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H10K 99/00 (2023.01)  
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62/320,915 2016년04월11일 미국(US)  
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(56) 선행기술조사문헌  
CN104004026 A\*  
(뒷면에 계속)  
전체 청구항 수 : 총 13 항

(73) 특허권자  
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(72) 발명자  
차이 주이-이  
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유니버설 디스플레이 코포레이션 내  
쟁 리창  
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(뒷면에 계속)  
(74) 대리인  
김진희, 김태홍

심사관 : 김지은

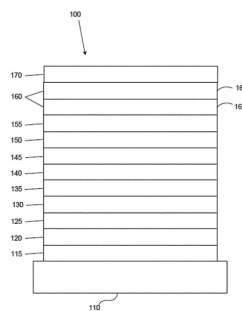
(54) 발명의 명칭 유기 전계발광 물질 및 소자

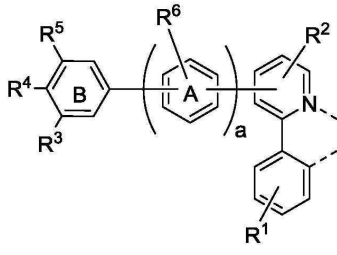
(57) 요약

하기 화학식을 갖는 리간드 L을 포함하는 화합물이 제공된다:

(뒷면에 계속)

대표도 - 도1





. 화학식 I의 구조에서, 각각의  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$ ,  $R^7$ , 및  $R^8$ 은 다양한 치환기에서 독립적으로 선택되고; 임의의 인접 치환기는 임의의 연결 또는 축합되어 고리가 되고;  $R^3$ ,  $R^4$ , 및  $R^5$  중 하나 이상은 수소가 아니고; "a"는 0~10의 정수이고; (i) a가 0인 경우,  $R^7$ ,  $R^8$ , 및 고리 B에 인접한  $R^2$  중 하나 이상은 수소가 아니고, (ii) a가 1~10인 경우, 고리 A에 인접한  $R^2$  및 고리 C에 인접한  $R^6$  중 하나 이상은 수소가 아니고; 리간드 L은 원자량이 40을 초과하는 금속 M에 배위 결합되고; 리간드 L은 다른 리간드와 임의의 연결되어 세자리, 네자리, 다섯자리 또는 여섯자리 리간드를 포함한다.

(52) CPC특허분류

- H10K 50/00 (2023.02)
- H10K 85/342 (2023.02)
- H10K 85/346 (2023.02)
- C07B 2200/05 (2013.01)

(72) 발명자

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**지아 추안준**

미국 08618 뉴저지주 유잉 필립스 불러바드 375 유  
니버설 디스플레이 코포레이션 내

(56) 선행기술조사문헌

- KR1020110065496 A\*
- KR1020120012431 A\*
- KR1020150137400 A\*

Valery N. Kozhevnikov 등, Chem. Mater., 2013, Vol. 25, pp. 2352-2358

\*는 심사관에 의하여 인용된 문헌

(30) 우선권주장

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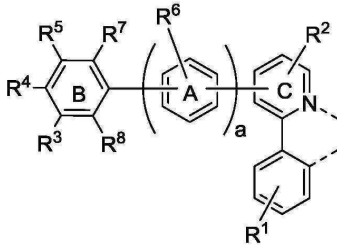


**명세서**

**청구범위**

**청구항 1**

하기 화학식을 갖는 리간드 L을 포함하는 화합물을 포함하는 발광 도펀트:



상기 식에서,

$R^1$ 은 일치환, 이치환, 삼치환 또는 사치환, 또는 비치환을 나타내고;

$R^2$ 은 일치환, 이치환 또는 삼치환을 나타내고;

각각의  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^7$ , 및  $R^8$ 은 수소, 중수소, 할라이드, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알키닐, 아릴, 헤테로아릴, 카르복실산, 니트릴, 이소니트릴, 설파닐, 포스포노, 및 이의 조합으로 이루어진 군에서 독립적으로 선택되고;

$R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^7$ , 및  $R^8$ 의 임의의 인접 치환기는 임의의 연결 또는 축합되어 고리가 되고;

$R^3$ ,  $R^4$ , 및  $R^5$  중 하나 이상은 일부 또는 전부 중수소화된 알킬, 일부 또는 전부 중수소화된 시클로알킬, 및 이의 조합으로 이루어진 군에서 선택되고,

a는 0이고;

고리 B는 고리 C의 N에 대하여 파라 위치에서 고리 C와 결합되고;

하나 이상의  $R^2$ 가 고리 B에 인접하게 위치하고,

고리 B에 인접한 하나 이상의  $R^2$ 는 수소가 아니고,

리간드 L은 Ir에 배위 결합되고;

리간드 L은 다른 리간드와 임의의 연결되어 세자리, 네자리, 다섯자리 또는 여섯자리 리간드를 포함한다.

**청구항 2**

삭제

**청구항 3**

제1항에 있어서,

$R^7$ ,  $R^8$ , 및 고리 B에 인접한  $R^2$  중 하나 이상은 알킬, 시클로알킬, 일부 또는 전부 중수소화된 이의 변형체, 및 이의 조합으로 이루어진 군에서 선택되는 것인 발광 도펀트.

**청구항 4**

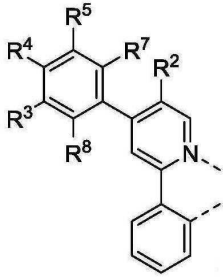
삭제

청구항 5

제1항에 있어서, R<sup>7</sup> 및 R<sup>8</sup> 중 하나 이상은 수소가 아닌 것인 발광 도펀트.

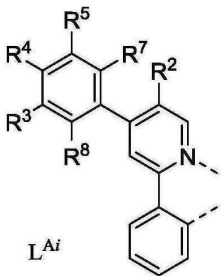
청구항 6

제1항에 있어서, 리간드 L은 하기 화학식인 것인 발광 도펀트:





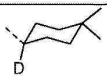
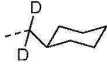
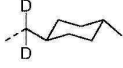


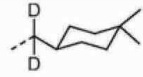
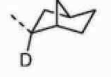


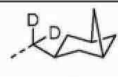
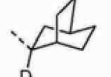
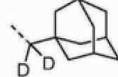
청구항 7


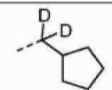
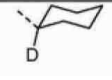
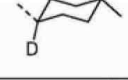
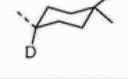
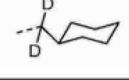
제1항에 있어서, 리간드 L은 하기 화학식의 구조를 기초로 하기 표에 정의된 L<sup>Ai</sup> (i는 159-168, 171-175, 178-180, 183-188, 191-199, 203-207, 210-212, 215-220, 287-318, 346-407, 436-444, 448-452, 455-457, 460-465, 496-504, 508-512, 515-517, 520-525, 556-564, 568-572, 575-577, 580-585, 616-647, 675-705, 734-765, 793-823, 852-860, 864-868, 871-873, 876-881, 884-892, 896-900, 903-905, 908-913, 943-951, 955-959, 962-964, 967-972, 975-1015, 1019-1023, 1026-1028, 1031-1075, 1079-1083, 1086-1088, 1091-1096, 1099-1107, 1111-1115, 1118-1120, 1123-1128, 1158-1166, 1170-1174, 1177-1179, 1182-1187, 1190-1198, 1202-1206, 1209-1211, 1214-1219, 1278-1340, 1368-1432의 정수이다.)에서 선택되는 것인 발광 도펀트:

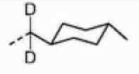
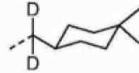
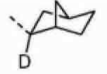
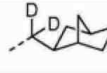
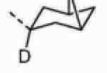
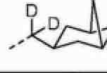
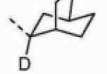
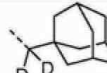


1. L <sup>Ai</sup> 에서 i	2. R <sup>2</sup>	3. R <sup>3</sup>	4. R <sup>4</sup>	5. R <sup>5</sup>	6. R <sup>7</sup>	7. R <sup>8</sup>
159.	956. C D <sub>3</sub>	957. H	958. CD <sub>3</sub>	959. H	960. H	961. CD <sub>3</sub>
160.	962. C D <sub>3</sub>	963. H	964. CD <sub>2</sub> CD <sub>3</sub>	965. H	966. H	967. CD <sub>3</sub>
161.	968. C D <sub>3</sub>	969. H	970. CD <sub>2</sub> CH <sub>3</sub>	971. H	972. H	973. CD <sub>3</sub>
162.	974. C D <sub>3</sub>	975. H	976. CD(CD <sub>3</sub> ) <sub>2</sub>	977. H	978. H	979. CD <sub>3</sub>
163.	980. C D <sub>3</sub>	981. H	982. CD(CH <sub>3</sub> ) <sub>2</sub>	983. H	984. H	985. CD <sub>3</sub>
164.	986. C D <sub>3</sub>	987. H	988. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	989. H	990. H	991. CD <sub>3</sub>





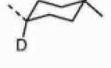


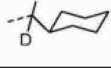

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
165.	992. C D <sub>3</sub>	993. H	994. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	995. H	996. H	997. CD <sub>3</sub>
166.	998. C D <sub>3</sub>	999. H	1000. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	1001. H	1002. H	1003. CD <sub>3</sub>
167.	1004. C D <sub>3</sub>	1005. H	1006. CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	1007. H	1008. H	1009. CD <sub>3</sub>
168.	1010. C D <sub>3</sub>	1011. H	1012. CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	1013. H	1014. H	1015. CD <sub>3</sub>
171.	1028. C D <sub>3</sub>	1029. H	1030. 	1031. H	1032. H	1033. CD <sub>3</sub>
172.	1034. C D <sub>3</sub>	1035. H	1036. 	1037. H	1038. H	1039. CD <sub>3</sub>
173.	1040. C D <sub>3</sub>	1041. H	1042. 	1043. H	1044. H	1045. CD <sub>3</sub>
174.	1046. C D <sub>3</sub>	1047. H	1048. 	1049. H	1050. H	1051. CD <sub>3</sub>
175.	1052. C D <sub>3</sub>	1053. H	1054. 	1055. H	1056. H	1057. CD <sub>3</sub>
178.	1070. C D <sub>3</sub>	1071. H	1072. 	1073. H	1074. H	1075. CD <sub>3</sub>
179.	1076. C D <sub>3</sub>	1077. H	1078. 	1079. H	1080. H	1081. CD <sub>3</sub>

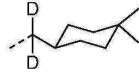
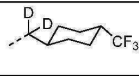
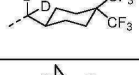


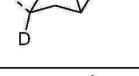


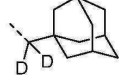
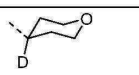
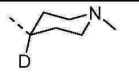
1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
180.	1082. C $D_3$	1083. H	1084. 	1085. H	1086. H	1087. $CD_3$
183.	1100. C $D_3$	1101. H	1102. 	1103. H	1104. H	1105. $CD_3$
184.	1106. C $D_3$	1107. H	1108. 	1109. H	1110. H	1111. $CD_3$
185.	1112. C $D_3$	1113. H	1114. 	1115. H	1116. H	1117. $CD_3$
186.	1118. C $D_3$	1119. H	1120. 	1121. H	1122. H	1123. $CD_3$
187.	1124. C $D_3$	1125. H	1126. 	1127. H	1128. H	1129. $CD_3$
188.	1130. C $D_3$	1131. H	1132. 	1133. H	1134. H	1135. $CD_3$
191.	1148. C $D_3$	1149. H	1150. $CD_3$	1151. H	1152. C $D_3$	1153. $CD_3$
192.	1154. C $D_3$	1155. H	1156. $CD_2CD_3$	1157. H	1158. C $D_3$	1159. $CD_3$
193.	1160. C $D_3$	1161. H	1162. $CD_2CH_3$	1163. H	1164. C $D_3$	1165. $CD_3$
194.	1166. C $D_3$	1167. H	1168. $CD(CD_3)_2$	1169. H	1170. C $D_3$	1171. $CD_3$
195.	1172. C	1173. H	1174. $CD(CH_3)_2$	1175. H	1176. C	1177. $CD_3$

I. $[L^{Al}]$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
	D <sub>3</sub>				D <sub>3</sub>	
196.	1178. C D <sub>3</sub>	1179. H	1180. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	1181. H	1182. C D <sub>3</sub>	1183. CD <sub>3</sub>
197.	1184. C D <sub>3</sub>	1185. H	1186. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	1187. H	1188. C D <sub>3</sub>	1189. CD <sub>3</sub>
198.	1190. C D <sub>3</sub>	1191. H	1192. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	1193. H	1194. C D <sub>3</sub>	1195. CD <sub>3</sub>
199.	1196. C D <sub>3</sub>	1197. H	1198. CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	1199. H	1200. C D <sub>3</sub>	1201. CD <sub>3</sub>
203.	1220. C D <sub>3</sub>	1221. H	1222. 	1223. H	1224. C D <sub>3</sub>	1225. CD <sub>3</sub>
204.	1226. C D <sub>3</sub>	1227. H	1228. 	1229. H	1230. C D <sub>3</sub>	1231. CD <sub>3</sub>
205.	1232. C D <sub>3</sub>	1233. H	1234. 	1235. H	1236. C D <sub>3</sub>	1237. CD <sub>3</sub>
206.	1238. C D <sub>3</sub>	1239. H	1240. 	1241. H	1242. C D <sub>3</sub>	1243. CD <sub>3</sub>
207.	1244. C D <sub>3</sub>	1245. H	1246. 	1247. H	1248. C D <sub>3</sub>	1249. CD <sub>3</sub>
210.	1262. C D <sub>3</sub>	1263. H	1264. 	1265. H	1266. C D <sub>3</sub>	1267. CD <sub>3</sub>

1. $L_{AF}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
211.	1268. C $D_3$	1269. H	1270. 	1271. H	1272. C $D_3$	1273. $CD_3$
212.	1274. C $D_3$	1275. H	1276. 	1277. H	1278. C $D_3$	1279. $CD_3$
215.	1292. C $D_3$	1293. H	1294. 	1295. H	1296. C $D_3$	1297. $CD_3$
216.	1298. C $D_3$	1299. H	1300. 	1301. H	1302. C $D_3$	1303. $CD_3$
217.	1304. C $D_3$	1305. H	1306. 	1307. H	1308. C $D_3$	1309. $CD_3$
218.	1310. C $D_3$	1311. H	1312. 	1313. H	1314. C $D_3$	1315. $CD_3$
219.	1316. C $D_3$	1317. H	1318. 	1319. H	1320. C $D_3$	1321. $CD_3$
220.	1322. C $D_3$	1323. H	1324. 	1325. H	1326. C $D_3$	1327. $CD_3$














1. $L_{AF}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
287.	1724. C $D_3$	1725. H	1726. $CD_3$	1727. $CD_3$	1728. C $D_3$	1729. $CD_3$
288.	1730. C $D_3$	1731. H	1732. $CD_2CD_3$	1733. $CD_3$	1734. C $D_3$	1735. $CD_3$
289.	1736. C $D_3$	1737. H	1738. $CD_2CH_3$	1739. $CD_3$	1740. C $D_3$	1741. $CD_3$
290.	1742. C $D_3$	1743. H	1744. $CD(CD_3)_2$	1745. $CD_3$	1746. C $D_3$	1747. $CD_3$
291.	1748. C $D_3$	1749. H	1750. $CD(CH_3)_2$	1751. $CD_3$	1752. C $D_3$	1753. $CD_3$
292.	1754. C $D_3$	1755. H	1756. $CD_2CD(CD_3)_2$	1757. $CD_3$	1758. C $D_3$	1759. $CD_3$






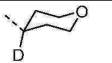
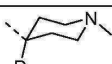
1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
293.	1760. C D <sub>3</sub>	1761. H	1762. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	1763. CD 3	1764. C D <sub>3</sub>	1765. CD <sub>3</sub>
294.	1766. C D <sub>3</sub>	1767. H	1768. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	1769. CD 3	1770. C D <sub>3</sub>	1771. CD <sub>3</sub>
295.	1772. C D <sub>3</sub>	1773. H	1774. CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	1775. CD 3	1776. C D <sub>3</sub>	1777. CD <sub>3</sub>
296.	1778. C D <sub>3</sub>	1779. H	1780. CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	1781. CD 3	1782. C D <sub>3</sub>	1783. CD <sub>3</sub>
297.	1784. C D <sub>3</sub>	1785. H	1786. CD <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	1787. CD 3	1788. C D <sub>3</sub>	1789. CD <sub>3</sub>
298.	1790. C D <sub>3</sub>	1791. H	1792. CD <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub>	1793. CD 3	1794. C D <sub>3</sub>	1795. CD <sub>3</sub>
299.	1796. C D <sub>3</sub>	1797. H	1798. 	1799. CD 3	1800. C D <sub>3</sub>	1801. CD <sub>3</sub>
300.	1802. C D <sub>3</sub>	1803. H	1804. 	1805. CD 3	1806. C D <sub>3</sub>	1807. CD <sub>3</sub>
301.	1808. C D <sub>3</sub>	1809. H	1810. 	1811. CD 3	1812. C D <sub>3</sub>	1813. CD <sub>3</sub>
302.	1814. C D <sub>3</sub>	1815. H	1816. 	1817. CD 3	1818. C D <sub>3</sub>	1819. CD <sub>3</sub>
303.	1820. C D <sub>3</sub>	1821. H	1822. 	1823. CD 3	1824. C D <sub>3</sub>	1825. CD <sub>3</sub>
304.	1826. C D <sub>3</sub>	1827. H	1828. 	1829. CD 3	1830. C D <sub>3</sub>	1831. CD <sub>3</sub>
305.	1832. C D <sub>3</sub>	1833. H	1834. 	1835. CD 3	1836. C D <sub>3</sub>	1837. CD <sub>3</sub>
306.	1838. C D <sub>3</sub>	1839. H	1840. 	1841. CD 3	1842. C D <sub>3</sub>	1843. CD <sub>3</sub>
307.	1844. C D <sub>3</sub>	1845. H	1846. 	1847. CD 3	1848. C D <sub>3</sub>	1849. CD <sub>3</sub>














1. $L^{A^i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^{61}$	7. $R^{62}$
308.	1850. C $D_3$	1851. H	1852. 	1853. CD <sub>3</sub>	1854. C $D_3$	1855. $CD_3$
309.	1856. C $D_3$	1857. H	1858. 	1859. CD <sub>3</sub>	1860. C $D_3$	1861. $CD_3$
310.	1862. C $D_3$	1863. H	1864. 	1865. CD <sub>3</sub>	1866. C $D_3$	1867. $CD_3$
311.	1868. C $D_3$	1869. H	1870. 	1871. CD <sub>3</sub>	1872. C $D_3$	1873. $CD_3$
312.	1874. C $D_3$	1875. H	1876. 	1877. CD <sub>3</sub>	1878. C $D_3$	1879. $CD_3$
313.	1880. C $D_3$	1881. H	1882. 	1883. CD <sub>3</sub>	1884. C $D_3$	1885. $CD_3$
314.	1886. C $D_3$	1887. H	1888. 	1889. CD <sub>3</sub>	1890. C $D_3$	1891. $CD_3$
315.	1892. C $D_3$	1893. H	1894. 	1895. CD <sub>3</sub>	1896. C $D_3$	1897. $CD_3$
316.	1898. C $D_3$	1899. H	1900. 	1901. CD <sub>3</sub>	1902. C $D_3$	1903. $CD_3$
317.	1904. C $D_3$	1905. H	1906. 	1907. CD <sub>3</sub>	1908. C $D_3$	1909. $CD_3$
318.	1910. C $D_3$	1911. H	1912. 	1913. CD <sub>3</sub>	1914. C $D_3$	1915. $CD_3$



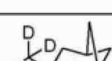

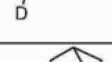


1. $L^{A^i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^{61}$	7. $R^{62}$
346.	2078. C $D_3$	2079. $CD_2CD_3$	2080. $CD_3$	2081. $CD_3$	2082. H	2083. $CD_3$
347.	2084. C $D_3$	2085. $CD_2CH_3$	2086. $CD_3$	2087. $CD_3$	2088. H	2089. $CD_3$
348.	2090. C $D_3$	2091. $CD(CD_3)_2$	2092. $CD_3$	2093. $CD_3$	2094. H	2095. $CD_3$
349.	2096. C $D_3$	2097. $CD(CH_3)_2$	2098. $CD_3$	2099. $CD_3$	2100. H	2101. $CD_3$
350.	2102. C $D_3$	2103. $CD_2CD(CD_3)_2$	2104. $CD_3$	2105. $CD_3$	2106. H	2107. $CD_3$
351.	2108. C $D_3$	2109. $CD_2CH(CH_3)_2$	2110. $CD_3$	2111. $CD_3$	2112. H	2113. $CD_3$
352.	2114. C $D_3$	2115. $CD_2C(CD_3)_3$	2116. $CD_3$	2117. $CD_3$	2118. H	2119. $CD_3$
353.	2120. C $D_3$	2121. $CD_2C(CH_3)_3$	2122. $CD_3$	2123. $CD_3$	2124. H	2125. $CD_3$
354.	2126. C	2127. $CD_2CD_2CF_3$	2128. $CD_3$	2129. $CD_3$	2130. H	2131. $CD_3$








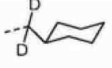
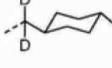
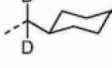






1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^{61}$	7. $R^{62}$
	$D_3$					
355.	2132. $C$ $D_3$	2133. $CD_2CH_2CF_3$	2134. $CD_3$	2135. $CD_3$	2136. $H$	2137. $CD_3$
356.	2138. $C$ $D_3$	2139. $CD_2CCF_3(CH_3)_2$	2140. $CD_3$	2141. $CD_3$	2142. $H$	2143. $CD_3$
357.	2144. $C$ $D_3$	2145. 	2146. $CD_3$	2147. $CD_3$	2148. $H$	2149. $CD_3$
358.	2150. $C$ $D_3$	2151. 	2152. $CD_3$	2153. $CD_3$	2154. $H$	2155. $CD_3$
359.	2156. $C$ $D_3$	2157. 	2158. $CD_3$	2159. $CD_3$	2160. $H$	2161. $CD_3$
360.	2162. $C$ $D_3$	2163. 	2164. $CD_3$	2165. $CD_3$	2166. $H$	2167. $CD_3$
361.	2168. $C$ $D_3$	2169. 	2170. $CD_3$	2171. $CD_3$	2172. $H$	2173. $CD_3$
362.	2174. $C$ $D_3$	2175. 	2176. $CD_3$	2177. $CD_3$	2178. $H$	2179. $CD_3$
363.	2180. $C$ $D_3$	2181. 	2182. $CD_3$	2183. $CD_3$	2184. $H$	2185. $CD_3$
364.	2186. $C$ $D_3$	2187. 	2188. $CD_3$	2189. $CD_3$	2190. $H$	2191. $CD_3$
365.	2192. $C$ $D_3$	2193. 	2194. $CD_3$	2195. $CD_3$	2196. $H$	2197. $CD_3$
366.	2198. $C$ $D_3$	2199. 	2200. $CD_3$	2201. $CD_3$	2202. $H$	2203. $CD_3$
367.	2204. $C$ $D_3$	2205. 	2206. $CD_3$	2207. $CD_3$	2208. $H$	2209. $CD_3$
368.	2210. $C$ $D_3$	2211. 	2212. $CD_3$	2213. $CD_3$	2214. $H$	2215. $CD_3$
369.	2216. $C$ $D_3$	2217. 	2218. $CD_3$	2219. $CD_3$	2220. $H$	2221. $CD_3$

1. $L^{A_i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^{61}$	7. $R^{62}$
370.	2222. C $D_3$	2223. 	2224. $CD_3$	2225. $CD_3$	2226. H	2227. $CD_3$
371.	2228. C $D_3$	2229. 	2230. $CD_3$	2231. $CD_3$	2232. H	2233. $CD_3$
372.	2234. C $D_3$	2235. 	2236. $CD_3$	2237. $CD_3$	2238. H	2239. $CD_3$
373.	2240. C $D_3$	2241. 	2242. $CD_3$	2243. $CD_3$	2244. H	2245. $CD_3$
374.	2246. C $D_3$	2247. 	2248. $CD_3$	2249. $CD_3$	2250. H	2251. $CD_3$
375.	2252. C $D_3$	2253. 	2254. $CD_3$	2255. $CD_3$	2256. H	2257. $CD_3$
376.	2258. C $D_3$	2259. 	2260. $CD_3$	2261. $CD_3$	2262. H	2263. $CD_3$
377.	2264. C $D_3$	2265. $CD_2CD_3$	2266. $CD_3$	2267. $CD_3$	2268. C $D_2CD_3$	2269. $CD_3$
378.	2270. C $D_3$	2271. $CD_2CH_3$	2272. $CD_3$	2273. $CD_3$	2274. C $D_2CD_3$	2275. $CD_3$
379.	2276. C $D_3$	2277. $CD(CD_3)_2$	2278. $CD_3$	2279. $CD_3$	2280. C $D_2CD_3$	2281. $CD_3$
380.	2282. C $D_3$	2283. $CD(CH_3)_2$	2284. $CD_3$	2285. $CD_3$	2286. C $D_2CD_3$	2287. $CD_3$
381.	2288. C $D_3$	2289. $CD_2CD(CD_3)_2$	2290. $CD_3$	2291. $CD_3$	2292. C $D_2CD_3$	2293. $CD_3$
382.	2294. C $D_3$	2295. $CD_2CH(CH_3)_2$	2296. $CD_3$	2297. $CD_3$	2298. C $D_2CD_3$	2299. $CD_3$
383.	2300. C $D_3$	2301. $CD_2C(CD_3)_3$	2302. $CD_3$	2303. $CD_3$	2304. C $D_2CD_3$	2305. $CD_3$
384.	2306. C $D_3$	2307. $CD_2C(CH_3)_3$	2308. $CD_3$	2309. $CD_3$	2310. C $D_2CD_3$	2311. $CD_3$
385.	2312. C $D_3$	2313. $CD_2CD_2CF_3$	2314. $CD_3$	2315. $CD_3$	2316. C $D_2CD_3$	2317. $CD_3$









1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
386.	2318. C $D_3$	2319. $CD_2CH_2CF_3$	2320. $CD_3$	2321. $CD_3$	2322. C $D_2CD_3$	2323. $CD_3$
387.	2324. C $D_3$	2325. $CD_2CCF_3(CH_3)_2$	2326. $CD_3$	2327. $CD_3$	2328. C $D_2CD_3$	2329. $CD_3$
388.	2330. C $D_3$	2331. 	2332. $CD_3$	2333. $CD_3$	2334. C $D_2CD_3$	2335. $CD_3$
389.	2336. C $D_3$	2337. 	2338. $CD_3$	2339. $CD_3$	2340. C $D_2CD_3$	2341. $CD_3$
390.	2342. C $D_3$	2343. 	2344. $CD_3$	2345. $CD_3$	2346. C $D_2CD_3$	2347. $CD_3$
391.	2348. C $D_3$	2349. 	2350. $CD_3$	2351. $CD_3$	2352. C $D_2CD_3$	2353. $CD_3$
392.	2354. C $D_3$	2355. 	2356. $CD_3$	2357. $CD_3$	2358. C $D_2CD_3$	2359. $CD_3$
393.	2360. C $D_3$	2361. 	2362. $CD_3$	2363. $CD_3$	2364. C $D_2CD_3$	2365. $CD_3$
394.	2366. C $D_3$	2367. 	2368. $CD_3$	2369. $CD_3$	2370. C $D_2CD_3$	2371. $CD_3$
395.	2372. C $D_3$	2373. 	2374. $CD_3$	2375. $CD_3$	2376. C $D_2CD_3$	2377. $CD_3$
396.	2378. C $D_3$	2379. 	2380. $CD_3$	2381. $CD_3$	2382. C $D_2CD_3$	2383. $CD_3$
397.	2384. C $D_3$	2385. 	2386. $CD_3$	2387. $CD_3$	2388. C $D_2CD_3$	2389. $CD_3$
398.	2390. C $D_3$	2391. 	2392. $CD_3$	2393. $CD_3$	2394. C $D_2CD_3$	2395. $CD_3$
399.	2396. C $D_3$	2397. 	2398. $CD_3$	2399. $CD_3$	2400. C $D_2CD_3$	2401. $CD_3$
400.	2402. C $D_3$	2403. 	2404. $CD_3$	2405. $CD_3$	2406. C $D_2CD_3$	2407. $CD_3$

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
401.	2408. C D <sub>3</sub>	2409. 	2410. CD <sub>3</sub>	2411. CD <sub>3</sub>	2412. C D <sub>2</sub> CD <sub>3</sub>	2413. CD <sub>3</sub>
402.	2414. C D <sub>3</sub>	2415. 	2416. CD <sub>3</sub>	2417. CD <sub>3</sub>	2418. C D <sub>2</sub> CD <sub>3</sub>	2419. CD <sub>3</sub>
403.	2420. C D <sub>3</sub>	2421. 	2422. CD <sub>3</sub>	2423. CD <sub>3</sub>	2424. C D <sub>2</sub> CD <sub>3</sub>	2425. CD <sub>3</sub>
404.	2426. C D <sub>3</sub>	2427. 	2428. CD <sub>3</sub>	2429. CD <sub>3</sub>	2430. C D <sub>2</sub> CD <sub>3</sub>	2431. CD <sub>3</sub>
405.	2432. C D <sub>3</sub>	2433. 	2434. CD <sub>3</sub>	2435. CD <sub>3</sub>	2436. C D <sub>2</sub> CD <sub>3</sub>	2437. CD <sub>3</sub>
406.	2438. C D <sub>3</sub>	2439. 	2440. CD <sub>3</sub>	2441. CD <sub>3</sub>	2442. C D <sub>2</sub> CD <sub>3</sub>	2443. CD <sub>3</sub>
407.	2444. C D <sub>3</sub>	2445. 	2446. CD <sub>3</sub>	2447. CD <sub>3</sub>	2448. C D <sub>2</sub> CD <sub>3</sub>	2449. CD <sub>3</sub>

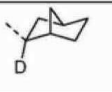
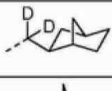

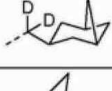
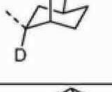
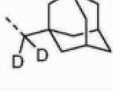
I. L <sup>Ar</sup> 에서 <i>i</i>	2. R <sup>2</sup>	3. R <sup>3</sup>	4. R <sup>4</sup>	5. R <sup>5</sup>	6. R <sup>7</sup>	7. R <sup>8</sup>
436.	2618. C D <sub>3</sub>	2619. CD <sub>3</sub>	2620. H	2621. H	2622. H	2623. CD <sub>2</sub> CD <sub>3</sub>
437.	2624. C D <sub>3</sub>	2625. CD <sub>2</sub> CD <sub>3</sub>	2626. H	2627. H	2628. H	2629. CD <sub>2</sub> CD <sub>3</sub>
438.	2630. C D <sub>3</sub>	2631. CD <sub>2</sub> CH <sub>3</sub>	2632. H	2633. H	2634. H	2635. CD <sub>2</sub> CD <sub>3</sub>
439.	2636. C D <sub>3</sub>	2637. CD(CD <sub>3</sub> ) <sub>2</sub>	2638. H	2639. H	2640. H	2641. CD <sub>2</sub> CD <sub>3</sub>
440.	2642. C D <sub>3</sub>	2643. CD(CH <sub>3</sub> ) <sub>2</sub>	2644. H	2645. H	2646. H	2647. CD <sub>2</sub> CD <sub>3</sub>
441.	2648. C D <sub>3</sub>	2649. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	2650. H	2651. H	2652. H	2653. CD <sub>2</sub> CD <sub>3</sub>
442.	2654. C D <sub>3</sub>	2655. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	2656. H	2657. H	2658. H	2659. CD <sub>2</sub> CD <sub>3</sub>
443.	2660. C D <sub>3</sub>	2661. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	2662. H	2663. H	2664. H	2665. CD <sub>2</sub> CD <sub>3</sub>
444.	2666. C D <sub>3</sub>	2667. CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	2668. H	2669. H	2670. H	2671. CD <sub>2</sub> CD <sub>3</sub>
448.	2690. C D <sub>3</sub>	2691. 	2692. H	2693. H	2694. H	2695. CD <sub>2</sub> CD <sub>3</sub>
449.	2696. C D <sub>3</sub>	2697. 	2698. H	2699. H	2700. H	2701. CD <sub>2</sub> CD <sub>3</sub>
450.	2702. C D <sub>3</sub>	2703. 	2704. H	2705. H	2706. H	2707. CD <sub>2</sub> CD <sub>3</sub>

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
451.	2708. C $D_3$	2709. 	2710. H	2711. H	2712. H	2713. $CD_2$ $CD_3$
452.	2714. C $D_3$	2715. 	2716. H	2717. H	2718. H	2719. $CD_2$ $CD_3$
455.	2732. C $D_3$	2733. 	2734. H	2735. H	2736. H	2737. $CD_2$ $CD_3$
456.	2738. C $D_3$	2739. 	2740. H	2741. H	2742. H	2743. $CD_2$ $CD_3$
457.	2744. C $D_3$	2745. 	2746. H	2747. H	2748. H	2749. $CD_2$ $CD_3$
460.	2762. C $D_3$	2763. 	2764. H	2765. H	2766. H	2767. $CD_2$ $CD_3$
461.	2768. C $D_3$	2769. 	2770. H	2771. H	2772. H	2773. $CD_2$ $CD_3$
462.	2774. C $D_3$	2775. 	2776. H	2777. H	2778. H	2779. $CD_2$ $CD_3$
463.	2780. C $D_3$	2781. 	2782. H	2783. H	2784. H	2785. $CD_2$ $CD_3$
464.	2786. C $D_3$	2787. 	2788. H	2789. H	2790. H	2791. $CD_2$ $CD_3$
465.	2792. C $D_3$	2793. 	2794. H	2795. H	2796. H	2797. $CD_2$ $CD_3$




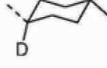

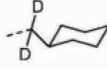
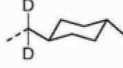

1. $L_n^{A_i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
496.	2978. C D <sub>3</sub>	2979. H	2980. CD <sub>3</sub>	2981. H	2982. H	2983. CD <sub>2</sub> C D <sub>3</sub>
497.	2984. C D <sub>3</sub>	2985. H	2986. CD <sub>2</sub> CD <sub>3</sub>	2987. H	2988. H	2989. CD <sub>2</sub> C D <sub>3</sub>
498.	2990. C D <sub>3</sub>	2991. H	2992. CD <sub>2</sub> CH <sub>3</sub>	2993. H	2994. H	2995. CD <sub>2</sub> C D <sub>3</sub>
499.	2996. C D <sub>3</sub>	2997. H	2998. CD(CD <sub>3</sub> ) <sub>2</sub>	2999. H	3000. H	3001. CD <sub>2</sub> C D <sub>3</sub>
500.	3002. C D <sub>3</sub>	3003. H	3004. CD(CH <sub>3</sub> ) <sub>2</sub>	3005. H	3006. H	3007. CD <sub>2</sub> C D <sub>3</sub>
501.	3008. C D <sub>3</sub>	3009. H	3010. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	3011. H	3012. H	3013. CD <sub>2</sub> C D <sub>3</sub>
502.	3014. C D <sub>3</sub>	3015. H	3016. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	3017. H	3018. H	3019. CD <sub>2</sub> C D <sub>3</sub>
503.	3020. C	3021. H	3022. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	3023. H	3024. H	3025. CD <sub>2</sub> C


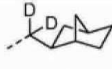

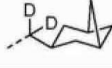

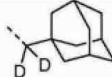
1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
	$D_3$					$D_3$
504.	3026. C $D_3$	3027. H	3028. $CD_2C(CH_3)_3$	3029. H	3030. H	3031. $CD_2C$ $D_3$
508.	3050. C $D_3$	3051. H	3052. 	3053. H	3054. H	3055. $CD_2C$ $D_3$
509.	3056. C $D_3$	3057. H	3058. 	3059. H	3060. H	3061. $CD_2C$ $D_3$
510.	3062. C $D_3$	3063. H	3064. 	3065. H	3066. H	3067. $CD_2C$ $D_3$
511.	3068. C $D_3$	3069. H	3070. 	3071. H	3072. H	3073. $CD_2C$ $D_3$
512.	3074. C $D_3$	3075. H	3076. 	3077. H	3078. H	3079. $CD_2C$ $D_3$
515.	3092. C $D_3$	3093. H	3094. 	3095. H	3096. H	3097. $CD_2C$ $D_3$
516.	3098. C $D_3$	3099. H	3100. 	3101. H	3102. H	3103. $CD_2C$ $D_3$
517.	3104. C $D_3$	3105. H	3106. 	3107. H	3108. H	3109. $CD_2C$ $D_3$







1. $L^{Ar}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
520.	3122. C $D_3$	3123. H	3124. 	3125. H	3126. H	3127. $CD_2C$ $D_3$
521.	3128. C $D_3$	3129. H	3130. 	3131. H	3132. H	3133. $CD_2C$ $D_3$
522.	3134. C $D_3$	3135. H	3136. 	3137. H	3138. H	3139. $CD_2C$ $D_3$
523.	3140. C $D_3$	3141. H	3142. 	3143. H	3144. H	3145. $CD_2C$ $D_3$
524.	3146. C $D_3$	3147. H	3148. 	3149. H	3150. H	3151. $CD_2C$ $D_3$
525.	3152. C $D_3$	3153. H	3154. 	3155. H	3156. H	3157. $CD_2C$ $D_3$

1. $L^{Ar}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
556.	3338. C $D_3$	3339. H	3340. H	3341. $CD_3$	3342. C $D_3$	3343. $CD_3$
557.	3344. C $D_3$	3345. H	3346. H	3347. $CD_2CD_3$	3348. C $D_3$	3349. $CD_3$
558.	3350. C $D_3$	3351. H	3352. H	3353. $CD_2CH_3$	3354. C $D_3$	3355. $CD_3$
559.	3356. C $D_3$	3357. H	3358. H	3359. $CD(CD_3)_2$	3360. C $D_3$	3361. $CD_3$
560.	3362. C $D_3$	3363. H	3364. H	3365. $CD(CH_3)_2$	3366. C $D_3$	3367. $CD_3$
561.	3368. C $D_3$	3369. H	3370. H	3371. $CD_2CD(CD_3)_2$	3372. C $D_3$	3373. $CD_3$
562.	3374. C $D_3$	3375. H	3376. H	3377. $CD_2CH(CH_3)_2$	3378. C $D_3$	3379. $CD_3$
563.	3380. C	3381. H	3382. H	3383. $CD_2C(CD_3)_3$	3384. C	3385. $CD_3$

1. $L^{A_i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
	$D_3$				$D_3$	
564.	3386. C $D_3$	3387. H	3388. H	3389. $CD_2C(CH_3)_3$	3390. C $D_3$	3391. $CD_3$
568.	3410. C $D_3$	3411. H	3412. H	3413. 	3414. C $D_3$	3415. $CD_3$
569.	3416. C $D_3$	3417. H	3418. H	3419. 	3420. C $D_3$	3421. $CD_3$
570.	3422. C $D_3$	3423. H	3424. H	3425. 	3426. C $D_3$	3427. $CD_3$
571.	3428. C $D_3$	3429. H	3430. H	3431. 	3432. C $D_3$	3433. $CD_3$
572.	3434. C $D_3$	3435. H	3436. H	3437. 	3438. C $D_3$	3439. $CD_3$
575.	3452. C $D_3$	3453. H	3454. H	3455. 	3456. C $D_3$	3457. $CD_3$
576.	3458. C $D_3$	3459. H	3460. H	3461. 	3462. C $D_3$	3463. $CD_3$
577.	3464. C $D_3$	3465. H	3466. H	3467. 	3468. C $D_3$	3469. $CD_3$



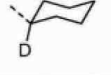
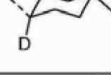
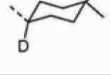

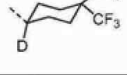
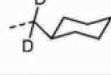
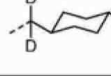
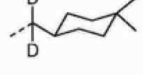
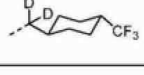
1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
580.	3482. C $D_3$	3483. H	3484. H	3485. 	3486. C $D_3$	3487. $CD_3$
581.	3488. C $D_3$	3489. H	3490. H	3491. 	3492. C $D_3$	3493. $CD_3$
582.	3494. C $D_3$	3495. H	3496. H	3497. 	3498. C $D_3$	3499. $CD_3$
583.	3500. C $D_3$	3501. H	3502. H	3503. 	3504. C $D_3$	3505. $CD_3$
584.	3506. C $D_3$	3507. H	3508. H	3509. 	3510. C $D_3$	3511. $CD_3$
585.	3512. C $D_3$	3513. H	3514. H	3515. 	3516. C $D_3$	3517. $CD_3$



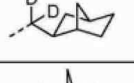
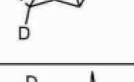


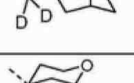
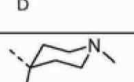

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
616.	3698. C D <sub>3</sub>	3699. CD <sub>3</sub>	3700. CD <sub>3</sub>	3701. H	3702. C D <sub>3</sub>	3703. CD <sub>3</sub>
617.	3704. C D <sub>3</sub>	3705. CD <sub>2</sub> CD <sub>3</sub>	3706. CD <sub>3</sub>	3707. H	3708. C D <sub>3</sub>	3709. CD <sub>3</sub>
618.	3710. C D <sub>3</sub>	3711. CD <sub>2</sub> CH <sub>3</sub>	3712. CD <sub>3</sub>	3713. H	3714. C D <sub>3</sub>	3715. CD <sub>3</sub>
619.	3716. C D <sub>3</sub>	3717. CD(CD <sub>3</sub> ) <sub>2</sub>	3718. CD <sub>3</sub>	3719. H	3720. C D <sub>3</sub>	3721. CD <sub>3</sub>
620.	3722. C D <sub>3</sub>	3723. CD(CH <sub>3</sub> ) <sub>2</sub>	3724. CD <sub>3</sub>	3725. H	3726. C D <sub>3</sub>	3727. CD <sub>3</sub>
621.	3728. C D <sub>3</sub>	3729. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	3730. CD <sub>3</sub>	3731. H	3732. C D <sub>3</sub>	3733. CD <sub>3</sub>
622.	3734. C D <sub>3</sub>	3735. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	3736. CD <sub>3</sub>	3737. H	3738. C D <sub>3</sub>	3739. CD <sub>3</sub>
623.	3740. C D <sub>3</sub>	3741. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	3742. CD <sub>3</sub>	3743. H	3744. C D <sub>3</sub>	3745. CD <sub>3</sub>
624.	3746. C D <sub>3</sub>	3747. CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	3748. CD <sub>3</sub>	3749. H	3750. C D <sub>3</sub>	3751. CD <sub>3</sub>
625.	3752. C D <sub>3</sub>	3753. CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	3754. CD <sub>3</sub>	3755. H	3756. C D <sub>3</sub>	3757. CD <sub>3</sub>
626.	3758. C D <sub>3</sub>	3759. CD <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	3760. CD <sub>3</sub>	3761. H	3762. C D <sub>3</sub>	3763. CD <sub>3</sub>
627.	3764. C D <sub>3</sub>	3765. CD <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub>	3766. CD <sub>3</sub>	3767. H	3768. C D <sub>3</sub>	3769. CD <sub>3</sub>
628.	3770. C D <sub>3</sub>	3771. 	3772. CD <sub>3</sub>	3773. H	3774. C D <sub>3</sub>	3775. CD <sub>3</sub>
629.	3776. C D <sub>3</sub>	3777. 	3778. CD <sub>3</sub>	3779. H	3780. C D <sub>3</sub>	3781. CD <sub>3</sub>
630.	3782. C D <sub>3</sub>	3783. 	3784. CD <sub>3</sub>	3785. H	3786. C D <sub>3</sub>	3787. CD <sub>3</sub>
631.	3788. C D <sub>3</sub>	3789. 	3790. CD <sub>3</sub>	3791. H	3792. C D <sub>3</sub>	3793. CD <sub>3</sub>

1. $L^{Ai}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
632.	3794. C $D_3$	3795.	3796. $CD_3$	3797. H	3798. C $D_3$	3799. $CD_3$
633.	3800. C $D_3$	3801.	3802. $CD_3$	3803. H	3804. C $D_3$	3805. $CD_3$
634.	3806. C $D_3$	3807.	3808. $CD_3$	3809. H	3810. C $D_3$	3811. $CD_3$
635.	3812. C $D_3$	3813.	3814. $CD_3$	3815. H	3816. C $D_3$	3817. $CD_3$
636.	3818. C $D_3$	3819.	3820. $CD_3$	3821. H	3822. C $D_3$	3823. $CD_3$
637.	3824. C $D_3$	3825.	3826. $CD_3$	3827. H	3828. C $D_3$	3829. $CD_3$
638.	3830. C $D_3$	3831.	3832. $CD_3$	3833. H	3834. C $D_3$	3835. $CD_3$
639.	3836. C $D_3$	3837.	3838. $CD_3$	3839. H	3840. C $D_3$	3841. $CD_3$
640.	3842. C $D_3$	3843.	3844. $CD_3$	3845. H	3846. C $D_3$	3847. $CD_3$
641.	3848. C $D_3$	3849.	3850. $CD_3$	3851. H	3852. C $D_3$	3853. $CD_3$
642.	3854. C $D_3$	3855.	3856. $CD_3$	3857. H	3858. C $D_3$	3859. $CD_3$
643.	3860. C $D_3$	3861.	3862. $CD_3$	3863. H	3864. C $D_3$	3865. $CD_3$
644.	3866. C $D_3$	3867.	3868. $CD_3$	3869. H	3870. C $D_3$	3871. $CD_3$
645.	3872. C $D_3$	3873.	3874. $CD_3$	3875. H	3876. C $D_3$	3877. $CD_3$


1. $L^{Ai}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
646.	3878. C $D_3$	3879.	3880. $CD_3$	3881. H	3882. C $D_3$	3883. $CD_3$
647.	3884. C $D_3$	3885.	3886. $CD_3$	3887. H	3888. C $D_3$	3889. $CD_3$

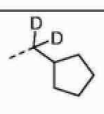
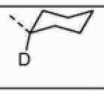


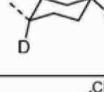
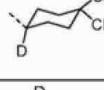
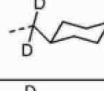
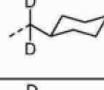
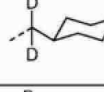
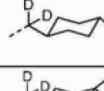

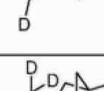

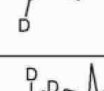

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
675.	4052. C D <sub>3</sub>	4053. C D <sub>3</sub>	4054. CD <sub>2</sub> CD <sub>3</sub>	4055. H	4056. C D <sub>2</sub> CH <sub>3</sub>	4057. CD <sub>2</sub> C H <sub>3</sub>
676.	4058. C D <sub>3</sub>	4059. C D <sub>3</sub>	4060. CD <sub>2</sub> CH <sub>3</sub>	4061. H	4062. C D <sub>2</sub> CH <sub>3</sub>	4063. CD <sub>2</sub> C H <sub>3</sub>
677.	4064. C D <sub>3</sub>	4065. C D <sub>3</sub>	4066. CD(CD <sub>3</sub> ) <sub>2</sub>	4067. H	4068. C D <sub>2</sub> CH <sub>3</sub>	4069. CD <sub>2</sub> C H <sub>3</sub>
678.	4070. C D <sub>3</sub>	4071. C D <sub>3</sub>	4072. CD(CH <sub>3</sub> ) <sub>2</sub>	4073. H	4074. C D <sub>2</sub> CH <sub>3</sub>	4075. CD <sub>2</sub> C H <sub>3</sub>
679.	4076. C D <sub>3</sub>	4077. C D <sub>3</sub>	4078. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	4079. H	4080. C D <sub>2</sub> CH <sub>3</sub>	4081. CD <sub>2</sub> C H <sub>3</sub>
680.	4082. C D <sub>3</sub>	4083. C D <sub>3</sub>	4084. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	4085. H	4086. C D <sub>2</sub> CH <sub>3</sub>	4087. CD <sub>2</sub> C H <sub>3</sub>
681.	4088. C	4089. C	4090. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	4091. H	4092. C	4093. CD <sub>2</sub> C


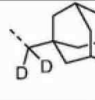


I. $L_{A^i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
	D <sub>3</sub>	D <sub>3</sub>			D <sub>2</sub> CH <sub>3</sub>	H <sub>3</sub>
682.	4094. C D <sub>3</sub>	4095. C D <sub>3</sub>	4096. CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	4097. H	4098. C D <sub>2</sub> CH <sub>3</sub>	4099. CD <sub>2</sub> C H <sub>3</sub>
683.	4100. C D <sub>3</sub>	4101. C D <sub>3</sub>	4102. CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	4103. H	4104. C D <sub>2</sub> CH <sub>3</sub>	4105. CD <sub>2</sub> C H <sub>3</sub>
684.	4106. C D <sub>3</sub>	4107. C D <sub>3</sub>	4108. CD <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	4109. H	4110. C D <sub>2</sub> CH <sub>3</sub>	4111. CD <sub>2</sub> C H <sub>3</sub>
685.	4112. C D <sub>3</sub>	4113. C D <sub>3</sub>	4114. CD <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub>	4115. H	4116. C D <sub>2</sub> CH <sub>3</sub>	4117. CD <sub>2</sub> C H <sub>3</sub>
686.	4118. C D <sub>3</sub>	4119. C D <sub>3</sub>	4120. 	4121. H	4122. C D <sub>2</sub> CH <sub>3</sub>	4123. CD <sub>2</sub> C H <sub>3</sub>
687.	4124. C D <sub>3</sub>	4125. C D <sub>3</sub>	4126. 	4127. H	4128. C D <sub>2</sub> CH <sub>3</sub>	4129. CD <sub>2</sub> C H <sub>3</sub>
688.	4130. C D <sub>3</sub>	4131. C D <sub>3</sub>	4132. 	4133. H	4134. C D <sub>2</sub> CH <sub>3</sub>	4135. CD <sub>2</sub> C H <sub>3</sub>
689.	4136. C D <sub>3</sub>	4137. C D <sub>3</sub>	4138. 	4139. H	4140. C D <sub>2</sub> CH <sub>3</sub>	4141. CD <sub>2</sub> C H <sub>3</sub>
690.	4142. C D <sub>3</sub>	4143. C D <sub>3</sub>	4144. 	4145. H	4146. C D <sub>2</sub> CH <sub>3</sub>	4147. CD <sub>2</sub> C H <sub>3</sub>
691.	4148. C D <sub>3</sub>	4149. C D <sub>3</sub>	4150. 	4151. H	4152. C D <sub>2</sub> CH <sub>3</sub>	4153. CD <sub>2</sub> C H <sub>3</sub>
692.	4154. C D <sub>3</sub>	4155. C D <sub>3</sub>	4156. 	4157. H	4158. C D <sub>2</sub> CH <sub>3</sub>	4159. CD <sub>2</sub> C H <sub>3</sub>
693.	4160. C D <sub>3</sub>	4161. C D <sub>3</sub>	4162. 	4163. H	4164. C D <sub>2</sub> CH <sub>3</sub>	4165. CD <sub>2</sub> C H <sub>3</sub>
694.	4166. C D <sub>3</sub>	4167. C D <sub>3</sub>	4168. 	4169. H	4170. C D <sub>2</sub> CH <sub>3</sub>	4171. CD <sub>2</sub> C H <sub>3</sub>
695.	4172. C D <sub>3</sub>	4173. C D <sub>3</sub>	4174. 	4175. H	4176. C D <sub>2</sub> CH <sub>3</sub>	4177. CD <sub>2</sub> C H <sub>3</sub>
696.	4178. C D <sub>3</sub>	4179. C D <sub>3</sub>	4180. 	4181. H	4182. C D <sub>2</sub> CH <sub>3</sub>	4183. CD <sub>2</sub> C H <sub>3</sub>

1. $L_n^{A_i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
697.	4184. C D <sub>3</sub>	4185. C D <sub>3</sub>	4186. 	4187. H	4188. C D <sub>2</sub> CH <sub>3</sub>	4189. CD <sub>2</sub> C H <sub>3</sub>
698.	4190. C D <sub>3</sub>	4191. C D <sub>3</sub>	4192. 	4193. H	4194. C D <sub>2</sub> CH <sub>3</sub>	4195. CD <sub>2</sub> C H <sub>3</sub>
699.	4196. C D <sub>3</sub>	4197. C D <sub>3</sub>	4198. 	4199. H	4200. C D <sub>2</sub> CH <sub>3</sub>	4201. CD <sub>2</sub> C H <sub>3</sub>
700.	4202. C D <sub>3</sub>	4203. C D <sub>3</sub>	4204. 	4205. H	4206. C D <sub>2</sub> CH <sub>3</sub>	4207. CD <sub>2</sub> C H <sub>3</sub>
701.	4208. C D <sub>3</sub>	4209. C D <sub>3</sub>	4210. 	4211. H	4212. C D <sub>2</sub> CH <sub>3</sub>	4213. CD <sub>2</sub> C H <sub>3</sub>
702.	4214. C D <sub>3</sub>	4215. C D <sub>3</sub>	4216. 	4217. H	4218. C D <sub>2</sub> CH <sub>3</sub>	4219. CD <sub>2</sub> C H <sub>3</sub>
703.	4220. C D <sub>3</sub>	4221. C D <sub>3</sub>	4222. 	4223. H	4224. C D <sub>2</sub> CH <sub>3</sub>	4225. CD <sub>2</sub> C H <sub>3</sub>
704.	4226. C D <sub>3</sub>	4227. C D <sub>3</sub>	4228. 	4229. H	4230. C D <sub>2</sub> CH <sub>3</sub>	4231. CD <sub>2</sub> C H <sub>3</sub>
705.	4232. C D <sub>3</sub>	4233. C D <sub>3</sub>	4234. 	4235. H	4236. C D <sub>2</sub> CH <sub>3</sub>	4237. CD <sub>2</sub> C H <sub>3</sub>

































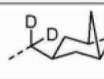
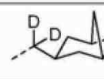


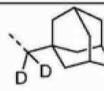
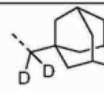
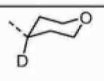
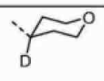
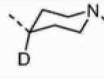

I. L <sup>At</sup> 에서 <i>i</i>	2. R <sup>2</sup>	3. R <sup>3</sup>	4. R <sup>4</sup>	5. R <sup>5</sup>	6. R <sup>7</sup>	7. R <sup>8</sup>
734.	4406. C D <sub>3</sub>	4407. C D <sub>3</sub>	4408. CD <sub>3</sub>	4409. CD 3	4410. C D <sub>2</sub> CH <sub>3</sub>	4411. CD <sub>2</sub> C H <sub>3</sub>
735.	4412. C D <sub>3</sub>	4413. C D <sub>3</sub>	4414. CD <sub>2</sub> CD <sub>3</sub>	4415. CD 3	4416. C D <sub>2</sub> CH <sub>3</sub>	4417. CD <sub>2</sub> C H <sub>3</sub>
736.	4418. C D <sub>3</sub>	4419. C D <sub>3</sub>	4420. CD <sub>2</sub> CH <sub>3</sub>	4421. CD 3	4422. C D <sub>2</sub> CH <sub>3</sub>	4423. CD <sub>2</sub> C H <sub>3</sub>
737.	4424. C D <sub>3</sub>	4425. C D <sub>3</sub>	4426. CD(CD <sub>3</sub> ) <sub>2</sub>	4427. CD 3	4428. C D <sub>2</sub> CH <sub>3</sub>	4429. CD <sub>2</sub> C H <sub>3</sub>
738.	4430. C D <sub>3</sub>	4431. C D <sub>3</sub>	4432. CD(CH <sub>3</sub> ) <sub>2</sub>	4433. CD 3	4434. C D <sub>2</sub> CH <sub>3</sub>	4435. CD <sub>2</sub> C H <sub>3</sub>
739.	4436. C D <sub>3</sub>	4437. C D <sub>3</sub>	4438. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	4439. CD 3	4440. C D <sub>2</sub> CH <sub>3</sub>	4441. CD <sub>2</sub> C H <sub>3</sub>
740.	4442. C D <sub>3</sub>	4443. C D <sub>3</sub>	4444. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	4445. CD 3	4446. C D <sub>2</sub> CH <sub>3</sub>	4447. CD <sub>2</sub> C H <sub>3</sub>
741.	4448. C D <sub>3</sub>	4449. C D <sub>3</sub>	4450. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	4451. CD 3	4452. C D <sub>2</sub> CH <sub>3</sub>	4453. CD <sub>2</sub> C H <sub>3</sub>
742.	4454. C D <sub>3</sub>	4455. C D <sub>3</sub>	4456. CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	4457. CD 3	4458. C D <sub>2</sub> CH <sub>3</sub>	4459. CD <sub>2</sub> C H <sub>3</sub>
743.	4460. C D <sub>3</sub>	4461. C D <sub>3</sub>	4462. CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	4463. CD 3	4464. C D <sub>2</sub> CH <sub>3</sub>	4465. CD <sub>2</sub> C H <sub>3</sub>
744.	4466. C D <sub>3</sub>	4467. C D <sub>3</sub>	4468. CD <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	4469. CD 3	4470. C D <sub>2</sub> CH <sub>3</sub>	4471. CD <sub>2</sub> C H <sub>3</sub>
745.	4472. C D <sub>3</sub>	4473. C D <sub>3</sub>	4474. CD <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub>	4475. CD 3	4476. C D <sub>2</sub> CH <sub>3</sub>	4477. CD <sub>2</sub> C H <sub>3</sub>
746.	4478. C D <sub>3</sub>	4479. C D <sub>3</sub>	4480. 	4481. CD 3	4482. C D <sub>2</sub> CH <sub>3</sub>	4483. CD <sub>2</sub> C H <sub>3</sub>

1. $L^{Ar}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
747.	4484. C $D_3$	4485. C $D_3$	4486. 	4487. CD <sub>3</sub>	4488. C $D_2CH_3$	4489. $CD_2C$ $H_3$
748.	4490. C $D_3$	4491. C $D_3$	4492. 	4493. CD <sub>3</sub>	4494. C $D_2CH_3$	4495. $CD_2C$ $H_3$
749.	4496. C $D_3$	4497. C $D_3$	4498. 	4499. CD <sub>3</sub>	4500. C $D_2CH_3$	4501. $CD_2C$ $H_3$
750.	4502. C $D_3$	4503. C $D_3$	4504. 	4505. CD <sub>3</sub>	4506. C $D_2CH_3$	4507. $CD_2C$ $H_3$
751.	4508. C $D_3$	4509. C $D_3$	4510. 	4511. CD <sub>3</sub>	4512. C $D_2CH_3$	4513. $CD_2C$ $H_3$
752.	4514. C $D_3$	4515. C $D_3$	4516. 	4517. CD <sub>3</sub>	4518. C $D_2CH_3$	4519. $CD_2C$ $H_3$
753.	4520. C $D_3$	4521. C $D_3$	4522. 	4523. CD <sub>3</sub>	4524. C $D_2CH_3$	4525. $CD_2C$ $H_3$
754.	4526. C $D_3$	4527. C $D_3$	4528. 	4529. CD <sub>3</sub>	4530. C $D_2CH_3$	4531. $CD_2C$ $H_3$
755.	4532. C $D_3$	4533. C $D_3$	4534. 	4535. CD <sub>3</sub>	4536. C $D_2CH_3$	4537. $CD_2C$ $H_3$
756.	4538. C $D_3$	4539. C $D_3$	4540. 	4541. CD <sub>3</sub>	4542. C $D_2CH_3$	4543. $CD_2C$ $H_3$
757.	4544. C $D_3$	4545. C $D_3$	4546. 	4547. CD <sub>3</sub>	4548. C $D_2CH_3$	4549. $CD_2C$ $H_3$
758.	4550. C $D_3$	4551. C $D_3$	4552. 	4553. CD <sub>3</sub>	4554. C $D_2CH_3$	4555. $CD_2C$ $H_3$
759.	4556. C $D_3$	4557. C $D_3$	4558. 	4559. CD <sub>3</sub>	4560. C $D_2CH_3$	4561. $CD_2C$ $H_3$
760.	4562. C $D_3$	4563. C $D_3$	4564. 	4565. CD <sub>3</sub>	4566. C $D_2CH_3$	4567. $CD_2C$ $H_3$
761.	4568. C $D_3$	4569. C $D_3$	4570. 	4571. CD <sub>3</sub>	4572. C $D_2CH_3$	4573. $CD_2C$ $H_3$




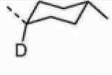
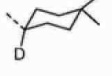
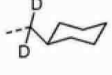
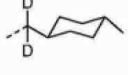

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
762.	4574. C $D_3$	4575. C $D_3$	4576. 	4577. CD <sub>3</sub>	4578. C $D_2CH_3$	4579. $CD_2C$ $H_3$
763.	4580. C $D_3$	4581. C $D_3$	4582. 	4583. CD <sub>3</sub>	4584. C $D_2CH_3$	4585. $CD_2C$ $H_3$
764.	4586. C $D_3$	4587. C $D_3$	4588. 	4589. CD <sub>3</sub>	4590. C $D_2CH_3$	4591. $CD_2C$ $H_3$
765.	4592. C $D_3$	4593. C $D_3$	4594. 	4595. CD <sub>3</sub>	4596. C $D_2CH_3$	4597. $CD_2C$ $H_3$






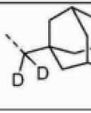
1. $L^A$ 에서 $i$	2. $R$ <sub>2</sub>	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
793.	4760. C $D_3$	4761. $CD_2CD_3$	4762. CD <sub>3</sub>	4763. $CD_2CD_3$	4764. H	4765. C $D_2CH_3$
794.	4766. C $D_3$	4767. $CD_2CH_3$	4768. CD <sub>3</sub>	4769. $CD_2CH_3$	4770. H	4771. C $D_2CH_3$
795.	4772. C $D_3$	4773. $CD(CD_3)_2$	4774. CD <sub>3</sub>	4775. $CD(CD_3)_2$	4776. H	4777. C $D_2CH_3$
796.	4778. C $D_3$	4779. $CD(CH_3)_2$	4780. CD <sub>3</sub>	4781. $CD(CH_3)_2$	4782. H	4783. C $D_2CH_3$
797.	4784. C $D_3$	4785. $CD_2CD(CD_3)_2$	4786. CD <sub>3</sub>	4787. $CD_2CD(CD_3)_2$	4788. H	4789. C $D_2CH_3$
798.	4790. C $D_3$	4791. $CD_2CH(CH_3)_2$	4792. CD <sub>3</sub>	4793. $CD_2CH(CH_3)_2$	4794. H	4795. C $D_2CH_3$
799.	4796. C $D_3$	4797. $CD_2C(CD_3)_3$	4798. CD <sub>3</sub>	4799. $CD_2C(CD_3)_3$	4800. H	4801. C $D_2CH_3$
800.	4802. C $D_3$	4803. $CD_2C(CH_3)_3$	4804. CD <sub>3</sub>	4805. $CD_2C(CH_3)_3$	4806. H	4807. C $D_2CH_3$
801.	4808. C $D_3$	4809. $CD_2CD_2CF_3$	4810. CD <sub>3</sub>	4811. $CD_2CD_2CF_3$	4812. H	4813. C $D_2CH_3$
802.	4814. C $D_3$	4815. $CD_2CH_2CF_3$	4816. CD <sub>3</sub>	4817. $CD_2CH_2CF_3$	4818. H	4819. C $D_2CH_3$
803.	4820. C	4821. $CD_2CCF_3(CH$	4822. CD	4823. $CD_2CCF_3(CH$	4824. H	4825. C






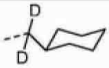
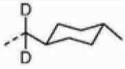

1. $L_n A_i$ 에서 $i$	2. R <sub>2</sub>	3. R <sup>3</sup>	4. R <sup>4</sup>	5. R <sup>5</sup>	6. R <sup>7</sup>	7. R <sup>8</sup>
	D <sub>3</sub>	3)2	3	3)2		D <sub>2</sub> CH <sub>3</sub>
804.	4826. D <sub>3</sub>	C 4827. 	4828. CD 3	4829. 	4830. H	4831. C D <sub>2</sub> CH <sub>3</sub>
805.	4832. D <sub>3</sub>	C 4833. 	4834. CD 3	4835. 	4836. H	4837. C D <sub>2</sub> CH <sub>3</sub>
806.	4838. D <sub>3</sub>	C 4839. 	4840. CD 3	4841. 	4842. H	4843. C D <sub>2</sub> CH <sub>3</sub>
807.	4844. D <sub>3</sub>	C 4845. 	4846. CD 3	4847. 	4848. H	4849. C D <sub>2</sub> CH <sub>3</sub>
808.	4850. D <sub>3</sub>	C 4851. 	4852. CD 3	4853. 	4854. H	4855. C D <sub>2</sub> CH <sub>3</sub>
809.	4856. D <sub>3</sub>	C 4857. 	4858. CD 3	4859. 	4860. H	4861. C D <sub>2</sub> CH <sub>3</sub>
810.	4862. D <sub>3</sub>	C 4863. 	4864. CD 3	4865. 	4866. H	4867. C D <sub>2</sub> CH <sub>3</sub>
811.	4868. D <sub>3</sub>	C 4869. 	4870. CD 3	4871. 	4872. H	4873. C D <sub>2</sub> CH <sub>3</sub>
812.	4874. D <sub>3</sub>	C 4875. 	4876. CD 3	4877. 	4878. H	4879. C D <sub>2</sub> CH <sub>3</sub>
813.	4880. D <sub>3</sub>	C 4881. 	4882. CD 3	4883. 	4884. H	4885. C D <sub>2</sub> CH <sub>3</sub>
814.	4886. D <sub>3</sub>	C 4887. 	4888. CD 3	4889. 	4890. H	4891. C D <sub>2</sub> CH <sub>3</sub>
815.	4892. D <sub>3</sub>	C 4893. 	4894. CD 3	4895. 	4896. H	4897. C D <sub>2</sub> CH <sub>3</sub>
816.	4898. D <sub>3</sub>	C 4899. 	4900. CD 3	4901. 	4902. H	4903. C D <sub>2</sub> CH <sub>3</sub>
817.	4904. D <sub>3</sub>	C 4905. 	4906. CD 3	4907. 	4908. H	4909. C D <sub>2</sub> CH <sub>3</sub>

1. $L^A$ 예시 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
818.	4910. C D <sub>3</sub>	4911. 	4912. CD 3	4913. 	4914. H	4915. C D <sub>2</sub> CH <sub>3</sub>
819.	4916. C D <sub>3</sub>	4917. 	4918. CD 3	4919. 	4920. H	4921. C D <sub>2</sub> CH <sub>3</sub>
820.	4922. C D <sub>3</sub>	4923. 	4924. CD 3	4925. 	4926. H	4927. C D <sub>2</sub> CH <sub>3</sub>
821.	4928. C D <sub>3</sub>	4929. 	4930. CD 3	4931. 	4932. H	4933. C D <sub>2</sub> CH <sub>3</sub>
822.	4934. C D <sub>3</sub>	4935. 	4936. CD 3	4937. 	4938. H	4939. C D <sub>2</sub> CH <sub>3</sub>
823.	4940. C D <sub>3</sub>	4941. 	4942. CD 3	4943. 	4944. H	4945. C D <sub>2</sub> CH <sub>3</sub>

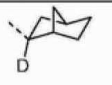
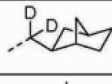

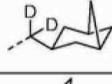

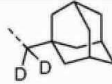
1. $L^A$ 예시 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
852.	5114. C D <sub>2</sub> CH <sub>3</sub>	5115. CD <sub>3</sub>	5116. H	5117. H	5118. C D <sub>2</sub> CH <sub>3</sub>	5119. CD <sub>2</sub> CH <sub>3</sub>
853.	5120. C D <sub>2</sub> CH <sub>3</sub>	5121. CD <sub>2</sub> CD <sub>3</sub>	5122. H	5123. H	5124. C D <sub>2</sub> CH <sub>3</sub>	5125. CD <sub>2</sub> CH <sub>3</sub>
854.	5126. C D <sub>2</sub> CH <sub>3</sub>	5127. CD <sub>2</sub> CH <sub>3</sub>	5128. H	5129. H	5130. C D <sub>2</sub> CH <sub>3</sub>	5131. CD <sub>2</sub> CH <sub>3</sub>
855.	5132. C D <sub>2</sub> CH <sub>3</sub>	5133. CD(CD <sub>3</sub> ) <sub>2</sub>	5134. H	5135. H	5136. C D <sub>2</sub> CH <sub>3</sub>	5137. CD <sub>2</sub> CH <sub>3</sub>
856.	5138. C D <sub>2</sub> CH <sub>3</sub>	5139. CD(CH <sub>3</sub> ) <sub>2</sub>	5140. H	5141. H	5142. C D <sub>2</sub> CH <sub>3</sub>	5143. CD <sub>2</sub> CH <sub>3</sub>
857.	5144. C D <sub>2</sub> CH <sub>3</sub>	5145. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	5146. H	5147. H	5148. C D <sub>2</sub> CH <sub>3</sub>	5149. CD <sub>2</sub> CH <sub>3</sub>
858.	5150. C D <sub>2</sub> CH <sub>3</sub>	5151. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	5152. H	5153. H	5154. C D <sub>2</sub> CH <sub>3</sub>	5155. CD <sub>2</sub> CH <sub>3</sub>
859.	5156. C	5157. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	5158. H	5159. H	5160. C	5161. CD <sub>2</sub>

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
	$D_2CH_3$				$D_2CH_3$	$CH_3$
860.	5162. C $D_2CH_3$	5163. $CD_2C(CH_3)_3$	5164. H	5165. H	5166. C $D_2CH_3$	5167. $CD_2$ $CH_3$
864.	5186. C $D_2CH_3$	5187. 	5188. H	5189. H	5190. C $D_2CH_3$	5191. $CD_2$ $CH_3$
865.	5192. C $D_2CH_3$	5193. 	5194. H	5195. H	5196. C $D_2CH_3$	5197. $CD_2$ $CH_3$
866.	5198. C $D_2CH_3$	5199. 	5200. H	5201. H	5202. C $D_2CH_3$	5203. $CD_2$ $CH_3$
867.	5204. C $D_2CH_3$	5205. 	5206. H	5207. H	5208. C $D_2CH_3$	5209. $CD_2$ $CH_3$
868.	5210. C $D_2CH_3$	5211. 	5212. H	5213. H	5214. C $D_2CH_3$	5215. $CD_2$ $CH_3$
871.	5228. C $D_2CH_3$	5229. 	5230. H	5231. H	5232. C $D_2CH_3$	5233. $CD_2$ $CH_3$
872.	5234. C $D_2CH_3$	5235. 	5236. H	5237. H	5238. C $D_2CH_3$	5239. $CD_2$ $CH_3$
873.	5240. C $D_2CH_3$	5241. 	5242. H	5243. H	5244. C $D_2CH_3$	5245. $CD_2$ $CH_3$




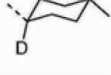

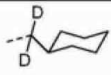
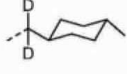


1. $L^A$ 예시 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
876.	5258. C $D_2CH_3$	5259. 	5260. H	5261. H	5262. C $D_2CH_3$	5263. $CD_2$ $CH_3$
877.	5264. C $D_2CH_3$	5265. 	5266. H	5267. H	5268. C $D_2CH_3$	5269. $CD_2$ $CH_3$
878.	5270. C $D_2CH_3$	5271. 	5272. H	5273. H	5274. C $D_2CH_3$	5275. $CD_2$ $CH_3$
879.	5276. C $D_2CH_3$	5277. 	5278. H	5279. H	5280. C $D_2CH_3$	5281. $CD_2$ $CH_3$
880.	5282. C $D_2CH_3$	5283. 	5284. H	5285. H	5286. C $D_2CH_3$	5287. $CD_2$ $CH_3$
881.	5288. C $D_2CH_3$	5289. 	5290. H	5291. H	5292. C $D_2CH_3$	5293. $CD_2$ $CH_3$
884.	5306. C $D_2CD_3$	5307. $CD_3$	5308. H	5309. H	5310. H	5311. $CD(CH_3)_2$
885.	5312. C $D_2CD_3$	5313. $CD_2CD_3$	5314. H	5315. H	5316. H	5317. $CD(CH_3)_2$
886.	5318. C $D_2CD_3$	5319. $CD_2CH_3$	5320. H	5321. H	5322. H	5323. $CD(CH_3)_2$
887.	5324. C $D_2CD_3$	5325. $CD(CD_3)_2$	5326. H	5327. H	5328. H	5329. $CD(CH_3)_2$
888.	5330. C $D_2CD_3$	5331. $CD(CH_3)_2$	5332. H	5333. H	5334. H	5335. $CD(CH_3)_2$
889.	5336. C $D_2CD_3$	5337. $CD_2CD(CD_3)_2$	5338. H	5339. H	5340. H	5341. $CD(CH_3)_2$
890.	5342. C $D_2CD_3$	5343. $CD_2CH(CH_3)_2$	5344. H	5345. H	5346. H	5347. $CD(CH_3)_2$

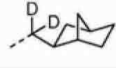

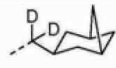


1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
891.	5348. C $D_2CD_3$	5349. $CD_2C(CD_3)_3$	5350. H	5351. H	5352. H	5353. $CD(CH_3)_2$
892.	5354. C $D_2CD_3$	5355. $CD_2C(CH_3)_3$	5356. H	5357. H	5358. H	5359. $CD(CH_3)_2$
896.	5378. C $D_2CD_3$	5379. 	5380. H	5381. H	5382. H	5383. $CD(CH_3)_2$
897.	5384. C $D_2CD_3$	5385. 	5386. H	5387. H	5388. H	5389. $CD(CH_3)_2$
898.	5390. C $D_2CD_3$	5391. 	5392. H	5393. H	5394. H	5395. $CD(CH_3)_2$
899.	5396. C $D_2CD_3$	5397. 	5398. H	5399. H	5400. H	5401. $CD(CH_3)_2$
900.	5402. C $D_2CD_3$	5403. 	5404. H	5405. H	5406. H	5407. $CD(CH_3)_2$
903.	5420. C $D_2CD_3$	5421. 	5422. H	5423. H	5424. H	5425. $CD(CH_3)_2$
904.	5426. C $D_2CD_3$	5427. 	5428. H	5429. H	5430. H	5431. $CD(CH_3)_2$
905.	5432. C $D_2CD_3$	5433. 	5434. H	5435. H	5436. H	5437. $CD(CH_3)_2$
















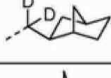
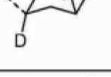

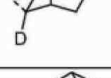
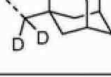
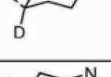
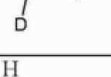
1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
908.	5450. C $D_2CD_3$	5451. 	5452. H	5453. H	5454. H	5455. $CD(CH_3)_2$
909.	5456. C $D_2CD_3$	5457. 	5458. H	5459. H	5460. H	5461. $CD(CH_3)_2$
910.	5462. C $D_2CD_3$	5463. 	5464. H	5465. H	5466. H	5467. $CD(CH_3)_2$
911.	5468. C $D_2CD_3$	5469. 	5470. H	5471. H	5472. H	5473. $CD(CH_3)_2$
912.	5474. C $D_2CD_3$	5475. 	5476. H	5477. H	5478. H	5479. $CD(CH_3)_2$
913.	5480. C $D_2CD_3$	5481. 	5482. H	5483. H	5484. H	5485. $CD(CH_3)_2$



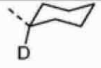


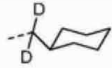
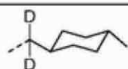

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
943.	5660. C $D_2CH_3$	5661. H	5662. $CD_3$	5663. H	5664. C $D(CH_3)_2$	5665. $CD(C H_3)_2$
944.	5666. C $D_2CH_3$	5667. H	5668. $CD_2CD_3$	5669. H	5670. C $D(CH_3)_2$	5671. $CD(C H_3)_2$
945.	5672. C $D_2CH_3$	5673. H	5674. $CD_2CH_3$	5675. H	5676. C $D(CH_3)_2$	5677. $CD(C H_3)_2$
946.	5678. C $D_2CH_3$	5679. H	5680. $CD(CD_3)_2$	5681. H	5682. C $D(CH_3)_2$	5683. $CD(C H_3)_2$
947.	5684. C $D_2CH_3$	5685. H	5686. $CD(CH_3)_2$	5687. H	5688. C $D(CH_3)_2$	5689. $CD(C H_3)_2$
948.	5690. C $D_2CH_3$	5691. H	5692. $CD_2CD(CD_3)_2$	5693. H	5694. C $D(CH_3)_2$	5695. $CD(C H_3)_2$
949.	5696. C $D_2CH_3$	5697. H	5698. $CD_2CH(CH_3)_2$	5699. H	5700. C $D(CH_3)_2$	5701. $CD(C H_3)_2$
950.	5702. C $D_2CH_3$	5703. H	5704. $CD_2C(CD_3)_3$	5705. H	5706. C $D(CH_3)_2$	5707. $CD(C H_3)_2$
951.	5708. C $D_2CH_3$	5709. H	5710. $CD_2C(CH_3)_3$	5711. H	5712. C $D(CH_3)_2$	5713. $CD(C H_3)_2$


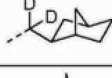
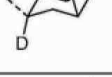
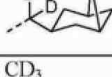
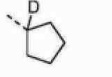
1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
955.	5732. C $D_2CH_3$	5733. H	5734. 	5735. H	5736. C $D(CH_3)_2$	5737. CD(C $H_3)_2$
956.	5738. C $D_2CH_3$	5739. H	5740. 	5741. H	5742. C $D(CH_3)_2$	5743. CD(C $H_3)_2$
957.	5744. C $D_2CH_3$	5745. H	5746. 	5747. H	5748. C $D(CH_3)_2$	5749. CD(C $H_3)_2$
958.	5750. C $D_2CH_3$	5751. H	5752. 	5753. H	5754. C $D(CH_3)_2$	5755. CD(C $H_3)_2$
959.	5756. C $D_2CH_3$	5757. H	5758. 	5759. H	5760. C $D(CH_3)_2$	5761. CD(C $H_3)_2$
962.	5774. C $D_2CH_3$	5775. H	5776. 	5777. H	5778. C $D(CH_3)_2$	5779. CD(C $H_3)_2$
963.	5780. C $D_2CH_3$	5781. H	5782. 	5783. H	5784. C $D(CH_3)_2$	5785. CD(C $H_3)_2$
964.	5786. C $D_2CH_3$	5787. H	5788. 	5789. H	5790. C $D(CH_3)_2$	5791. CD(C $H_3)_2$
967.	5804. C $D_2CH_3$	5805. H	5806. 	5807. H	5808. C $D(CH_3)_2$	5809. CD(C $H_3)_2$
















1. $L_{A^i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
968.	5810. C $D_2CH_3$	5811. H	5812. 	5813. H	5814. C $D(CH_3)_2$	5815. $CD(CH_3)_2$
969.	5816. C $D_2CH_3$	5817. H	5818. 	5819. H	5820. C $D(CH_3)_2$	5821. $CD(CH_3)_2$
970.	5822. C $D_2CH_3$	5823. H	5824. 	5825. H	5826. C $D(CH_3)_2$	5827. $CD(CH_3)_2$
971.	5828. C $D_2CH_3$	5829. H	5830. 	5831. H	5832. C $D(CH_3)_2$	5833. $CD(CH_3)_2$
972.	5834. C $D_2CH_3$	5835. H	5836. 	5837. H	5838. C $D(CH_3)_2$	5839. $CD(CH_3)_2$
975.	5852. C $D_2CD_3$	5853. C $D_3$	5854. $CD_3$	5855. H	5856. H	5857. $CD_2C D(CD_3)_2$
976.	5858. C $D_2CD_3$	5859. C $D_3$	5860. $CD_2CD_3$	5861. H	5862. H	5863. $CD_2C D(CD_3)_2$
977.	5864. C $D_2CD_3$	5865. C $D_3$	5866. $CD_2CH_3$	5867. H	5868. H	5869. $CD_2C D(CD_3)_2$
978.	5870. C $D_2CD_3$	5871. C $D_3$	5872. $CD(CD_3)_2$	5873. H	5874. H	5875. $CD_2C D(CD_3)_2$
979.	5876. C $D_2CD_3$	5877. C $D_3$	5878. $CD(CH_3)_2$	5879. H	5880. H	5881. $CD_2C D(CD_3)_2$
980.	5882. C $D_2CD_3$	5883. C $D_3$	5884. $CD_2CD(CD_3)_2$	5885. H	5886. H	5887. $CD_2C D(CD_3)_2$
981.	5888. C $D_2CD_3$	5889. C $D_3$	5890. $CD_2CH(CH_3)_2$	5891. H	5892. H	5893. $CD_2C D(CD_3)_2$
982.	5894. C $D_2CD_3$	5895. C $D_3$	5896. $CD_2C(CD_3)_3$	5897. H	5898. H	5899. $CD_2C D(CD_3)_2$
983.	5900. C $D_2CD_3$	5901. C $D_3$	5902. $CD_2C(CH_3)_3$	5903. H	5904. H	5905. $CD_2C D(CD_3)_2$

I. [A] 예시 <i>i</i>	2. R <sup>2</sup>	3. R <sup>3</sup>	4. R <sup>4</sup>	5. R <sup>5</sup>	6. R <sup>7</sup>	7. R <sup>8</sup>
984.	5906. C D <sub>2</sub> CD <sub>3</sub>	5907. C D <sub>3</sub>	5908. CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	5909. H	5910. H	5911. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
985.	5912. C D <sub>2</sub> CD <sub>3</sub>	5913. C D <sub>3</sub>	5914. CD <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	5915. H	5916. H	5917. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
986.	5918. C D <sub>2</sub> CD <sub>3</sub>	5919. C D <sub>3</sub>	5920. CD <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub>	5921. H	5922. H	5923. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
987.	5924. C D <sub>2</sub> CD <sub>3</sub>	5925. C D <sub>3</sub>	5926. 	5927. H	5928. H	5929. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
988.	5930. C D <sub>2</sub> CD <sub>3</sub>	5931. C D <sub>3</sub>	5932. 	5933. H	5934. H	5935. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
989.	5936. C D <sub>2</sub> CD <sub>3</sub>	5937. C D <sub>3</sub>	5938. 	5939. H	5940. H	5941. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
990.	5942. C D <sub>2</sub> CD <sub>3</sub>	5943. C D <sub>3</sub>	5944. 	5945. H	5946. H	5947. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
991.	5948. C D <sub>2</sub> CD <sub>3</sub>	5949. C D <sub>3</sub>	5950. 	5951. H	5952. H	5953. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
992.	5954. C D <sub>2</sub> CD <sub>3</sub>	5955. C D <sub>3</sub>	5956. 	5957. H	5958. H	5959. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
993.	5960. C D <sub>2</sub> CD <sub>3</sub>	5961. C D <sub>3</sub>	5962. 	5963. H	5964. H	5965. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
994.	5966. C D <sub>2</sub> CD <sub>3</sub>	5967. C D <sub>3</sub>	5968. 	5969. H	5970. H	5971. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
995.	5972. C D <sub>2</sub> CD <sub>3</sub>	5973. C D <sub>3</sub>	5974. 	5975. H	5976. H	5977. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
996.	5978. C D <sub>2</sub> CD <sub>3</sub>	5979. C D <sub>3</sub>	5980. 	5981. H	5982. H	5983. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
997.	5984. C D <sub>2</sub> CD <sub>3</sub>	5985. C D <sub>3</sub>	5986. 	5987. H	5988. H	5989. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>
998.	5990. C D <sub>2</sub> CD <sub>3</sub>	5991. C D <sub>3</sub>	5992. 	5993. H	5994. H	5995. CD <sub>2</sub> C D(CD <sub>3</sub> ) <sub>2</sub>


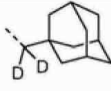


1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
999.	5996. C $D_2CD_3$	5997. C $D_3$	5998. 	5999. H	6000. H	6001. $CD_2C$ $D(CD_3)_2$
1000.	6002. C $D_2CD_3$	6003. C $D_3$	6004. 	6005. H	6006. H	6007. $CD_2C$ $D(CD_3)_2$
1001.	6008. C $D_2CD_3$	6009. C $D_3$	6010. 	6011. H	6012. H	6013. $CD_2C$ $D(CD_3)_2$
1002.	6014. C $D_2CD_3$	6015. C $D_3$	6016. 	6017. H	6018. H	6019. $CD_2C$ $D(CD_3)_2$
1003.	6020. C $D_2CD_3$	6021. C $D_3$	6022. 	6023. H	6024. H	6025. $CD_2C$ $D(CD_3)_2$
1004.	6026. C $D_2CD_3$	6027. C $D_3$	6028. 	6029. H	6030. H	6031. $CD_2C$ $D(CD_3)_2$
1005.	6032. C $D_2CD_3$	6033. C $D_3$	6034. 	6035. H	6036. H	6037. $CD_2C$ $D(CD_3)_2$
1006.	6038. C $D_2CD_3$	6039. C $D_3$	6040. 	6041. H	6042. H	6043. $CD_2C$ $D(CD_3)_2$
1007.	6044. C $D_2CH_3$	6045. H	6046. H	6047. $CD_3$	6048. C $D_2CH_3$	6049. $CD_2C$ $H_3$
1008.	6050. C $D_2CH_3$	6051. H	6052. H	6053. $CD_2CD_3$	6054. C $D_2CH_3$	6055. $CD_2C$ $H_3$
1009.	6056. C $D_2CH_3$	6057. H	6058. H	6059. $CD_2CH_3$	6060. C $D_2CH_3$	6061. $CD_2C$ $H_3$
1010.	6062. C $D_2CH_3$	6063. H	6064. H	6065. $CD(CD_3)_2$	6066. C $D_2CH_3$	6067. $CD_2C$ $H_3$
1011.	6068. C $D_2CH_3$	6069. H	6070. H	6071. $CD(CH_3)_2$	6072. C $D_2CH_3$	6073. $CD_2C$ $H_3$
1012.	6074. C $D_2CH_3$	6075. H	6076. H	6077. $CD_2CD(CD_3)_2$	6078. C $D_2CH_3$	6079. $CD_2C$ $H_3$
1013.	6080. C $D_2CH_3$	6081. H	6082. H	6083. $CD_2CH(CH_3)_2$	6084. C $D_2CH_3$	6085. $CD_2C$ $H_3$
1014.	6086. C $D_2CH_3$	6087. H	6088. H	6089. $CD_2C(CD_3)_3$	6090. C $D_2CH_3$	6091. $CD_2C$ $H_3$










1. $L^{A_i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1015.	6092. C $D_2CH_3$	6093. H	6094. H	6095. $CD_2C(CH_3)_3$	6096. C $D_2CH_3$	6097. $CD_2C$ $H_3$
1019.	6116. C $D_2CH_3$	6117. H	6118. H	6119. 	6120. C $D_2CH_3$	6121. $CD_2C$ $H_3$
1020.	6122. C $D_2CH_3$	6123. H	6124. H	6125. 	6126. C $D_2CH_3$	6127. $CD_2C$ $H_3$
1021.	6128. C $D_2CH_3$	6129. H	6130. H	6131. 	6132. C $D_2CH_3$	6133. $CD_2C$ $H_3$
1022.	6134. C $D_2CH_3$	6135. H	6136. H	6137. 	6138. C $D_2CH_3$	6139. $CD_2C$ $H_3$
1023.	6140. C $D_2CH_3$	6141. H	6142. H	6143. 	6144. C $D_2CH_3$	6145. $CD_2C$ $H_3$
1026.	6158. C $D_2CH_3$	6159. H	6160. H	6161. 	6162. C $D_2CH_3$	6163. $CD_2C$ $H_3$
1027.	6164. C $D_2CH_3$	6165. H	6166. H	6167. 	6168. C $D_2CH_3$	6169. $CD_2C$ $H_3$
1028.	6170. C $D_2CH_3$	6171. H	6172. H	6173. 	6174. C $D_2CH_3$	6175. $CD_2C$ $H_3$











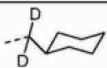





1. $L^{A'}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1031.	6188. C $D_2CH_3$	6189. H	6190. H	6191. 	6192. C $D_2CH_3$	6193. $CD_2C$ $H_3$
1032.	6194. C $D_2CH_3$	6195. H	6196. H	6197. 	6198. C $D_2CH_3$	6199. $CD_2C$ $H_3$
1033.	6200. C $D_2CH_3$	6201. H	6202. H	6203. 	6204. C $D_2CH_3$	6205. $CD_2C$ $H_3$
1034.	6206. C $D_2CH_3$	6207. H	6208. H	6209. 	6210. C $D_2CH_3$	6211. $CD_2C$ $H_3$
1035.	6212. C $D_2CH_3$	6213. $CD_3$	6214. H	6215. $CD_3$	6216. C $D(CH_3)_2$	6217. $CD(C$ $H_3)_2$
1036.	6218. C $D_2CH_3$	6219. $CD_3$	6220. H	6221. $CD_2CD_3$	6222. C $D(CH_3)_2$	6223. $CD(C$ $H_3)_2$
1037.	6224. C $D_2CH_3$	6225. $CD_3$	6226. H	6227. $CD_2CH_3$	6228. C $D(CH_3)_2$	6229. $CD(C$ $H_3)_2$
1038.	6230. C $D_2CH_3$	6231. $CD_3$	6232. H	6233. $CD(CD_3)_2$	6234. C $D(CH_3)_2$	6235. $CD(C$ $H_3)_2$
1039.	6236. C $D_2CH_3$	6237. $CD_3$	6238. H	6239. $CD(CH_3)_2$	6240. C $D(CH_3)_2$	6241. $CD(C$ $H_3)_2$
1040.	6242. C $D_2CH_3$	6243. $CD_3$	6244. H	6245. $CD_2CD(CD_3)_2$	6246. C $D(CH_3)_2$	6247. $CD(C$ $H_3)_2$
1041.	6248. C $D_2CH_3$	6249. $CD_3$	6250. H	6251. $CD_2CH(CH_3)_2$	6252. C $D(CH_3)_2$	6253. $CD(C$ $H_3)_2$
1042.	6254. C $D_2CH_3$	6255. $CD_3$	6256. H	6257. $CD_2C(CD_3)_3$	6258. C $D(CH_3)_2$	6259. $CD(C$ $H_3)_2$
1043.	6260. C $D_2CH_3$	6261. $CD_3$	6262. H	6263. $CD_2C(CH_3)_3$	6264. C $D(CH_3)_2$	6265. $CD(C$ $H_3)_2$
1044.	6266. C $D_2CH_3$	6267. $CD_3$	6268. H	6269. $CD_2CD_2CF_3$	6270. C $D(CH_3)_2$	6271. $CD(C$ $H_3)_2$
1045.	6272. C $D_2CH_3$	6273. $CD_3$	6274. H	6275. $CD_2CH_2CF_3$	6276. C $D(CH_3)_2$	6277. $CD(C$ $H_3)_2$
1046.	6278. C $D_2CH_3$	6279. $CD_3$	6280. H	6281. $CD_2CCF_3(CH_3)$ 2	6282. C $D(CH_3)_2$	6283. $CD(C$ $H_3)_2$
1047.	6284. C $D_2CH_3$	6285. $CD_3$	6286. H	6287. 	6288. C $D(CH_3)_2$	6289. $CD(C$ $H_3)_2$

















1. $L_{A^i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1048.	6290. C $D_2CH_3$	6291. $CD_3$	6292. H	6293. 	6294. C $D(CH_3)_2$	6295. $CD(C H_3)_2$
1049.	6296. C $D_2CH_3$	6297. $CD_3$	6298. H	6299. 	6300. C $D(CH_3)_2$	6301. $CD(C H_3)_2$
1050.	6302. C $D_2CH_3$	6303. $CD_3$	6304. H	6305. 	6306. C $D(CH_3)_2$	6307. $CD(C H_3)_2$
1051.	6308. C $D_2CH_3$	6309. $CD_3$	6310. H	6311. 	6312. C $D(CH_3)_2$	6313. $CD(C H_3)_2$
1052.	6314. C $D_2CH_3$	6315. $CD_3$	6316. H	6317. 	6318. C $D(CH_3)_2$	6319. $CD(C H_3)_2$
1053.	6320. C $D_2CH_3$	6321. $CD_3$	6322. H	6323. 	6324. C $D(CH_3)_2$	6325. $CD(C H_3)_2$
1054.	6326. C $D_2CH_3$	6327. $CD_3$	6328. H	6329. 	6330. C $D(CH_3)_2$	6331. $CD(C H_3)_2$
1055.	6332. C $D_2CH_3$	6333. $CD_3$	6334. H	6335. 	6336. C $D(CH_3)_2$	6337. $CD(C H_3)_2$
1056.	6338. C $D_2CH_3$	6339. $CD_3$	6340. H	6341. 	6342. C $D(CH_3)_2$	6343. $CD(C H_3)_2$
1057.	6344. C $D_2CH_3$	6345. $CD_3$	6346. H	6347. 	6348. C $D(CH_3)_2$	6349. $CD(C H_3)_2$
1058.	6350. C $D_2CH_3$	6351. $CD_3$	6352. H	6353. 	6354. C $D(CH_3)_2$	6355. $CD(C H_3)_2$
1059.	6356. C $D_2CH_3$	6357. $CD_3$	6358. H	6359. 	6360. C $D(CH_3)_2$	6361. $CD(C H_3)_2$
1060.	6362. C $D_2CH_3$	6363. $CD_3$	6364. H	6365. 	6366. C $D(CH_3)_2$	6367. $CD(C H_3)_2$
1061.	6368. C $D_2CH_3$	6369. $CD_3$	6370. H	6371. 	6372. C $D(CH_3)_2$	6373. $CD(C H_3)_2$
1062.	6374. C $D_2CH_3$	6375. $CD_3$	6376. H	6377. 	6378. C $D(CH_3)_2$	6379. $CD(C H_3)_2$
















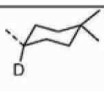

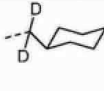

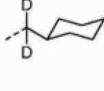

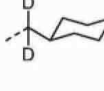

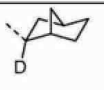

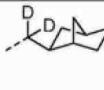

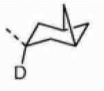

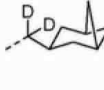

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1063.	6380. C $D_2CH_3$	6381. $CD_3$	6382. H	6383. 	6384. C $D(CH_3)_2$	6385. $CD(CH_3)_2$
1064.	6386. C $D_2CH_3$	6387. $CD_3$	6388. H	6389. 	6390. C $D(CH_3)_2$	6391. $CD(CH_3)_2$
1065.	6392. C $D_2CH_3$	6393. $CD_3$	6394. H	6395. 	6396. C $D(CH_3)_2$	6397. $CD(CH_3)_2$
1066.	6398. C $D_2CH_3$	6399. $CD_3$	6400. H	6401. 	6402. C $D(CH_3)_2$	6403. $CD(CH_3)_2$

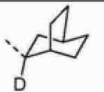

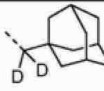

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1067.	6404. C $D(CH_3)_2$	6405. $CD_3$	6406. H	6407. H	6408. H	6409. 
1068.	6410. C $D(CH_3)_2$	6411. $CD_2CD_3$	6412. H	6413. H	6414. H	6415. 
1069.	6416. C $D(CH_3)_2$	6417. $CD_2CH_3$	6418. H	6419. H	6420. H	6421. 
1070.	6422. C $D(CH_3)_2$	6423. $CD(CD_3)_2$	6424. H	6425. H	6426. H	6427. 
1071.	6428. C $D(CH_3)_2$	6429. $CD(CH_3)_2$	6430. H	6431. H	6432. H	6433. 
1072.	6434. C $D(CH_3)_2$	6435. $CD_2CD(CD_3)_2$	6436. H	6437. H	6438. H	6439. 
1073.	6440. C $D(CH_3)_2$	6441. $CD_2CH(CH_3)_2$	6442. H	6443. H	6444. H	6445. 
1074.	6446. C $D(CH_3)_2$	6447. $CD_2C(CD_3)_3$	6448. H	6449. H	6450. H	6451. 
1075.	6452. C $D(CH_3)_2$	6453. $CD_2C(CH_3)_3$	6454. H	6455. H	6456. H	6457. 










1. $L^A_i$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1079.	6476. C $D(CH_3)_2$	6477. 	6478. H	6479. H	6480. H	6481. 
1080.	6482. C $D(CH_3)_2$	6483. 	6484. H	6485. H	6486. H	6487. 
1081.	6488. C $D(CH_3)_2$	6489. 	6490. H	6491. H	6492. H	6493. 
1082.	6494. C $D(CH_3)_2$	6495. 	6496. H	6497. H	6498. H	6499. 
1083.	6500. C $D(CH_3)_2$	6501. 	6502. H	6503. H	6504. H	6505. 
1086.	6518. C $D(CH_3)_2$	6519. 	6520. H	6521. H	6522. H	6523. 
1087.	6524. C $D(CH_3)_2$	6525. 	6526. H	6527. H	6528. H	6529. 
1088.	6530. C $D(CH_3)_2$	6531. 	6532. H	6533. H	6534. H	6535. 







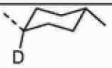

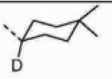

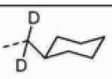



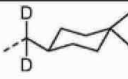

1. $L^i$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1091.	6548. C D(CH <sub>3</sub> ) <sub>2</sub>	6549. 	6550. H	6551. H	6552. H	6553. 
1092.	6554. C D(CH <sub>3</sub> ) <sub>2</sub>	6555. 	6556. H	6557. H	6558. H	6559. 
1093.	6560. C D(CH <sub>3</sub> ) <sub>2</sub>	6561. 	6562. H	6563. H	6564. H	6565. 
1094.	6566. C D(CH <sub>3</sub> ) <sub>2</sub>	6567. 	6568. H	6569. H	6570. H	6571. 
1095.	6572. C D(CH <sub>3</sub> ) <sub>2</sub>	6573. 	6574. H	6575. H	6576. H	6577. 
1096.	6578. C D(CH <sub>3</sub> ) <sub>2</sub>	6579. 	6580. H	6581. H	6582. H	6583. 
1099.	6596. C D(CD <sub>3</sub> ) <sub>2</sub>	6597. CD <sub>3</sub>	6598. H	6599. H	6600. H	6601. 
1100.	6602. C D(CD <sub>3</sub> ) <sub>2</sub>	6603. CD <sub>2</sub> CD <sub>3</sub>	6604. H	6605. H	6606. H	6607. 
1101.	6608. C D(CD <sub>3</sub> ) <sub>2</sub>	6609. CD <sub>2</sub> CH <sub>3</sub>	6610. H	6611. H	6612. H	6613. 
1102.	6614. C D(CD <sub>3</sub> ) <sub>2</sub>	6615. CD(CD <sub>3</sub> ) <sub>2</sub>	6616. H	6617. H	6618. H	6619. 

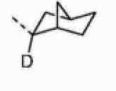

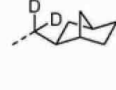



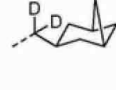

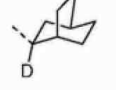

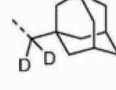

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1103.	6620. C D(CD <sub>3</sub> ) <sub>2</sub>	6621. CD(CH <sub>3</sub> ) <sub>2</sub>	6622. H	6623. H	6624. H	6625. 
1104.	6626. C D(CD <sub>3</sub> ) <sub>2</sub>	6627. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	6628. H	6629. H	6630. H	6631. 
1105.	6632. C D(CD <sub>3</sub> ) <sub>2</sub>	6633. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	6634. H	6635. H	6636. H	6637. 
1106.	6638. C D(CD <sub>3</sub> ) <sub>2</sub>	6639. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	6640. H	6641. H	6642. H	6643. 
1107.	6644. C D(CD <sub>3</sub> ) <sub>2</sub>	6645. CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	6646. H	6647. H	6648. H	6649. 
1111.	6668. C D(CD <sub>3</sub> ) <sub>2</sub>	6669. 	6670. H	6671. H	6672. H	6673. 
1112.	6674. C D(CD <sub>3</sub> ) <sub>2</sub>	6675. 	6676. H	6677. H	6678. H	6679. 
1113.	6680. C D(CD <sub>3</sub> ) <sub>2</sub>	6681. 	6682. H	6683. H	6684. H	6685. 
1114.	6686. C D(CD <sub>3</sub> ) <sub>2</sub>	6687. 	6688. H	6689. H	6690. H	6691. 

1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1115.	6692. C $D(CD_3)_2$	6693. 	6694. H	6695. H	6696. H	6697. 
1118.	6710. C $D(CD_3)_2$	6711. 	6712. H	6713. H	6714. H	6715. 
1119.	6716. C $D(CD_3)_2$	6717. 	6718. H	6719. H	6720. H	6721. 
1120.	6722. C $D(CD_3)_2$	6723. 	6724. H	6725. H	6726. H	6727. 
1123.	6740. C $D(CD_3)_2$	6741. 	6742. H	6743. H	6744. H	6745. 
1124.	6746. C $D(CD_3)_2$	6747. 	6748. H	6749. H	6750. H	6751. 
1125.	6752. C $D(CD_3)_2$	6753. 	6754. H	6755. H	6756. H	6757. 
1126.	6758. C $D(CD_3)_2$	6759. 	6760. H	6761. H	6762. H	6763. 








1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1127.	6764. C $D(CD_3)_2$	6765. 	6766. H	6767. H	6768. H	6769. 
1128.	6770. C $D(CD_3)_2$	6771. 	6772. H	6773. H	6774. H	6775. 

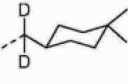



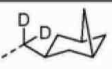

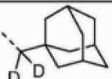
1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1158.	6950. C D(CH <sub>3</sub> ) <sub>2</sub>	6951. H	6952. CD <sub>3</sub>	6953. H	6954. 	6955. C D <sub>3</sub>
1159.	6956. C D(CH <sub>3</sub> ) <sub>2</sub>	6957. H	6958. CD <sub>2</sub> CD <sub>3</sub>	6959. H	6960. 	6961. C D <sub>3</sub>
1160.	6962. C D(CH <sub>3</sub> ) <sub>2</sub>	6963. H	6964. CD <sub>2</sub> CH <sub>3</sub>	6965. H	6966. 	6967. C D <sub>3</sub>
1161.	6968. C D(CH <sub>3</sub> ) <sub>2</sub>	6969. H	6970. CD(CD <sub>3</sub> ) <sub>2</sub>	6971. H	6972. 	6973. C D <sub>3</sub>
1162.	6974. C D(CH <sub>3</sub> ) <sub>2</sub>	6975. H	6976. CD(CH <sub>3</sub> ) <sub>2</sub>	6977. H	6978. 	6979. C D <sub>3</sub>
1163.	6980. C D(CH <sub>3</sub> ) <sub>2</sub>	6981. H	6982. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	6983. H	6984. 	6985. C D <sub>3</sub>
1164.	6986. C D(CH <sub>3</sub> ) <sub>2</sub>	6987. H	6988. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	6989. H	6990. 	6991. C D <sub>3</sub>
1165.	6992. C D(CH <sub>3</sub> ) <sub>2</sub>	6993. H	6994. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	6995. H	6996. 	6997. C D <sub>3</sub>
1166.	6998. C D(CH <sub>3</sub> ) <sub>2</sub>	6999. H	7000. CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	7001. H	7002. 	7003. C D <sub>3</sub>

1. $L^{A_i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1170.	7022. C D(CH <sub>3</sub> ) <sub>2</sub>	7023. H	7024. 	7025. H	7026. 	7027. C D <sub>3</sub>
1171.	7028. C D(CH <sub>3</sub> ) <sub>2</sub>	7029. H	7030. 	7031. H	7032. 	7033. C D <sub>3</sub>
1172.	7034. C D(CH <sub>3</sub> ) <sub>2</sub>	7035. H	7036. 	7037. H	7038. 	7039. C D <sub>3</sub>
1173.	7040. C D(CH <sub>3</sub> ) <sub>2</sub>	7041. H	7042. 	7043. H	7044. 	7045. C D <sub>3</sub>
1174.	7046. C D(CH <sub>3</sub> ) <sub>2</sub>	7047. H	7048. 	7049. H	7050. 	7051. C D <sub>3</sub>
1177.	7064. C D(CH <sub>3</sub> ) <sub>2</sub>	7065. H	7066. 	7067. H	7068. 	7069. C D <sub>3</sub>
1178.	7070. C D(CH <sub>3</sub> ) <sub>2</sub>	7071. H	7072. 	7073. H	7074. 	7075. C D <sub>3</sub>
1179.	7076. C D(CH <sub>3</sub> ) <sub>2</sub>	7077. H	7078. 	7079. H	7080. 	7081. C D <sub>3</sub>




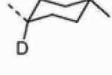
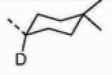

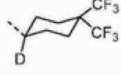
1. $L_{A^i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1182.	7094. C D(CH <sub>3</sub> ) <sub>2</sub>	7095. H	7096. 	7097. H	7098. 	7099. C D <sub>3</sub>
1183.	7100. C D(CH <sub>3</sub> ) <sub>2</sub>	7101. H	7102. 	7103. H	7104. 	7105. C D <sub>3</sub>
1184.	7106. C D(CH <sub>3</sub> ) <sub>2</sub>	7107. H	7108. 	7109. H	7110. 	7111. C D <sub>3</sub>
1185.	7112. C D(CH <sub>3</sub> ) <sub>2</sub>	7113. H	7114. 	7115. H	7116. 	7117. C D <sub>3</sub>
1186.	7118. C D(CH <sub>3</sub> ) <sub>2</sub>	7119. H	7120. 	7121. H	7122. 	7123. C D <sub>3</sub>
1187.	7124. C D(CH <sub>3</sub> ) <sub>2</sub>	7125. H	7126. 	7127. H	7128. 	7129. C D <sub>3</sub>
1190.	7142. C D(CD <sub>3</sub> ) <sub>2</sub>	7143. H	7144. CD <sub>3</sub>	7145. H	7146. CD(CD <sub>3</sub> ) <sub>2</sub>	7147. C D(CD <sub>3</sub> ) <sub>2</sub>
1191.	7148. C D(CD <sub>3</sub> ) <sub>2</sub>	7149. H	7150. CD <sub>2</sub> CD <sub>3</sub>	7151. H	7152. CD(CD <sub>3</sub> ) <sub>2</sub>	7153. C D(CD <sub>3</sub> ) <sub>2</sub>
1192.	7154. C D(CD <sub>3</sub> ) <sub>2</sub>	7155. H	7156. CD <sub>2</sub> CH <sub>3</sub>	7157. H	7158. CD(CD <sub>3</sub> ) <sub>2</sub>	7159. C D(CD <sub>3</sub> ) <sub>2</sub>
1193.	7160. C D(CD <sub>3</sub> ) <sub>2</sub>	7161. H	7162. CD(CD <sub>3</sub> ) <sub>2</sub>	7163. H	7164. CD(CD <sub>3</sub> ) <sub>2</sub>	7165. C D(CD <sub>3</sub> ) <sub>2</sub>
1194.	7166. C D(CD <sub>3</sub> ) <sub>2</sub>	7167. H	7168. CD(CH <sub>3</sub> ) <sub>2</sub>	7169. H	7170. CD(CD <sub>3</sub> ) <sub>2</sub>	7171. C D(CD <sub>3</sub> ) <sub>2</sub>
1195.	7172. C D(CD <sub>3</sub> ) <sub>2</sub>	7173. H	7174. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	7175. H	7176. CD(CD <sub>3</sub> ) <sub>2</sub>	7177. C D(CD <sub>3</sub> ) <sub>2</sub>

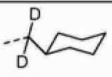
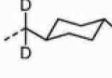
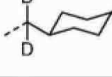
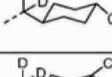
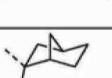
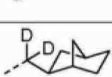




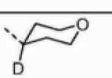
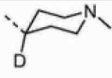
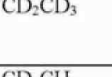









1. $L^{A_i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1196.	7178. C D(CD <sub>3</sub> ) <sub>2</sub>	7179. H	7180. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	7181. H	7182. CD(CD <sub>3</sub> ) <sub>2</sub>	7183. C D(CD <sub>3</sub> ) <sub>2</sub>
1197.	7184. C D(CD <sub>3</sub> ) <sub>2</sub>	7185. H	7186. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	7187. H	7188. CD(CD <sub>3</sub> ) <sub>2</sub>	7189. C D(CD <sub>3</sub> ) <sub>2</sub>
1198.	7190. C D(CD <sub>3</sub> ) <sub>2</sub>	7191. H	7192. CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	7193. H	7194. CD(CD <sub>3</sub> ) <sub>2</sub>	7195. C D(CD <sub>3</sub> ) <sub>2</sub>
1202.	7214. C D(CD <sub>3</sub> ) <sub>2</sub>	7215. H	7216. 	7217. H	7218. CD(CD <sub>3</sub> ) <sub>2</sub>	7219. C D(CD <sub>3</sub> ) <sub>2</sub>
1203.	7220. C D(CD <sub>3</sub> ) <sub>2</sub>	7221. H	7222. 	7223. H	7224. CD(CD <sub>3</sub> ) <sub>2</sub>	7225. C D(CD <sub>3</sub> ) <sub>2</sub>
1204.	7226. C D(CD <sub>3</sub> ) <sub>2</sub>	7227. H	7228. 	7229. H	7230. CD(CD <sub>3</sub> ) <sub>2</sub>	7231. C D(CD <sub>3</sub> ) <sub>2</sub>
1205.	7232. C D(CD <sub>3</sub> ) <sub>2</sub>	7233. H	7234. 	7235. H	7236. CD(CD <sub>3</sub> ) <sub>2</sub>	7237. C D(CD <sub>3</sub> ) <sub>2</sub>
1206.	7238. C D(CD <sub>3</sub> ) <sub>2</sub>	7239. H	7240. 	7241. H	7242. CD(CD <sub>3</sub> ) <sub>2</sub>	7243. C D(CD <sub>3</sub> ) <sub>2</sub>
1209.	7256. C D(CD <sub>3</sub> ) <sub>2</sub>	7257. H	7258. 	7259. H	7260. CD(CD <sub>3</sub> ) <sub>2</sub>	7261. C D(CD <sub>3</sub> ) <sub>2</sub>
1210.	7262. C D(CD <sub>3</sub> ) <sub>2</sub>	7263. H	7264. 	7265. H	7266. CD(CD <sub>3</sub> ) <sub>2</sub>	7267. C D(CD <sub>3</sub> ) <sub>2</sub>

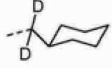
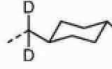
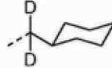
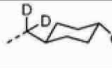
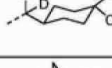



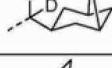

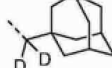
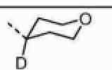
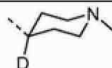
1. $L^{A_i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1211.	7268. C D(CD <sub>3</sub> ) <sub>2</sub>	7269. H	7270. 	7271. H	7272. CD(CD <sub>3</sub> ) <sub>2</sub>	7273. C D(CD <sub>3</sub> ) <sub>2</sub>
1214.	7286. C D(CD <sub>3</sub> ) <sub>2</sub>	7287. H	7288. 	7289. H	7290. CD(CD <sub>3</sub> ) <sub>2</sub>	7291. C D(CD <sub>3</sub> ) <sub>2</sub>
1215.	7292. C D(CD <sub>3</sub> ) <sub>2</sub>	7293. H	7294. 	7295. H	7296. CD(CD <sub>3</sub> ) <sub>2</sub>	7297. C D(CD <sub>3</sub> ) <sub>2</sub>
1216.	7298. C D(CD <sub>3</sub> ) <sub>2</sub>	7299. H	7300. 	7301. H	7302. CD(CD <sub>3</sub> ) <sub>2</sub>	7303. C D(CD <sub>3</sub> ) <sub>2</sub>
1217.	7304. C D(CD <sub>3</sub> ) <sub>2</sub>	7305. H	7306. 	7307. H	7308. CD(CD <sub>3</sub> ) <sub>2</sub>	7309. C D(CD <sub>3</sub> ) <sub>2</sub>
1218.	7310. C D(CD <sub>3</sub> ) <sub>2</sub>	7311. H	7312. 	7313. H	7314. CD(CD <sub>3</sub> ) <sub>2</sub>	7315. C D(CD <sub>3</sub> ) <sub>2</sub>
1219.	7316. C D(CD <sub>3</sub> ) <sub>2</sub>	7317. H	7318. 	7319. H	7320. CD(CD <sub>3</sub> ) <sub>2</sub>	7321. C D(CD <sub>3</sub> ) <sub>2</sub>

1. $L^{A_i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1278.	7670. C D(CH <sub>3</sub> ) <sub>2</sub>	7671. CD <sub>3</sub>	7672. CD <sub>3</sub>	7673. H	7674. C H <sub>3</sub>	7675. CH <sub>3</sub>
1279.	7676. C D(CH <sub>3</sub> ) <sub>2</sub>	7677. CD <sub>2</sub> CD <sub>3</sub>	7678. CD <sub>3</sub>	7679. H	7680. C H <sub>3</sub>	7681. CH <sub>3</sub>
1280.	7682. C D(CH <sub>3</sub> ) <sub>2</sub>	7683. CD <sub>2</sub> CH <sub>3</sub>	7684. CD <sub>3</sub>	7685. H	7686. C H <sub>3</sub>	7687. CH <sub>3</sub>
1281.	7688. C	7689. CD(CD <sub>3</sub> ) <sub>2</sub>	7690. CD <sub>3</sub>	7691. H	7692. C	7693. CH <sub>3</sub>












1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
	$D(CH_3)_2$				$H_3$	
1282.	7694. C $D(CH_3)_2$	7695. $CD(CH_3)_2$	7696. $CD_3$	7697. H	7698. C $H_3$	7699. $CH_3$
1283.	7700. C $D(CH_3)_2$	7701. $CD_2CD(CD_3)_2$	7702. $CD_3$	7703. H	7704. C $H_3$	7705. $CH_3$
1284.	7706. C $D(CH_3)_2$	7707. $CD_2CH(CH_3)_2$	7708. $CD_3$	7709. H	7710. C $H_3$	7711. $CH_3$
1285.	7712. C $D(CH_3)_2$	7713. $CD_2C(CD_3)_3$	7714. $CD_3$	7715. H	7716. C $H_3$	7717. $CH_3$
1286.	7718. C $D(CH_3)_2$	7719. $CD_2C(CH_3)_3$	7720. $CD_3$	7721. H	7722. C $H_3$	7723. $CH_3$
1287.	7724. C $D(CH_3)_2$	7725. $CD_2CD_2CF_3$	7726. $CD_3$	7727. H	7728. C $H_3$	7729. $CH_3$
1288.	7730. C $D(CH_3)_2$	7731. $CD_2CH_2CF_3$	7732. $CD_3$	7733. H	7734. C $H_3$	7735. $CH_3$
1289.	7736. C $D(CH_3)_2$	7737. $CD_2CCF_3(CH_3)_2$	7738. $CD_3$	7739. H	7740. C $H_3$	7741. $CH_3$
1290.	7742. C $D(CH_3)_2$	7743. 	7744. $CD_3$	7745. H	7746. C $H_3$	7747. $CH_3$
1291.	7748. C $D(CH_3)_2$	7749. 	7750. $CD_3$	7751. H	7752. C $H_3$	7753. $CH_3$
1292.	7754. C $D(CH_3)_2$	7755. 	7756. $CD_3$	7757. H	7758. C $H_3$	7759. $CH_3$
1293.	7760. C $D(CH_3)_2$	7761. 	7762. $CD_3$	7763. H	7764. C $H_3$	7765. $CH_3$
1294.	7766. C $D(CH_3)_2$	7767. 	7768. $CD_3$	7769. H	7770. C $H_3$	7771. $CH_3$
1295.	7772. C $D(CH_3)_2$	7773. 	7774. $CD_3$	7775. H	7776. C $H_3$	7777. $CH_3$
1296.	7778. C $D(CH_3)_2$	7779. 	7780. $CD_3$	7781. H	7782. C $H_3$	7783. $CH_3$


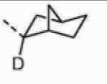


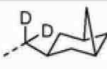

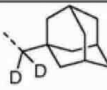

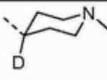
1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1297.	7784. C D(CH <sub>3</sub> ) <sub>2</sub>	7785. 	7786. CD <sub>3</sub>	7787. H	7788. C H <sub>3</sub>	7789. CH <sub>3</sub>
1298.	7790. C D(CH <sub>3</sub> ) <sub>2</sub>	7791. 	7792. CD <sub>3</sub>	7793. H	7794. C H <sub>3</sub>	7795. CH <sub>3</sub>
1299.	7796. C D(CH <sub>3</sub> ) <sub>2</sub>	7797. 	7798. CD <sub>3</sub>	7799. H	7800. C H <sub>3</sub>	7801. CH <sub>3</sub>
1300.	7802. C D(CH <sub>3</sub> ) <sub>2</sub>	7803. 	7804. CD <sub>3</sub>	7805. H	7806. C H <sub>3</sub>	7807. CH <sub>3</sub>
1301.	7808. C D(CH <sub>3</sub> ) <sub>2</sub>	7809. 	7810. CD <sub>3</sub>	7811. H	7812. C H <sub>3</sub>	7813. CH <sub>3</sub>
1302.	7814. C D(CH <sub>3</sub> ) <sub>2</sub>	7815. 	7816. CD <sub>3</sub>	7817. H	7818. C H <sub>3</sub>	7819. CH <sub>3</sub>
1303.	7820. C D(CH <sub>3</sub> ) <sub>2</sub>	7821. 	7822. CD <sub>3</sub>	7823. H	7824. C H <sub>3</sub>	7825. CH <sub>3</sub>
1304.	7826. C D(CH <sub>3</sub> ) <sub>2</sub>	7827. 	7828. CD <sub>3</sub>	7829. H	7830. C H <sub>3</sub>	7831. CH <sub>3</sub>
1305.	7832. C D(CH <sub>3</sub> ) <sub>2</sub>	7833. 	7834. CD <sub>3</sub>	7835. H	7836. C H <sub>3</sub>	7837. CH <sub>3</sub>
1306.	7838. C D(CH <sub>3</sub> ) <sub>2</sub>	7839. 	7840. CD <sub>3</sub>	7841. H	7842. C H <sub>3</sub>	7843. CH <sub>3</sub>
1307.	7844. C D(CH <sub>3</sub> ) <sub>2</sub>	7845. 	7846. CD <sub>3</sub>	7847. H	7848. C H <sub>3</sub>	7849. CH <sub>3</sub>
1308.	7850. C D(CH <sub>3</sub> ) <sub>2</sub>	7851. 	7852. CD <sub>3</sub>	7853. H	7854. C H <sub>3</sub>	7855. CH <sub>3</sub>
1309.	7856. C D(CH <sub>3</sub> ) <sub>2</sub>	7857. 	7858. CD <sub>3</sub>	7859. H	7860. C H <sub>3</sub>	7861. CH <sub>3</sub>
1310.	7862. C D(CD <sub>3</sub> ) <sub>2</sub>	7863. CD <sub>2</sub> CD <sub>3</sub>	7864. CD <sub>3</sub>	7865. H	7866. C D <sub>2</sub> CD <sub>3</sub>	7867. CD <sub>2</sub> CD <sub>3</sub>
1311.	7868. C D(CD <sub>3</sub> ) <sub>2</sub>	7869. CD <sub>2</sub> CH <sub>3</sub>	7870. CD <sub>3</sub>	7871. H	7872. C D <sub>2</sub> CD <sub>3</sub>	7873. CD <sub>2</sub> CD <sub>3</sub>

1. $L^A_i$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1312.	7874. C D(CD <sub>3</sub> ) <sub>2</sub>	7875. CD(CD <sub>3</sub> ) <sub>2</sub>	7876. CD <sub>3</sub>	7877. H	7878. C D <sub>2</sub> CD <sub>3</sub>	7879. CD <sub>2</sub> CD <sub>3</sub>
1313.	7880. C D(CD <sub>3</sub> ) <sub>2</sub>	7881. CD(CH <sub>3</sub> ) <sub>2</sub>	7882. CD <sub>3</sub>	7883. H	7884. C D <sub>2</sub> CD <sub>3</sub>	7885. CD <sub>2</sub> CD <sub>3</sub>
1314.	7886. C D(CD <sub>3</sub> ) <sub>2</sub>	7887. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	7888. CD <sub>3</sub>	7889. H	7890. C D <sub>2</sub> CD <sub>3</sub>	7891. CD <sub>2</sub> CD <sub>3</sub>
1315.	7892. C D(CD <sub>3</sub> ) <sub>2</sub>	7893. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	7894. CD <sub>3</sub>	7895. H	7896. C D <sub>2</sub> CD <sub>3</sub>	7897. CD <sub>2</sub> CD <sub>3</sub>
1316.	7898. C D(CD <sub>3</sub> ) <sub>2</sub>	7899. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	7900. CD <sub>3</sub>	7901. H	7902. C D <sub>2</sub> CD <sub>3</sub>	7903. CD <sub>2</sub> CD <sub>3</sub>
1317.	7904. C D(CD <sub>3</sub> ) <sub>2</sub>	7905. CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	7906. CD <sub>3</sub>	7907. H	7908. C D <sub>2</sub> CD <sub>3</sub>	7909. CD <sub>2</sub> CD <sub>3</sub>
1318.	7910. C D(CD <sub>3</sub> ) <sub>2</sub>	7911. CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	7912. CD <sub>3</sub>	7913. H	7914. C D <sub>2</sub> CD <sub>3</sub>	7915. CD <sub>2</sub> CD <sub>3</sub>
1319.	7916. C D(CD <sub>3</sub> ) <sub>2</sub>	7917. CD <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	7918. CD <sub>3</sub>	7919. H	7920. C D <sub>2</sub> CD <sub>3</sub>	7921. CD <sub>2</sub> CD <sub>3</sub>
1320.	7922. C D(CD <sub>3</sub> ) <sub>2</sub>	7923. CD <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub>	7924. CD <sub>3</sub>	7925. H	7926. C D <sub>2</sub> CD <sub>3</sub>	7927. CD <sub>2</sub> CD <sub>3</sub>
1321.	7928. C D(CD <sub>3</sub> ) <sub>2</sub>	7929. 	7930. CD <sub>3</sub>	7931. H	7932. C D <sub>2</sub> CD <sub>3</sub>	7933. CD <sub>2</sub> CD <sub>3</sub>
1322.	7934. C D(CD <sub>3</sub> ) <sub>2</sub>	7935. 	7936. CD <sub>3</sub>	7937. H	7938. C D <sub>2</sub> CD <sub>3</sub>	7939. CD <sub>2</sub> CD <sub>3</sub>
1323.	7940. C D(CD <sub>3</sub> ) <sub>2</sub>	7941. 	7942. CD <sub>3</sub>	7943. H	7944. C D <sub>2</sub> CD <sub>3</sub>	7945. CD <sub>2</sub> CD <sub>3</sub>
1324.	7946. C D(CD <sub>3</sub> ) <sub>2</sub>	7947. 	7948. CD <sub>3</sub>	7949. H	7950. C D <sub>2</sub> CD <sub>3</sub>	7951. CD <sub>2</sub> CD <sub>3</sub>
1325.	7952. C D(CD <sub>3</sub> ) <sub>2</sub>	7953. 	7954. CD <sub>3</sub>	7955. H	7956. C D <sub>2</sub> CD <sub>3</sub>	7957. CD <sub>2</sub> CD <sub>3</sub>
1326.	7958. C D(CD <sub>3</sub> ) <sub>2</sub>	7959. 	7960. CD <sub>3</sub>	7961. H	7962. C D <sub>2</sub> CD <sub>3</sub>	7963. CD <sub>2</sub> CD <sub>3</sub>
1327.	7964. C D(CD <sub>3</sub> ) <sub>2</sub>	7965. 	7966. CD <sub>3</sub>	7967. H	7968. C D <sub>2</sub> CD <sub>3</sub>	7969. CD <sub>2</sub> CD <sub>3</sub>












1. $L^{A_i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1328.	7970. C D(CD <sub>3</sub> ) <sub>2</sub>	7971. 	7972. CD <sub>3</sub>	7973. H	7974. C D <sub>2</sub> CD <sub>3</sub>	7975. CD <sub>2</sub> CD <sub>3</sub>
1329.	7976. C D(CD <sub>3</sub> ) <sub>2</sub>	7977. 	7978. CD <sub>3</sub>	7979. H	7980. C D <sub>2</sub> CD <sub>3</sub>	7981. CD <sub>2</sub> CD <sub>3</sub>
1330.	7982. C D(CD <sub>3</sub> ) <sub>2</sub>	7983. 	7984. CD <sub>3</sub>	7985. H	7986. C D <sub>2</sub> CD <sub>3</sub>	7987. CD <sub>2</sub> CD <sub>3</sub>
1331.	7988. C D(CD <sub>3</sub> ) <sub>2</sub>	7989. 	7990. CD <sub>3</sub>	7991. H	7992. C D <sub>2</sub> CD <sub>3</sub>	7993. CD <sub>2</sub> CD <sub>3</sub>
1332.	7994. C D(CD <sub>3</sub> ) <sub>2</sub>	7995. 	7996. CD <sub>3</sub>	7997. H	7998. C D <sub>2</sub> CD <sub>3</sub>	7999. CD <sub>2</sub> CD <sub>3</sub>
1333.	8000. C D(CD <sub>3</sub> ) <sub>2</sub>	8001. 	8002. CD <sub>3</sub>	8003. H	8004. C D <sub>2</sub> CD <sub>3</sub>	8005. CD <sub>2</sub> CD <sub>3</sub>
1334.	8006. C D(CD <sub>3</sub> ) <sub>2</sub>	8007. 	8008. CD <sub>3</sub>	8009. H	8010. C D <sub>2</sub> CD <sub>3</sub>	8011. CD <sub>2</sub> CD <sub>3</sub>
1335.	8012. C D(CD <sub>3</sub> ) <sub>2</sub>	8013. 	8014. CD <sub>3</sub>	8015. H	8016. C D <sub>2</sub> CD <sub>3</sub>	8017. CD <sub>2</sub> CD <sub>3</sub>
1336.	8018. C D(CD <sub>3</sub> ) <sub>2</sub>	8019. 	8020. CD <sub>3</sub>	8021. H	8022. C D <sub>2</sub> CD <sub>3</sub>	8023. CD <sub>2</sub> CD <sub>3</sub>
1337.	8024. C D(CD <sub>3</sub> ) <sub>2</sub>	8025. 	8026. CD <sub>3</sub>	8027. H	8028. C D <sub>2</sub> CD <sub>3</sub>	8029. CD <sub>2</sub> CD <sub>3</sub>
1338.	8030. C D(CD <sub>3</sub> ) <sub>2</sub>	8031. 	8032. CD <sub>3</sub>	8033. H	8034. C D <sub>2</sub> CD <sub>3</sub>	8035. CD <sub>2</sub> CD <sub>3</sub>
1339.	8036. C D(CD <sub>3</sub> ) <sub>2</sub>	8037. 	8038. CD <sub>3</sub>	8039. H	8040. C D <sub>2</sub> CD <sub>3</sub>	8041. CD <sub>2</sub> CD <sub>3</sub>
1340.	8042. C D(CD <sub>3</sub> ) <sub>2</sub>	8043. 	8044. CD <sub>3</sub>	8045. H	8046. C D <sub>2</sub> CD <sub>3</sub>	8047. CD <sub>2</sub> CD <sub>3</sub>















1. $L^{A_i}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1368.	8210. C D(CH <sub>3</sub> ) <sub>2</sub>	8211. C D <sub>3</sub>	8212. CD <sub>2</sub> CD <sub>3</sub>	8213. H	8214. C D <sub>2</sub> CD <sub>3</sub>	8215. CD <sub>2</sub> C D <sub>3</sub>
1369.	8216. C D(CH <sub>3</sub> ) <sub>2</sub>	8217. C D <sub>3</sub>	8218. CD <sub>2</sub> CH <sub>3</sub>	8219. H	8220. C D <sub>2</sub> CD <sub>3</sub>	8221. CD <sub>2</sub> C D <sub>3</sub>
1370.	8222. C D(CH <sub>3</sub> ) <sub>2</sub>	8223. C D <sub>3</sub>	8224. CD(CD <sub>3</sub> ) <sub>2</sub>	8225. H	8226. C D <sub>2</sub> CD <sub>3</sub>	8227. CD <sub>2</sub> C D <sub>3</sub>
1371.	8228. C D(CH <sub>3</sub> ) <sub>2</sub>	8229. C D <sub>3</sub>	8230. CD(CH <sub>3</sub> ) <sub>2</sub>	8231. H	8232. C D <sub>2</sub> CD <sub>3</sub>	8233. CD <sub>2</sub> C D <sub>3</sub>
1372.	8234. C D(CH <sub>3</sub> ) <sub>2</sub>	8235. C D <sub>3</sub>	8236. CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	8237. H	8238. C D <sub>2</sub> CD <sub>3</sub>	8239. CD <sub>2</sub> C D <sub>3</sub>
1373.	8240. C D(CH <sub>3</sub> ) <sub>2</sub>	8241. C D <sub>3</sub>	8242. CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	8243. H	8244. C D <sub>2</sub> CD <sub>3</sub>	8245. CD <sub>2</sub> C D <sub>3</sub>
1374.	8246. C	8247. C	8248. CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	8249. H	8250. C	8251. CD <sub>2</sub> C





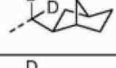
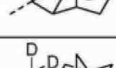
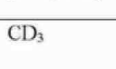

1. $L_{i,j}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
	$D(CH_3)_2$	$D_3$			$D_2CD_3$	$D_3$
1375.	8252. C $D(CH_3)_2$	8253. C $D_3$	8254. $CD_2C(CH_3)_3$	8255. H	8256. C $D_2CD_3$	8257. $CD_2C$ $D_3$
1376.	8258. C $D(CH_3)_2$	8259. C $D_3$	8260. $CD_2CD_2CF_3$	8261. H	8262. C $D_2CD_3$	8263. $CD_2C$ $D_3$
1377.	8264. C $D(CH_3)_2$	8265. C $D_3$	8266. $CD_2CH_2CF_3$	8267. H	8268. C $D_2CD_3$	8269. $CD_2C$ $D_3$
1378.	8270. C $D(CH_3)_2$	8271. C $D_3$	8272. $CD_2CCF_3(CH_3)_2$	8273. H	8274. C $D_2CD_3$	8275. $CD_2C$ $D_3$
1379.	8276. C $D(CH_3)_2$	8277. C $D_3$	8278. 	8279. H	8280. C $D_2CD_3$	8281. $CD_2C$ $D_3$
1380.	8282. C $D(CH_3)_2$	8283. C $D_3$	8284. 	8285. H	8286. C $D_2CD_3$	8287. $CD_2C$ $D_3$
1381.	8288. C $D(CH_3)_2$	8289. C $D_3$	8290. 	8291. H	8292. C $D_2CD_3$	8293. $CD_2C$ $D_3$
1382.	8294. C $D(CH_3)_2$	8295. C $D_3$	8296. 	8297. H	8298. C $D_2CD_3$	8299. $CD_2C$ $D_3$
1383.	8300. C $D(CH_3)_2$	8301. C $D_3$	8302. 	8303. H	8304. C $D_2CD_3$	8305. $CD_2C$ $D_3$
1384.	8306. C $D(CH_3)_2$	8307. C $D_3$	8308. 	8309. H	8310. C $D_2CD_3$	8311. $CD_2C$ $D_3$
1385.	8312. C $D(CH_3)_2$	8313. C $D_3$	8314. 	8315. H	8316. C $D_2CD_3$	8317. $CD_2C$ $D_3$
1386.	8318. C $D(CH_3)_2$	8319. C $D_3$	8320. 	8321. H	8322. C $D_2CD_3$	8323. $CD_2C$ $D_3$
1387.	8324. C $D(CH_3)_2$	8325. C $D_3$	8326. 	8327. H	8328. C $D_2CD_3$	8329. $CD_2C$ $D_3$
1388.	8330. C $D(CH_3)_2$	8331. C $D_3$	8332. 	8333. H	8334. C $D_2CD_3$	8335. $CD_2C$ $D_3$
1389.	8336. C $D(CH_3)_2$	8337. C $D_3$	8338. 	8339. H	8340. C $D_2CD_3$	8341. $CD_2C$ $D_3$

I. L <sup>Ar</sup> 에서 <i>i</i>	2. R <sup>2</sup>	3. R <sup>3</sup>	4. R <sup>4</sup>	5. R <sup>5</sup>	6. R <sup>7</sup>	7. R <sup>8</sup>
1390.	8342. C D(CH <sub>3</sub> ) <sub>2</sub>	8343. C D <sub>3</sub>	8344. 	8345. H	8346. C D <sub>2</sub> CD <sub>3</sub>	8347. CD <sub>2</sub> C D <sub>3</sub>
1391.	8348. C D(CH <sub>3</sub> ) <sub>2</sub>	8349. C D <sub>3</sub>	8350. 	8351. H	8352. C D <sub>2</sub> CD <sub>3</sub>	8353. CD <sub>2</sub> C D <sub>3</sub>
1392.	8354. C D(CH <sub>3</sub> ) <sub>2</sub>	8355. C D <sub>3</sub>	8356. 	8357. H	8358. C D <sub>2</sub> CD <sub>3</sub>	8359. CD <sub>2</sub> C D <sub>3</sub>
1393.	8360. C D(CH <sub>3</sub> ) <sub>2</sub>	8361. C D <sub>3</sub>	8362. 	8363. H	8364. C D <sub>2</sub> CD <sub>3</sub>	8365. CD <sub>2</sub> C D <sub>3</sub>
1394.	8366. C D(CH <sub>3</sub> ) <sub>2</sub>	8367. C D <sub>3</sub>	8368. 	8369. H	8370. C D <sub>2</sub> CD <sub>3</sub>	8371. CD <sub>2</sub> C D <sub>3</sub>
1395.	8372. C D(CH <sub>3</sub> ) <sub>2</sub>	8373. C D <sub>3</sub>	8374. 	8375. H	8376. C D <sub>2</sub> CD <sub>3</sub>	8377. CD <sub>2</sub> C D <sub>3</sub>
1396.	8378. C D(CH <sub>3</sub> ) <sub>2</sub>	8379. C D <sub>3</sub>	8380. 	8381. H	8382. C D <sub>2</sub> CD <sub>3</sub>	8383. CD <sub>2</sub> C D <sub>3</sub>
1397.	8384. C D(CH <sub>3</sub> ) <sub>2</sub>	8385. C D <sub>3</sub>	8386. 	8387. H	8388. C D <sub>2</sub> CD <sub>3</sub>	8389. CD <sub>2</sub> C D <sub>3</sub>
1398.	8390. C D(CH <sub>3</sub> ) <sub>2</sub>	8391. C D <sub>3</sub>	8392. 	8393. H	8394. C D <sub>2</sub> CD <sub>3</sub>	8395. CD <sub>2</sub> C D <sub>3</sub>



1. $L^A$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1399. 8396.		8397. CD 3	8398. H	8399. H	8400. H	8401. C D <sub>3</sub>
1400.		8403. CD 3	8404. C D <sub>3</sub>	8405. H	8406. H	8407. C D <sub>3</sub>
1401.		8409. CD 3	8410. H	8411. CD <sub>3</sub>	8412. H	8413. C D <sub>3</sub>
1402.		8415. CD 3	8416. C D <sub>3</sub>	8417. CD <sub>3</sub>	8418. H	8419. C D <sub>3</sub>
1403.		8421. CD 3	8422. H	8423. H	8424. H	8425. C D <sub>3</sub>
1404.		8427. CD 3	8428. C D <sub>3</sub>	8429. H	8430. H	8431. C D <sub>3</sub>
1405.		8433. CD 3	8434. H	8435. CD <sub>3</sub>	8436. H	8437. C D <sub>3</sub>
1406.		8439. CD 3	8440. C D <sub>3</sub>	8441. CD <sub>3</sub>	8442. H	8443. C D <sub>3</sub>
1407.		8445. CD 3	8446. H	8447. H	8448. H	8449. C D <sub>3</sub>
1408.		8451. CD 3	8452. C D <sub>3</sub>	8453. H	8454. H	8455. C D <sub>3</sub>
1409.		8457. CD 3	8458. H	8459. CD <sub>3</sub>	8460. H	8461. C D <sub>3</sub>

I. L <sub>Ai</sub> 에서 i	2. R <sup>2</sup>	3. R <sup>3</sup>	4. R <sup>4</sup>	5. R <sup>5</sup>	6. R <sup>7</sup>	7. R <sup>8</sup>
1410.	8462. 	8463. CD <sub>3</sub>	8464. C D <sub>3</sub>	8465. CD <sub>3</sub>	8466. H	8467. C D <sub>3</sub>
1411.	8468. 	8469. CD <sub>3</sub>	8470. H	8471. H	8472. H	8473. C D <sub>3</sub>
1412.	8474. 	8475. CD <sub>3</sub>	8476. C D <sub>3</sub>	8477. H	8478. H	8479. C D <sub>3</sub>
1413.	8480. 	8481. CD <sub>3</sub>	8482. H	8483. CD <sub>3</sub>	8484. H	8485. C D <sub>3</sub>
1414.	8486. 	8487. CD <sub>3</sub>	8488. C D <sub>3</sub>	8489. CD <sub>3</sub>	8490. H	8491. C D <sub>3</sub>
1415.	8492. 	8493. CD <sub>3</sub>	8494. H	8495. H	8496. H	8497. C D <sub>3</sub>
1416.	8498. 	8499. CD <sub>3</sub>	8500. C D <sub>3</sub>	8501. H	8502. H	8503. C D <sub>3</sub>
1417.	8504. 	8505. CD <sub>3</sub>	8506. H	8507. CD <sub>3</sub>	8508. H	8509. C D <sub>3</sub>
1418.	8510. 	8511. CD <sub>3</sub>	8512. C D <sub>3</sub>	8513. CD <sub>3</sub>	8514. H	8515. C D <sub>3</sub>
1419.	8516. 	8517. CD <sub>3</sub>	8518. H	8519. H	8520. H	8521. C D <sub>3</sub>
1420.	8522. 	8523. CD <sub>3</sub>	8524. C D <sub>3</sub>	8525. H	8526. H	8527. C D <sub>3</sub>
1421.	8528. 	8529. CD <sub>3</sub>	8530. H	8531. CD <sub>3</sub>	8532. H	8533. C D <sub>3</sub>
1422.	8534. 	8535. CD <sub>3</sub>	8536. C D <sub>3</sub>	8537. CD <sub>3</sub>	8538. H	8539. C D <sub>3</sub>
1423.	8540. 	8541. CD <sub>3</sub>	8542. H	8543. H	8544. H	8545. C D <sub>3</sub>

1. $L_{Af}$ 에서 $i$	2. $R^2$	3. $R^3$	4. $R^4$	5. $R^5$	6. $R^7$	7. $R^8$
1424.	8546. 	8547. CD 3	8548. C D <sub>3</sub>	8549. H	8550. H	8551. C D <sub>3</sub>
1425.	8552. 	8553. CD 3	8554. H	8555. CD <sub>3</sub>	8556. H	8557. C D <sub>3</sub>
1426.	8558. 	8559. CD 3	8560. C D <sub>3</sub>	8561. CD <sub>3</sub>	8562. H	8563. C D <sub>3</sub>
1427.	8564. 	8565. CD 3	8566. H	8567. H	8568. H	8569. C D <sub>3</sub>
1428.	8570. 	8571. CD 3	8572. C D <sub>3</sub>	8573. H	8574. H	8575. C D <sub>3</sub>
1429.	8576. 	8577. CD 3	8578. H	8579. CD <sub>3</sub>	8580. H	8581. H
1430.	8582. 	8583. CD 3	8584. C D <sub>3</sub>	8585. CD <sub>3</sub>	8586. H	8587. H
1431.	8588. CD <sub>3</sub>	8589. H	8590. H	8591. 	8592. H	8593. H
1432.	8594. CD <sub>3</sub>	8595. CD 3	8596. C D <sub>3</sub>	8597. H	8598. H	8599. H

**청구항 8**

제1항에 있어서, 화합물은  $ML_m(L_B)_{m-n}$ 의 화학식을 갖고;

$L_B$ 는 두자리 리간드이고;

$m$ 은 3이고,  $n$ 은 1, 2 또는 3인 것인 발광 도펀트.

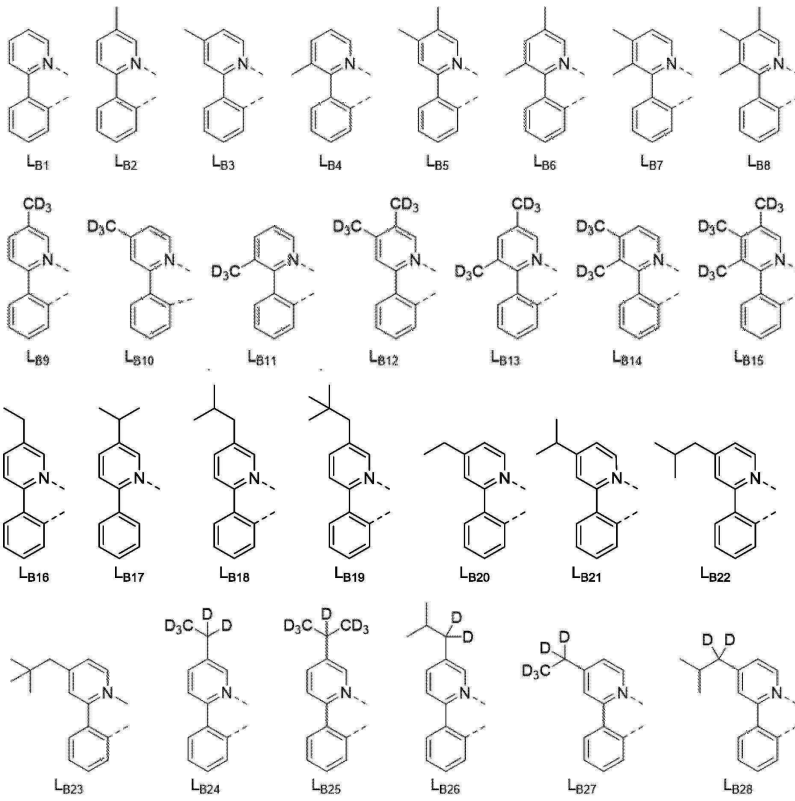
**청구항 9**

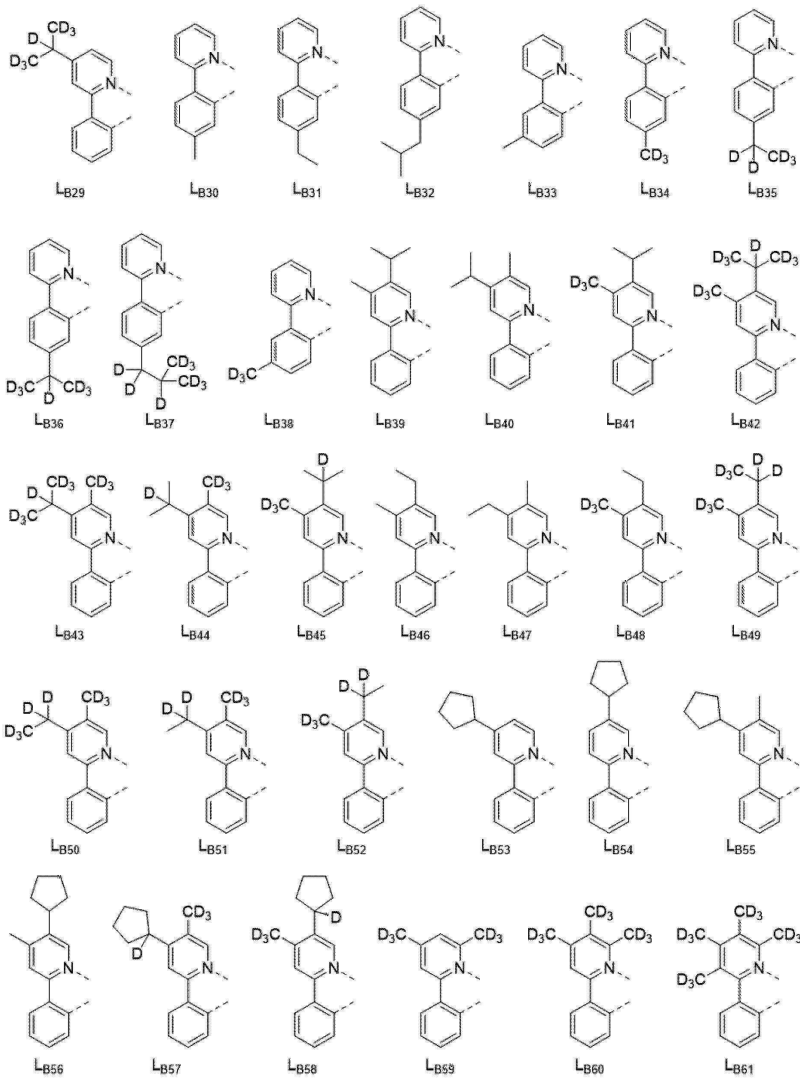
제8항에 있어서, 화합물은  $IrL_3$ ,  $IrL(L_B)_2$  또는  $Ir(L)_2(L_B)$ 의 화학식을 갖고,  $L_B$ 는  $L$ 과 상이한 것인 발광 도펀트.

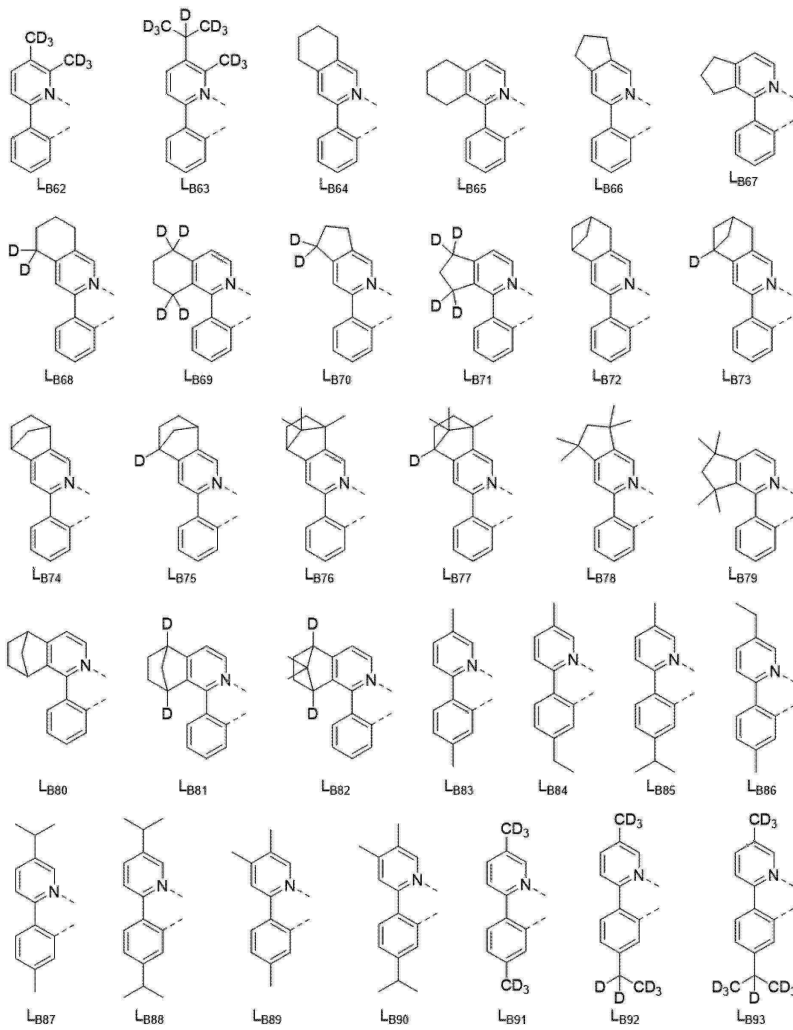
**청구항 10**

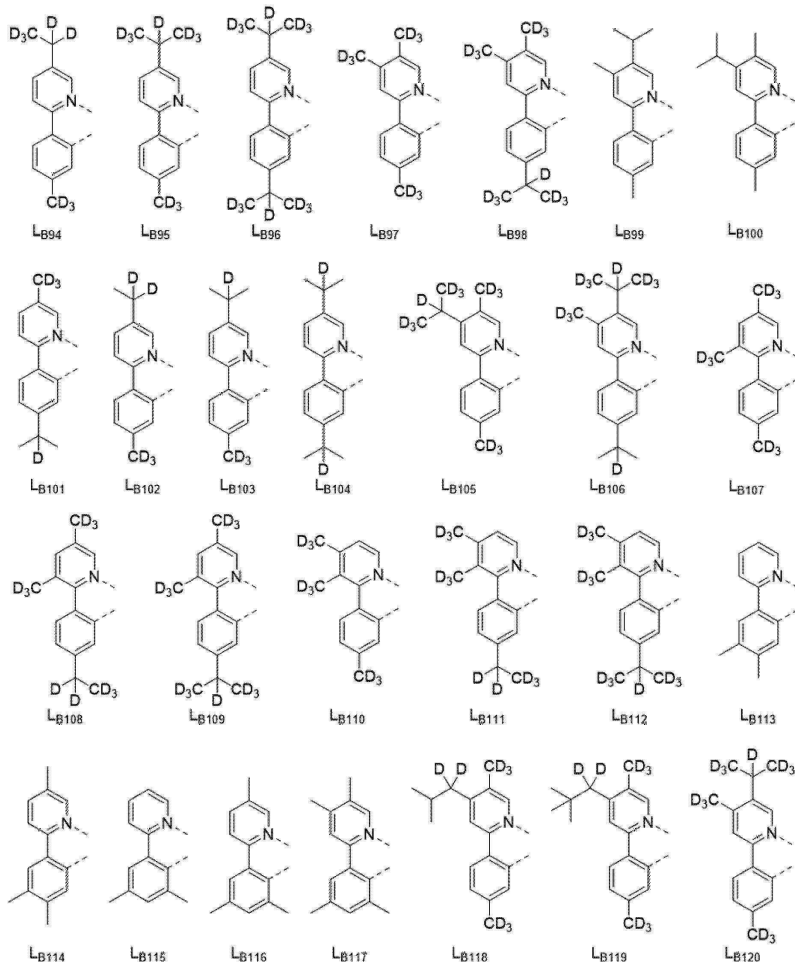
제8항에 있어서,  $m$ 은 3이고,  $n$ 은 1 또는 2이고;

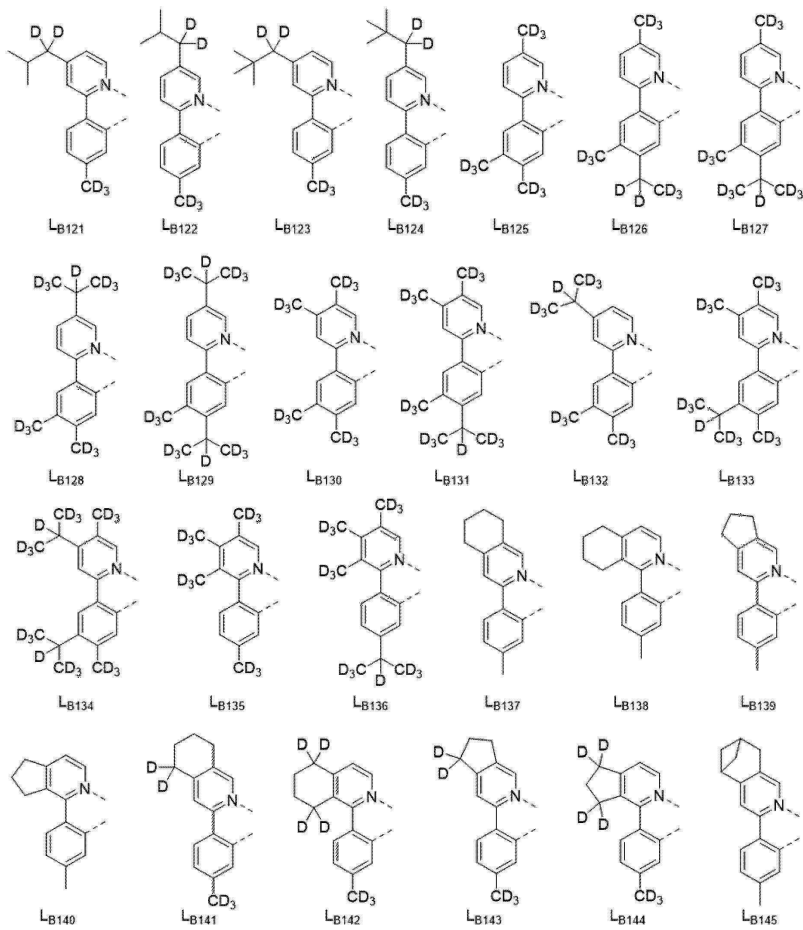
L<sub>B</sub>는 하기 제시된 L<sub>B1</sub> 내지 L<sub>B300</sub>으로 이루어진 군에서 선택되는 것인 발광 도펀트:



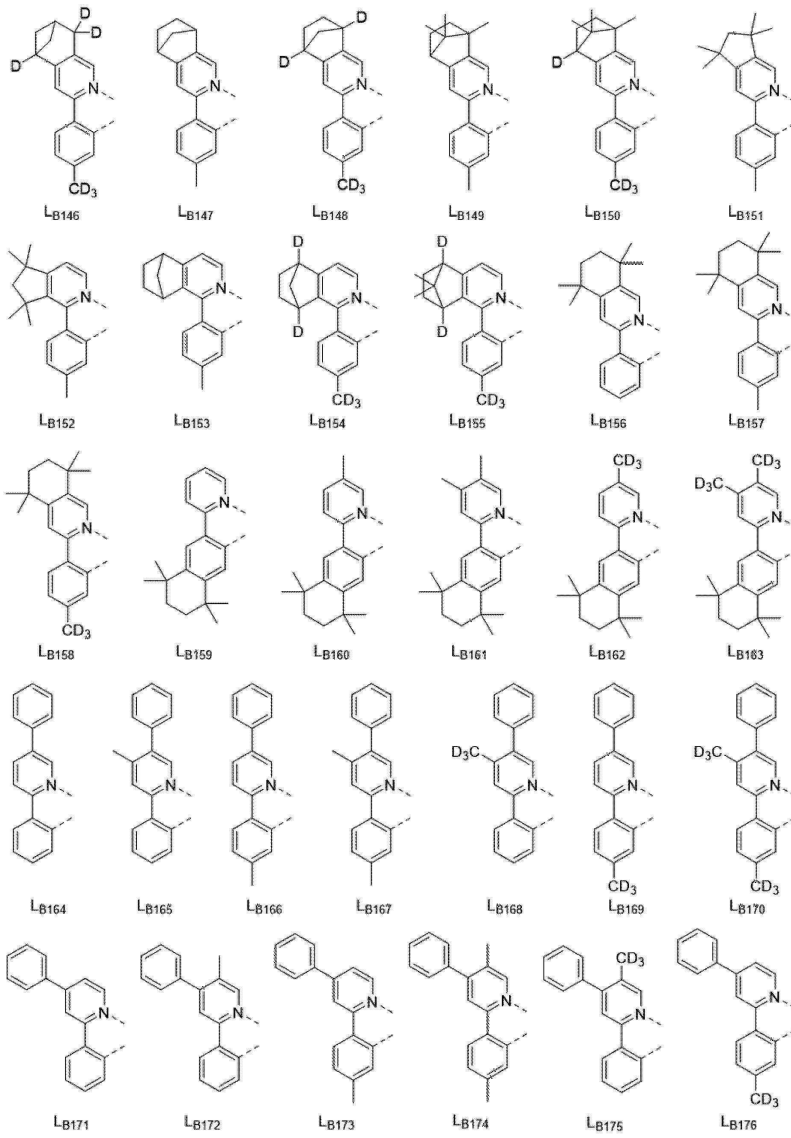


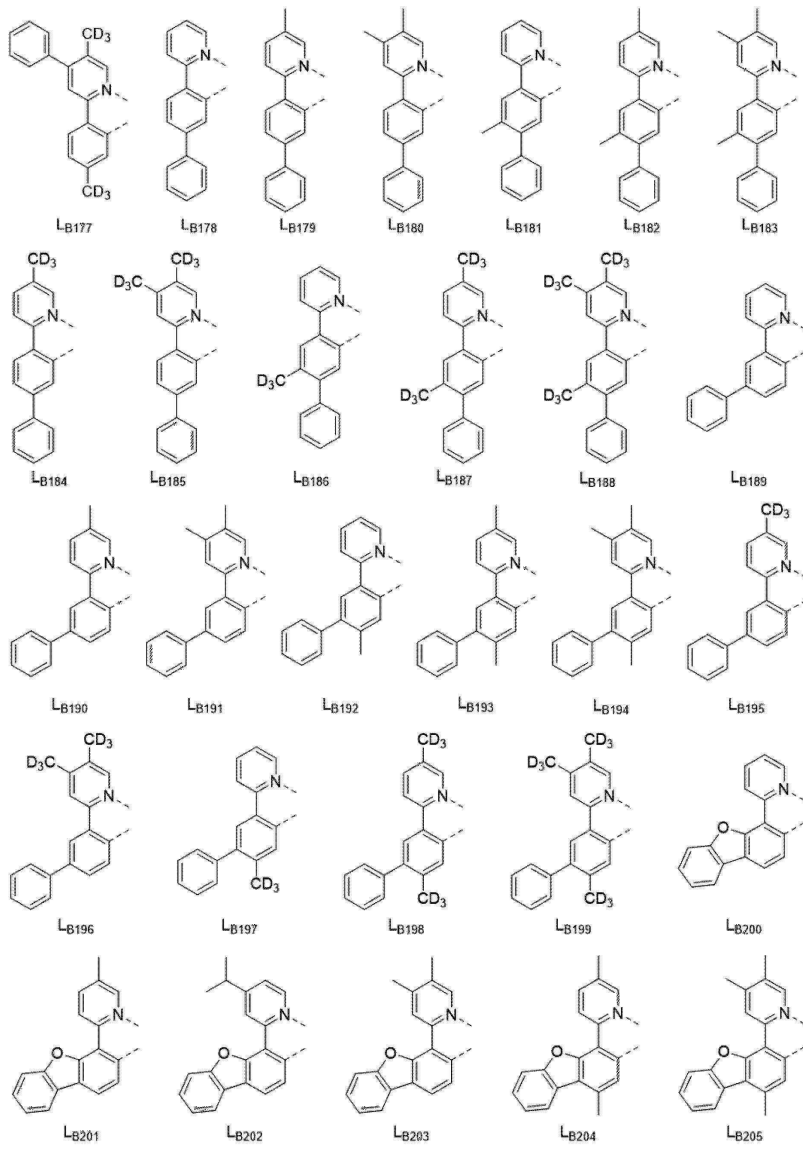


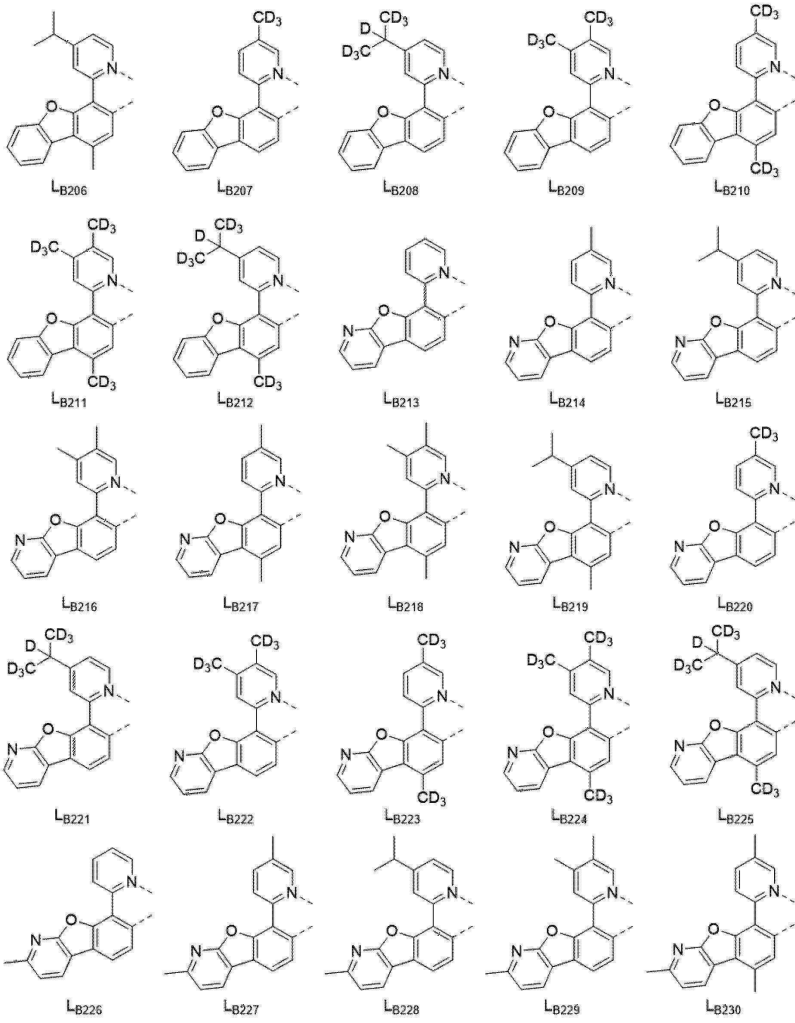


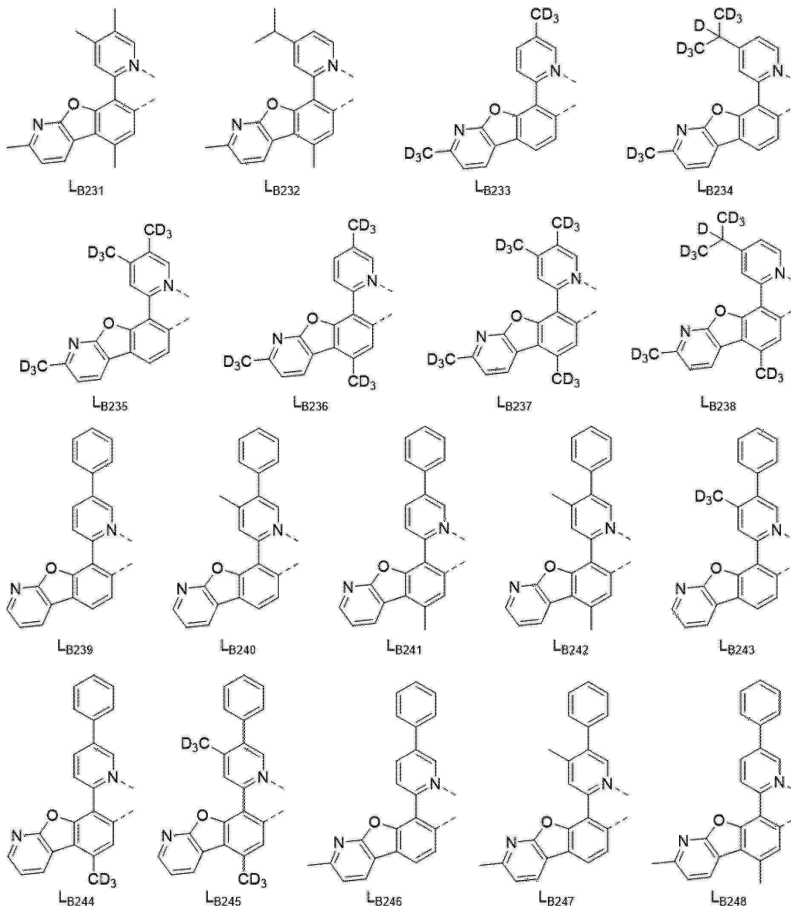


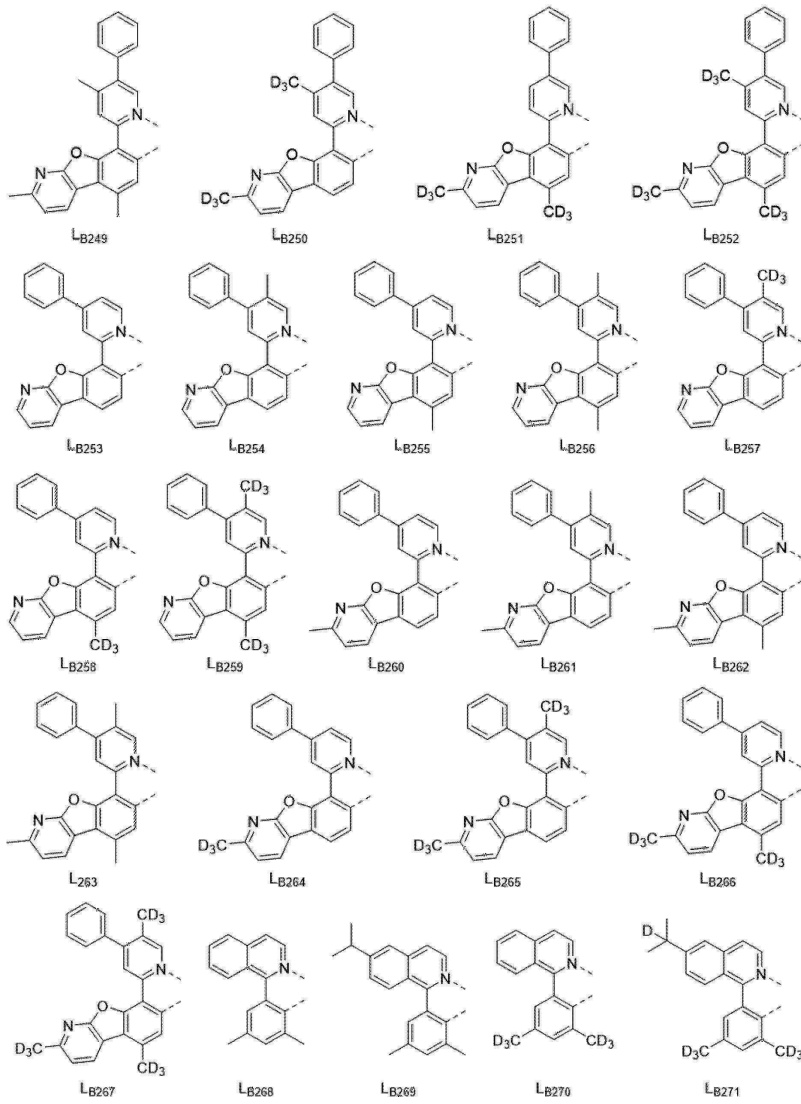


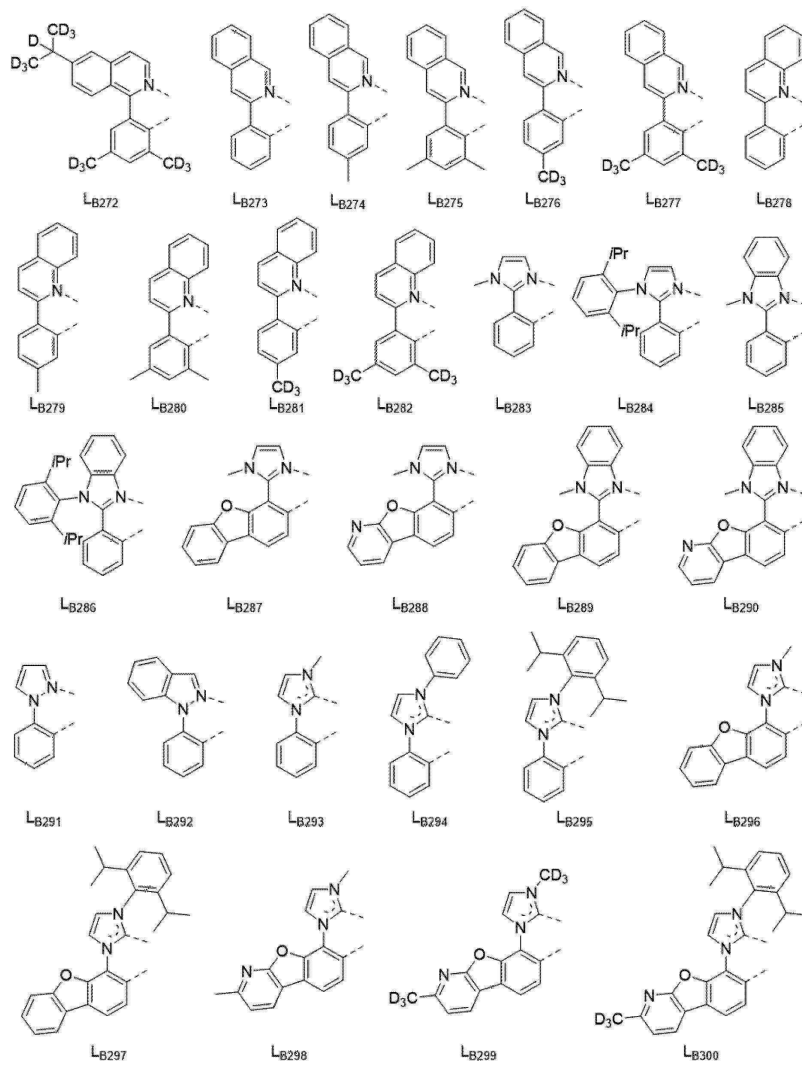












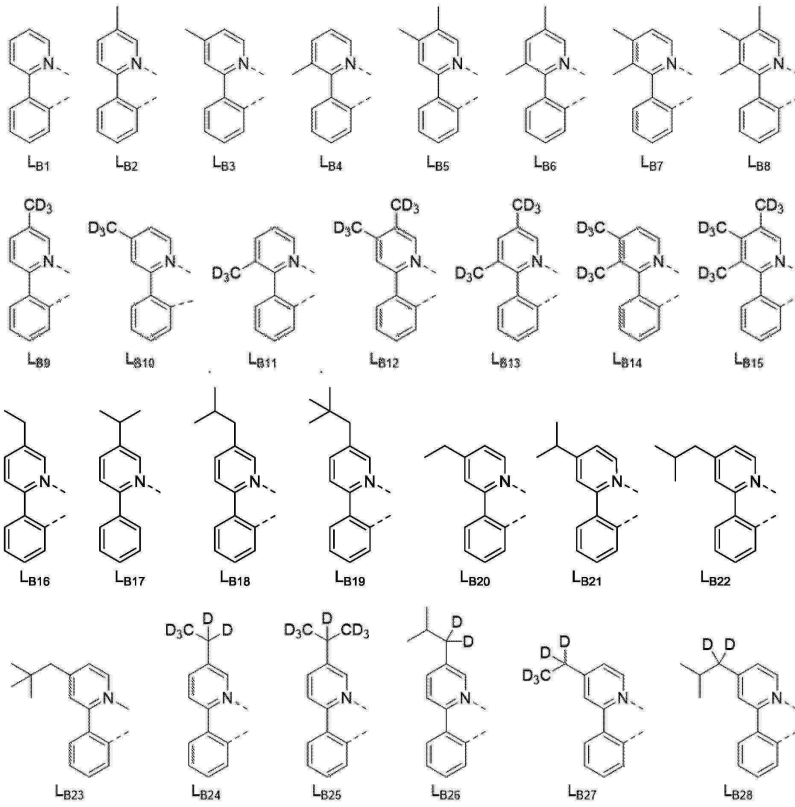
**청구항 11**

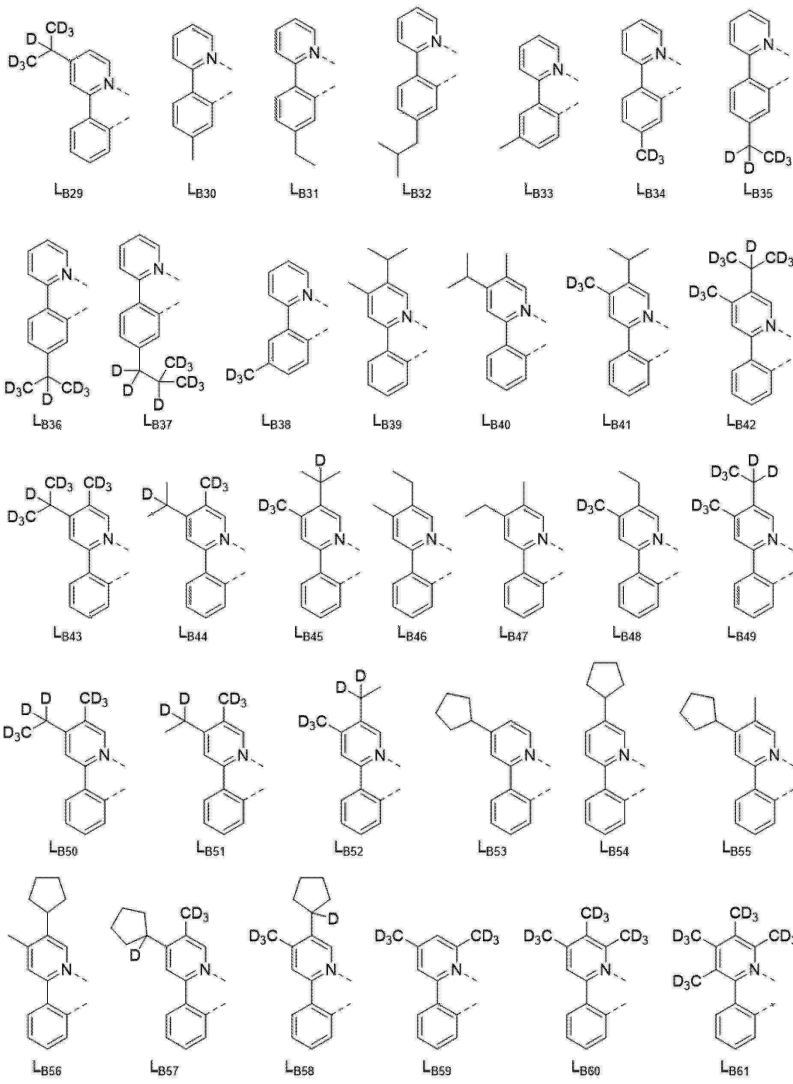
제7항에 있어서, 화합물은 화합물 k-x로 이루어진 군에서 선택되고;

화합물 k-x는 화학식 Ir(L<sup>ki</sup>)(L<sub>Bj</sub>)<sub>2</sub>를 갖고;

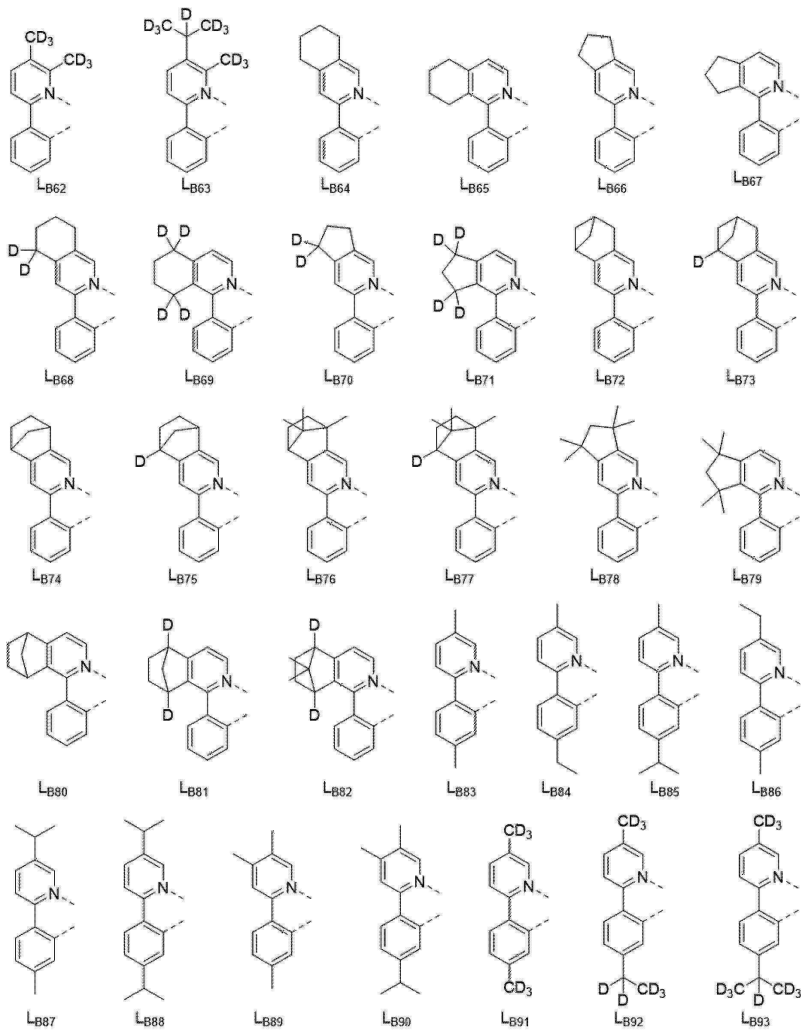
x = 300i+j-300이고; k는 A이고; i는 159-168, 171-175, 178-180, 183-188, 191-199, 203-207, 210-212, 215-220, 287-318, 346-407, 436-444, 448-452, 455-457, 460-465, 496-504, 508-512, 515-517, 520-525, 556-564, 568-572, 575-577, 580-585, 616-647, 675-705, 734-765, 793-823, 852-860, 864-868, 871-873, 876-881, 884-892, 896-900, 903-905, 908-913, 943-951, 955-959, 962-964, 967-972, 975-1015, 1019-1023, 1026-1028, 1031-1075, 1079-1083, 1086-1088, 1091-1096, 1099-1107, 1111-1115, 1118-1120, 1123-1128, 1158-1166, 1170-1174, 1177-1179, 1182-1187, 1190-1198, 1202-1206, 1209-1211, 1214-1219, 1278-1340, 1368-1432의 정수이고; j는 1~300의 정수이고;

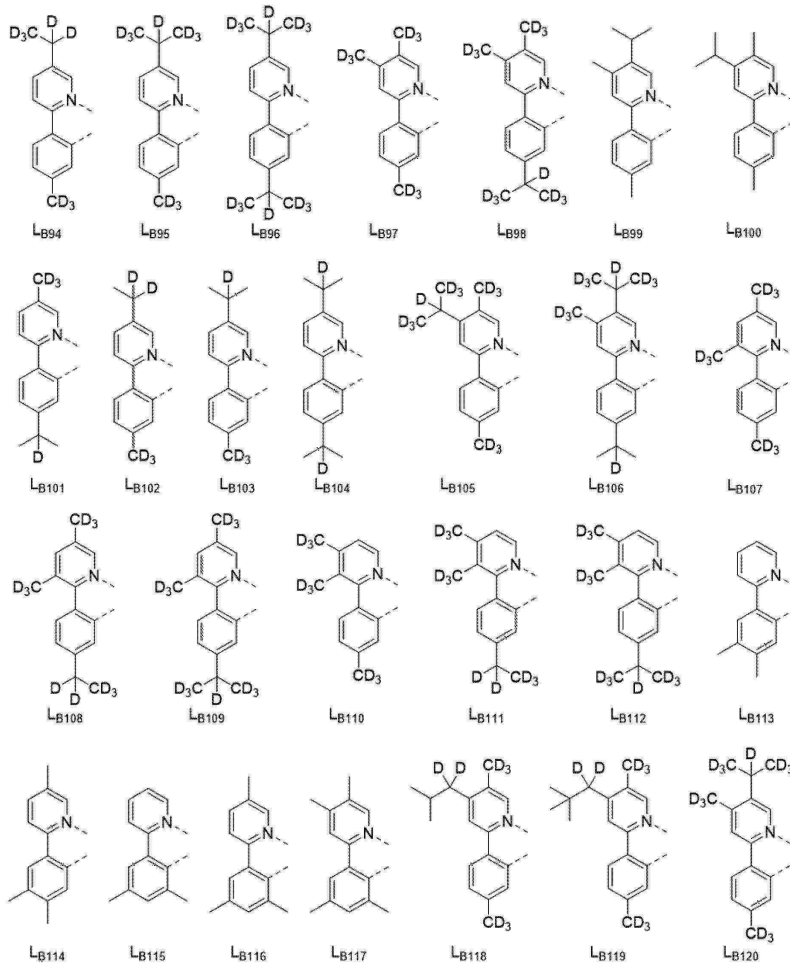
L<sub>B1</sub> 내지 L<sub>B300</sub>은 하기 구조를 갖는 것인 발광 도펀트:

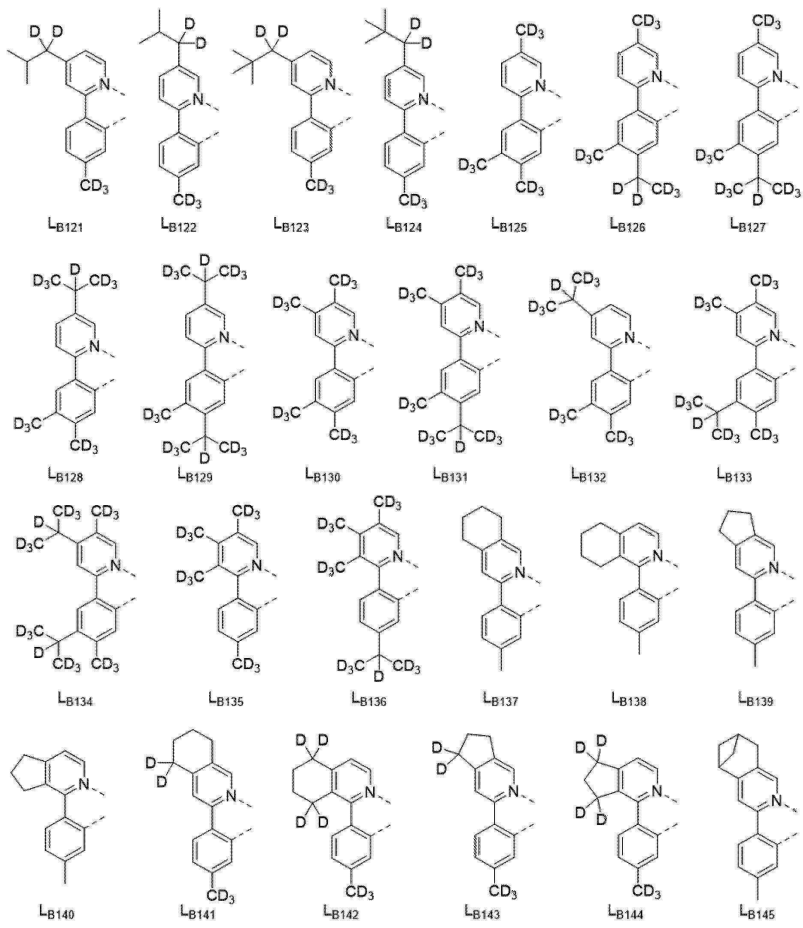


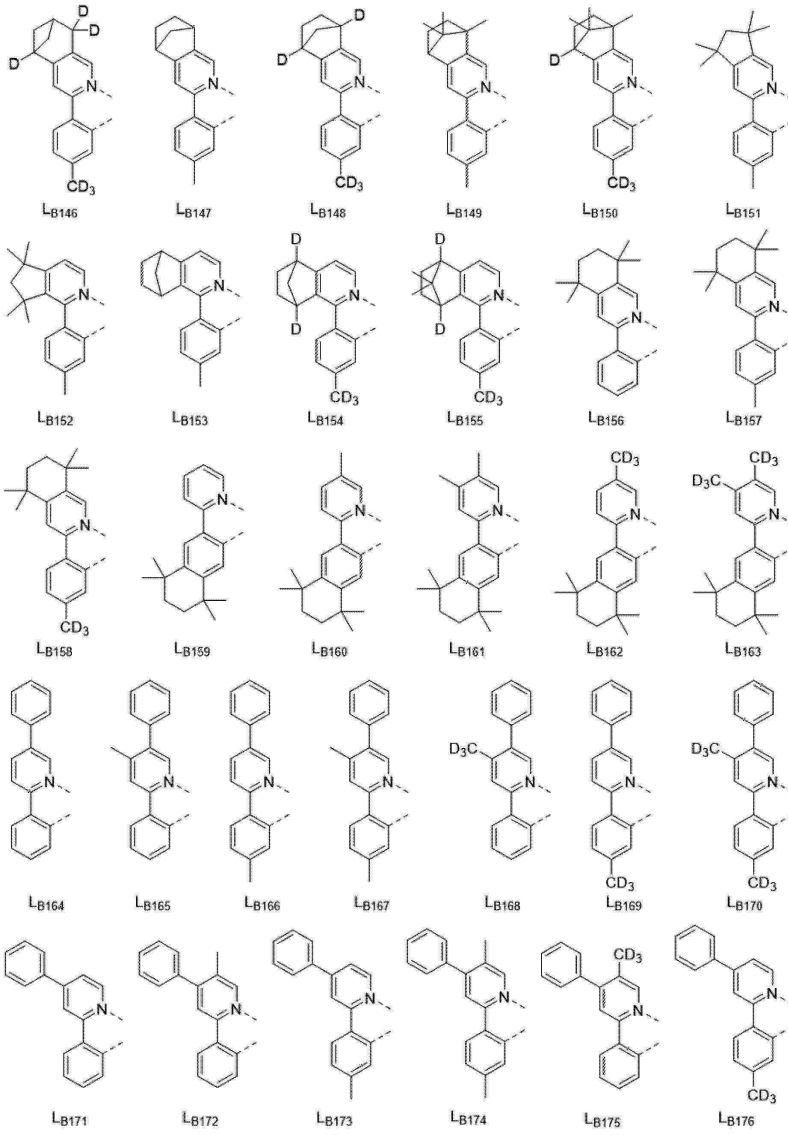


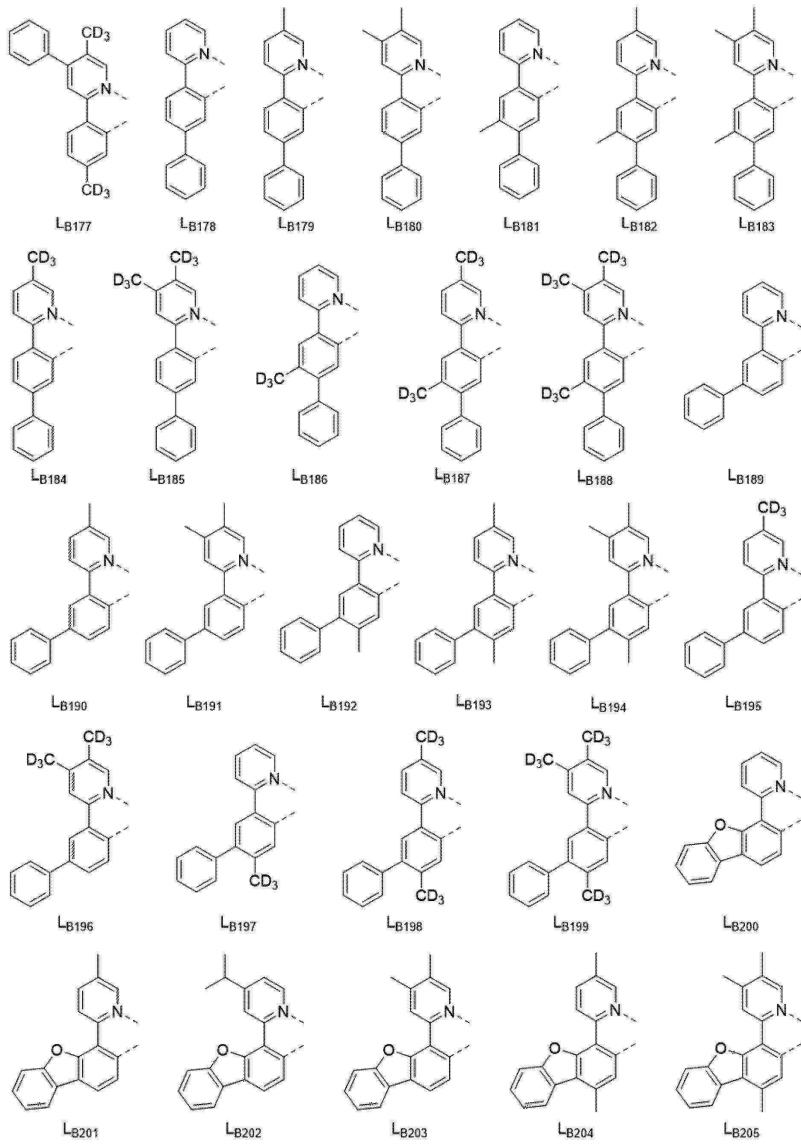


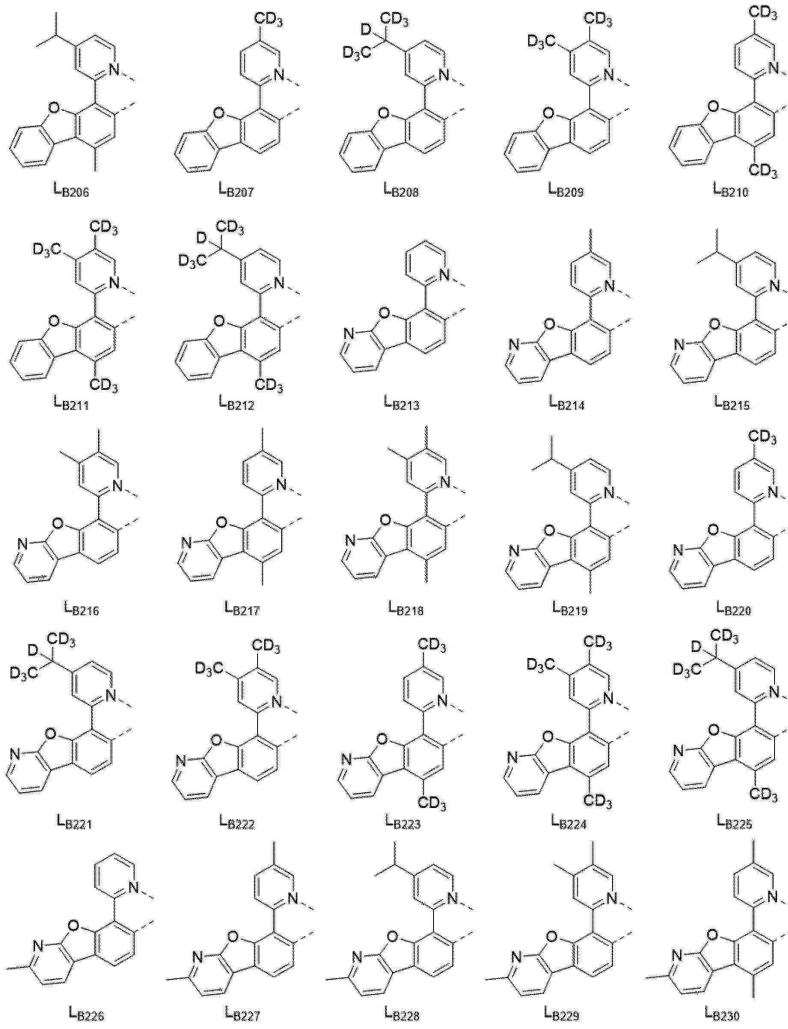


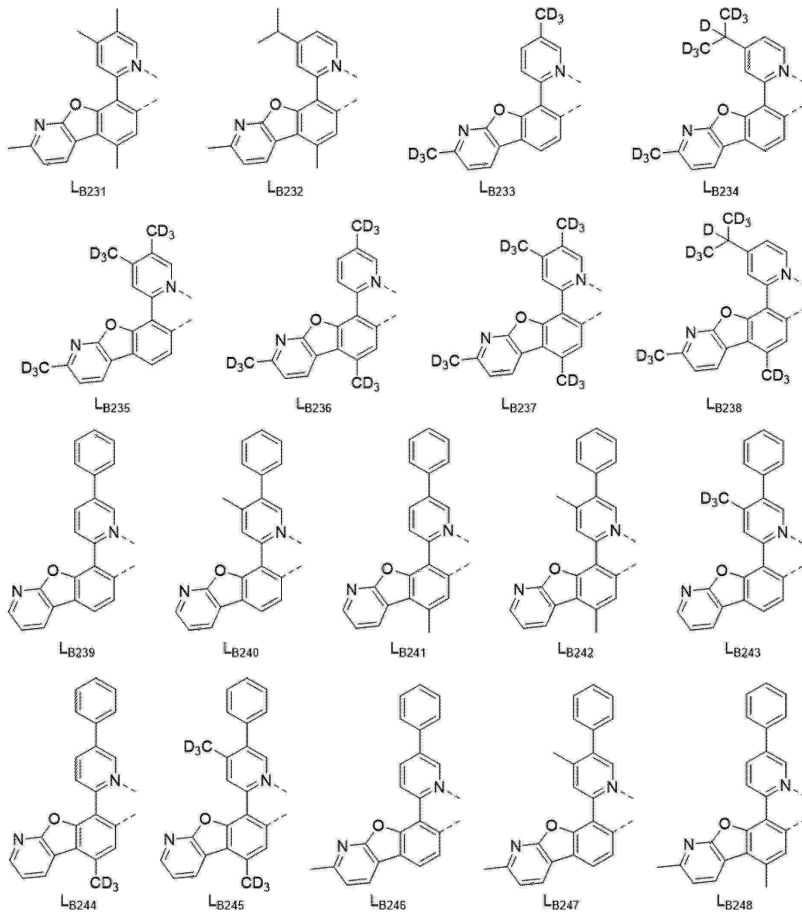


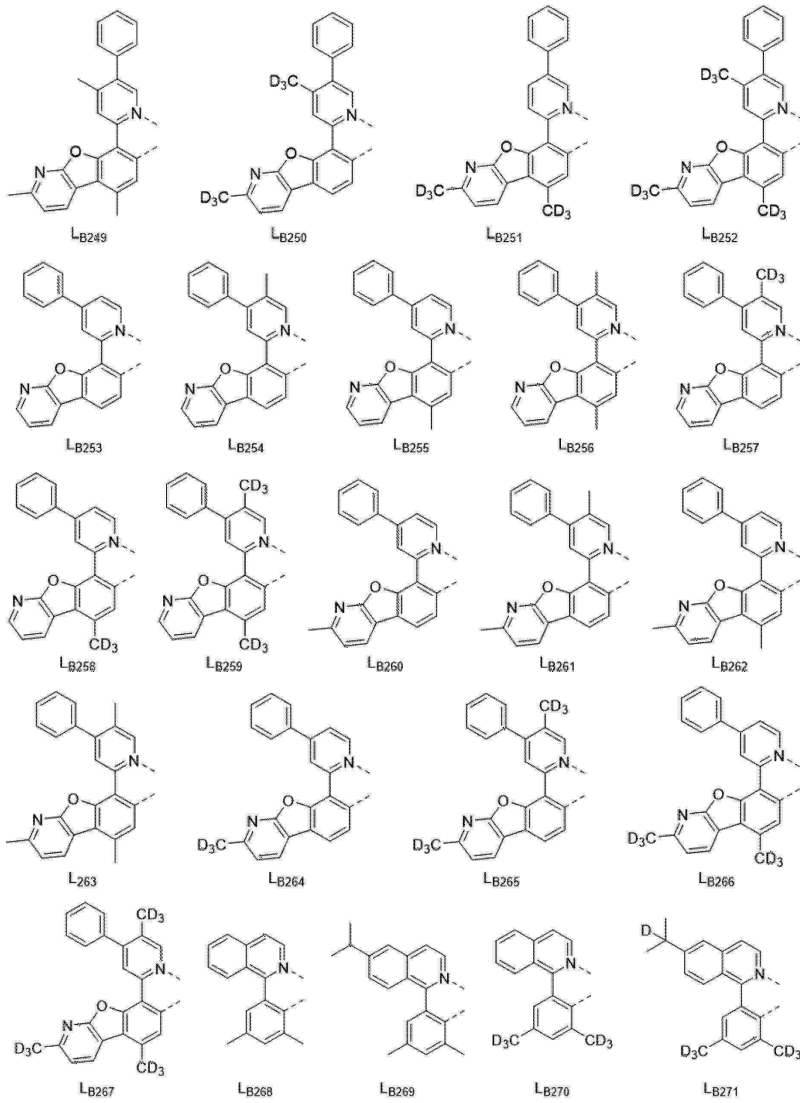




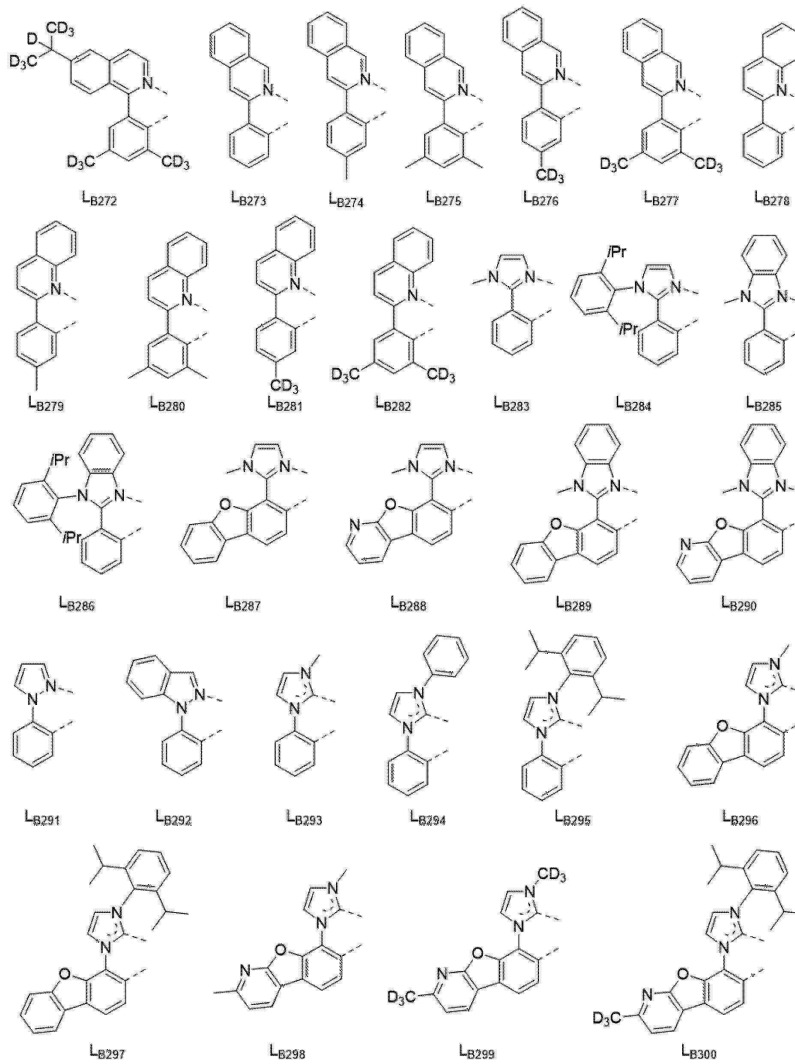






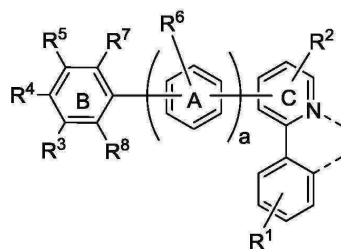






청구항 12

유기 발광 소자(OLED)에 사용하기 위한 인광 이미터로서, 하기 화학식을 갖는 리간드 L을 포함하는 화합물을 포함하는 인광 이미터:



상기 식에서,

R<sup>1</sup>은 일치환, 이치환, 삼치환 또는 사치환, 또는 비치환을 나타내고;

R<sup>2</sup>는 일치환, 이치환 또는 삼치환을 나타내고;

각각의 R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>7</sup>, 및 R<sup>8</sup>은 수소, 중수소, 할라이드, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알키닐, 아릴, 헤테로아릴, 카르복실산, 니트릴, 이소니트릴, 설파닐, 포스피노, 및 이의 조합으로 이루어진 군에서 독립적으로 선택되고;

R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>7</sup>, 및 R<sup>8</sup>의 임의의 인접 치환기는 임의의 연결 또는 축합되어 고리가 되고;

$R^3$ ,  $R^4$ , 및  $R^5$  중 하나 이상은 일부 또는 전부 중수소화된 알킬, 일부 또는 전부 중수소화된 시클로알킬, 및 이의 조합으로 이루어진 군에서 선택되고,

a는 0이고;

고리 B는 고리 C의 N에 대하여 파라 위치에서 고리 C와 결합되고;

하나 이상의  $R^2$ 가 고리 B에 인접하게 위치하고,

고리 B에 인접한 하나 이상의  $R^2$ 는 수소가 아니고,

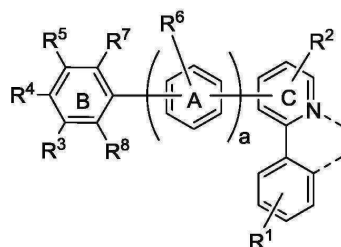
리간드 L은 Ir에 배위 결합되고;

리간드 L은 다른 리간드와 임의 연결되어 세자리, 네자리, 다섯자리 또는 여섯자리 리간드를 포함한다.

**청구항 13**

호스트 및 발광 도펀트를 포함하는 유기 발광층으로서,

발광 도펀트는 하기 화학식을 갖는 리간드 L을 포함하는 화합물을 포함하는 것인 유기 발광층:



상기 식에서,

$R^1$ 은 일치환, 이치환, 삼치환 또는 사치환, 또는 비치환을 나타내고;

$R^2$ 는 일치환, 이치환 또는 삼치환을 나타내고;

각각의  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^7$ , 및  $R^8$ 은 수소, 중수소, 할라이드, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알키닐, 아릴, 헤테로아릴, 카르복실산, 니트릴, 이소니트릴, 설파닐, 포스포노, 및 이의 조합으로 이루어진 군에서 독립적으로 선택되고;

$R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^7$ , 및  $R^8$ 의 임의의 인접 치환기는 임의 연결 또는 축합되어 고리가 되고;

$R^3$ ,  $R^4$ , 및  $R^5$  중 하나 이상은 일부 또는 전부 중수소화된 알킬, 일부 또는 전부 중수소화된 시클로알킬, 및 이의 조합으로 이루어진 군에서 선택되고,

a는 0이고;

고리 B는 고리 C의 N에 대하여 파라 위치에서 고리 C와 결합되고;

하나 이상의  $R^2$ 가 고리 B에 인접하게 위치하고,

고리 B에 인접한 하나 이상의  $R^2$ 는 수소가 아니고,

리간드 L은 Ir에 배위 결합되고;

리간드 L은 다른 리간드와 임의 연결되어 세자리, 네자리, 다섯자리 또는 여섯자리 리간드를 포함한다.

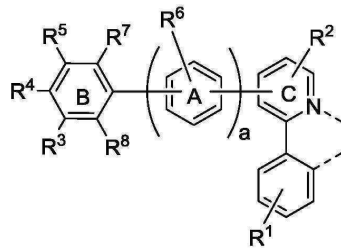
**청구항 14**

제13항에 있어서, 호스트는 트리페닐렌, 카르바졸, 디벤조티오펜, 디벤조푸란, 디벤조셀레노펜, 아자트리페닐렌, 아자카르바졸, 아자-디벤조티오펜, 아자-디벤조푸란, 및 아자-디벤조셀레노펜으로 이루어진 군

에서 선택된 하나 이상의 화학적 기를 포함하는 것인 유기 발광층.

**청구항 15**

하기 화학식을 갖는 리간드 L을 포함하는 화합물을 포함하는 배합물:



상기 식에서,

R<sup>1</sup>은 일치환, 이치환, 삼치환 또는 사치환, 또는 비치환을 나타내고;

R<sup>2</sup>는 일치환, 이치환 또는 삼치환을 나타내고;

각각의 R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>7</sup>, 및 R<sup>8</sup>은 수소, 중수소, 할라이드, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알키닐, 아릴, 헤테로아릴, 카르복실산, 니트릴, 이소니트릴, 설파닐, 포스피노, 및 이의 조합으로 이루어진 군에서 독립적으로 선택되고;

R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>7</sup>, 및 R<sup>8</sup>의 임의의 인접 치환기는 임의 연결 또는 축합되어 고리가 되고;

R<sup>3</sup>, R<sup>4</sup>, 및 R<sup>5</sup> 중 하나 이상은 일부 또는 전부 중수소화된 알킬, 일부 또는 전부 중수소화된 시클로알킬, 및 이의 조합으로 이루어진 군에서 선택되고,

a는 0이고;

고리 B는 고리 C의 N에 대하여 파라 위치에서 고리 C와 결합되고;

하나 이상의 R<sup>2</sup>가 고리 B에 인접하게 위치하고,

고리 B에 인접한 하나 이상의 R<sup>2</sup>는 수소가 아니고,

리간드 L은 Ir에 배위 결합되고;

리간드 L은 다른 리간드와 임의 연결되어 세자리, 네자리, 다섯자리 또는 여섯자리 리간드를 포함한다.

**발명의 설명**

**기술 분야**

[0001] **관련 출원의 상호 참조**

[0002] 본 출원은 미국 특허 출원의 연속 번호 제62/320,915호(2016년 4월 11일 출원)의 정규 출원 및 미국 특허 출원의 연속 번호 제62/368,518호(2016년 7월 29일 출원)의 정규 출원을 우선권으로 주장하며, 이의 전체 내용은 본원에 참고 인용된다.

[0003] **분야**

[0004] 본 발명은 이미터로서 사용하기 위한 화합물 및 이를 포함하는 소자, 예컨대 유기 발광 다이오드에 관한 것이다.

**배경 기술**

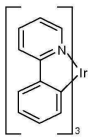
[0005] 유기 물질을 사용하는 광전자 소자는 여러 이유로 인하여 점차로 중요해지고 있다. 이와 같은 소자를 제조하는데 사용되는 다수의 물질은 비교적 저렴하여 유기 광전자 소자는 무기 소자에 비하여 경제적 잇점면에서 잠재성

을 갖는다. 또한, 유기 물질의 고유한 성질, 예컨대 이의 가요성은 가요성 기관상에서의 제조와 같은 특정 적용 예에 매우 적합하게 될 수 있다. 유기 광전자 소자의 예로는 유기 발광 소자(OLED), 유기 광트랜지스터, 유기 광전지 및 유기 광검출기를 들 수 있다. OLED의 경우, 유기 물질은 통상의 물질에 비하여 성능면에서의 잇점을 가질 수 있다. 예를 들면, 유기 발광층이 광을 방출하는 파장은 일반적으로 적절한 도펀트로 용이하게 조절될 수 있다.

[0006] OLED는 소자에 전압을 인가시 광을 방출하는 유기 박막을 사용하게 한다. OLED는 평면 패널 디스플레이, 조명 및 역광 조명과 같은 적용예에 사용하기 위한 점차로 중요해지는 기술이다. 여러가지의 OLED 물질 및 구조는 미국 특허 제5,844,363호, 제6,303,238호 및 제5,707,745호에 기재되어 있으며, 이들 특허 문헌은 그 전문이 본원에 참고로 포함된다.

[0007] 인광 방출 분자에 대한 하나의 적용예는 풀 컬러 디스플레이이다. 이러한 디스플레이에 대한 산업적 기준은 "포화" 색상으로서 지칭하는 특정 색상을 방출하도록 조정된 픽셀을 필요로 한다. 특히, 이러한 기준은 포화 적색, 녹색 및 청색 픽셀을 필요로 한다. 색상은 당업계에 공지된 CIE 좌표를 사용하여 측정될 수 있다.

[0008] 녹색 발광 분자의 일례로는 하기 화학식을 갖는 Ir(ppy)<sub>3</sub>으로 나타낸 트리스(2-페닐피리딘) 이리듐이다:



[0009] 본원에서의 이와 같은 화학식 및 하기의 화학식에서, 본 출원인은 질소로부터 금속(여기에서는 Ir)으로의 배위 결합을 직선으로 도시한다.

[0011] 본원에서, 용어 "유기"라는 것은 유기 광전자 소자를 제조하는데 사용될 수 있는 중합체 물질뿐 아니라, 소분자 유기 물질을 포함한다. "소분자"는 중합체가 아닌 임의의 유기 물질을 지칭하며, "소분자"는 실제로 꽤 클 수도 있다. 소분자는 일부의 상황에서는 반복 단위를 포함할 수 있다. 예를 들면, 치환기로서 장쇄 알킬 기를 사용하는 것은 "소분자" 부류로부터 분자를 제거하지 않는다. 소분자는 또한 예를 들면 중합체 주쇄상에서의 측쇄기로서 또는 주쇄의 일부로서 중합체에 혼입될 수 있다. 소분자는 또한 코어 모이어티 상에 생성된 일련의 화학적 셀로 이루어진 덴드리머의 코어 모이어티로서 작용할 수 있다. 덴드리머의 코어 모이어티는 형광 또는 인광 소분자 이미터일 수 있다. 덴드리머는 "소분자"일 수 있으며, OLED 분야에서 통상적으로 사용되는 모든 덴드리머는 소분자인 것으로 밝혀졌다.

[0012] 본원에서 사용한 바와 같이, "상부"는 기관으로부터 가장 멀리 떨어져 있다는 것을 의미하며, "하부"는 기관에 가장 근접하다는 것을 의미한다. 제1층이 제2층의 상부에 배치되는" 것으로 기재될 경우, 제1층은 기관으로부터 멀리 떨어져 배치된다. 제1층이 제2층과 "접촉되어 있는" 것으로 명시되지 않는다면 제1층과 제2층 사이에는 다른 층이 존재할 수 있다. 예를 들면, 캐소드와 애노드의 사이에 다양한 유기층이 존재할 수 있을지라도, 캐소드는 애노드"의 상부에 배치되는" 것으로 기재될 수 있다.

[0013] 본원에서 사용한 바와 같이, "용액 가공성"은 용액 또는 현탁액 형태로 액체 매체에 용해, 분산 또는 수송될 수 있거나 및/또는 액체 매체로부터 증착될 수 있다는 것을 의미한다.

[0014] 리간드가 발광 물질의 광활성 성질에 직접적으로 기여하는 것으로 밝혀질 경우, 리간드는 "광활성"으로서 지칭될 수 있다. 보조적 리간드가 광활성 리간드의 성질을 변경시킬 수 있을지라도, 리간드가 발광 물질의 광활성 성질에 기여하지 않는 것으로 밝혀질 경우, 리간드는 "보조적"인 것으로 지칭될 수 있다.

[0015] 본원에서 사용한 바와 같이 그리고 일반적으로 당업자가 이해하고 있는 바와 같이, 제1의 "최고 점유 분자 궤도"(HOMO) 또는 "최저 비점유 분자 궤도"(LUMO) 에너지 준위가 진공 에너지 준위에 근접할 경우, 제1의 에너지 준위는 제2의 HOMO 또는 LUMO보다 "더 크거나" 또는 "더 높다". 이온화 전위(IP)가 진공 준위에 대하여 음의 에너지로서 측정되므로, 더 높은 HOMO 에너지 준위는 더 작은 절대값을 갖는 IP에 해당한다(IP는 음의 값이 더 작다). 유사하게, 더 높은 LUMO 에너지 준위는 절대값이 더 작은 전자 친화도(EA)에 해당한다(EA의 음의 값이 더 작다). 상부에서의 진공 준위를 갖는 통상의 에너지 준위 다이어그램에서, 물질의 LUMO 에너지 준위는 동일한 물질의 HOMO 에너지 준위보다 더 높다. "더 높은" HOMO 또는 LUMO 에너지 준위는 "더 낮은" HOMO 또는 LUMO 에너지 준위보다 상기 다이어그램의 상부에 더 근접한다는 것을 나타낸다.

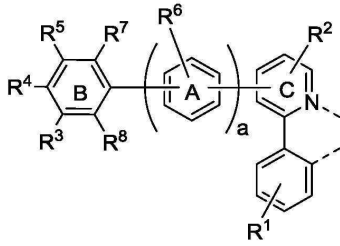
[0016] 본원에서 사용한 바와 같이 그리고 일반적으로 당업자가 이해하는 바와 같이, 제1의 일 함수의 절대값이 더 클

경우, 제1의 일 함수는 제2의 일 함수보다 "더 크거나" 또는 "더 높다". 일 함수는 일반적으로 진공 준위에 대하여 음의 수로서 측정되므로, 이는 "더 높은" 일 함수의 음의 값이 더 크다는 것을 의미한다. 상부에서 진공 준위를 갖는 통상의 에너지 준위 다이어그램에서, "더 높은" 일 함수는 진공 준위로부터 아래 방향으로 더 먼 것으로서 도시된다. 그래서, HOMO 및 LUMO 에너지 준위의 정의는 일 함수와는 상이한 조약을 따른다.

[0017] OLED에 대한 세부사항 및 기술한 정의는 미국 특허 제7,279,704호에서 찾아볼 수 있으며, 이 특허 문헌의 개시 내용은 그 전문이 본원에 참고로 포함된다.

**발명의 내용**

[0018] 구체예에 따르면, 하기 화학식 I을 갖는 리간드 L을 포함하는 화합물을 제공한다:



[0019] . 상기 화학식 I의 구조에서,

[0020] R<sup>1</sup> 및 R<sup>6</sup>은 일치환, 이치환, 삼치환 또는 사치환, 또는 비치환을 나타내고;

[0021] R<sup>2</sup>는 일치환, 이치환 또는 삼치환, 또는 비치환을 나타내고;

[0022] 각각의 R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, 및 R<sup>8</sup>은 수소, 중수소, 할라이드, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알키닐, 아릴, 헤테로아릴, 아실, 카르보닐, 카르복실산, 에스테르, 니트릴, 이소니트릴, 설파닐, 설피닐, 설포닐, 포스피노, 및 이의 조합으로 이루어진 군에서 독립적으로 선택되고;

[0023] R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, 및 R<sup>8</sup>의 임의의 인접 치환기는 임의의 연결 또는 축합되어 고리가 되고;

[0024] R<sup>3</sup>, R<sup>4</sup>, 및 R<sup>5</sup> 중 하나 이상은 수소가 아니고;

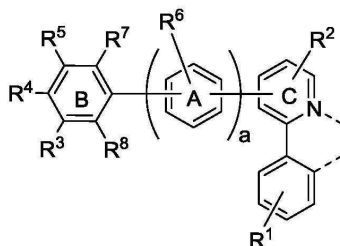
[0025] a는 0~10의 정수이고;

[0026] (i) a가 0인 경우, R<sup>7</sup>, R<sup>8</sup>, 및 고리 B에 인접한 R<sup>2</sup> 중 하나 이상은 수소가 아니고, (ii) a가 1~10인 경우, 고리 A에 인접한 R<sup>2</sup> 및 고리 C에 인접한 R<sup>6</sup> 중 하나 이상은 수소가 아니고;

[0027] 리간드 L은 원자량이 40을 초과하는 금속 M에 배위 결합되고;

[0028] 리간드 L은 다른 리간드와 임의의 연결되어 세자리, 네자리, 다섯자리 또는 여섯자리 리간드를 포함한다.

[0029] 또다른 구체예에 따르면, 유기 발광 다이오드/소자(OLED)가 또한 제공된다. OLED는 애노드, 캐소드, 및 애노드와 캐소드 사이에 배치된 유기층을 포함할 수 있다. 유기층은 하기 화학식 I을 갖는 리간드 L을 포함하는 화합물을 포함할 수 있다:



[0030] . 또다른 구체예에 따르면, 유기 발광 소자는 소비자 제품, 전자 부품 모듈, 및 /또는 조명 패널에서 선택된 하나 이상의 소자에 통합된다.

[0031] 또다른 구체예에 따르면, 하기 화학식을 갖는 리간드 L을 포함하는 화합물을 함유하는 조제물이 제공된다:





- [0039] 도 2에는 역전된 OLED(200)가 도시된다. 소자는 기관(210), 캐소드(215), 발광층(220), 정공 수송층(225) 및 애노드(230)를 포함한다. 소자(200)는 기재된 순서로 층을 적층시켜 제조될 수 있다. 가장 흔한 OLED 구조는 애노드의 위에 캐소드가 배치되어 있고 소자(200)가 애노드(230)의 아래에 캐소드(215)가 배치되어 있으므로, 소자(200)는 "역전된" OLED로 지칭될 수 있다. 소자(100)에 관하여 기재된 것과 유사한 물질이 소자(200)의 해당 층에 사용될 수 있다. 도 2는 소자(100)의 구조로부터 일부 층이 얼마나 생략될 수 있는지의 일례를 제공한다.
- [0040] 도 1 및 도 2에 도시된 단순 적층된 구조는 비제한적인 예로서 제공하며, 본 발명의 구체예는 다양한 기타의 구조와 관련하여 사용될 수 있는 것으로 이해하여야 한다. 기재된 특정한 물질 및 구조는 사실상 예시를 위한 것이며, 기타의 물질 및 구조도 사용될 수 있다. 작용성 OLED는 기재된 다양한 층을 상이한 방식으로 조합하여 달성될 수 있거나 또는 층은 디자인, 성능 및 비용 요인에 기초하여 전적으로 생략할 수 있다. 구체적으로 기재되지 않은 기타의 층도 또한 포함될 수 있다. 이들 구체적으로 기재된 층을 제외한 물질을 사용할 수 있다. 본원에 제공된 다수의 예가 단일 물질을 포함하는 것으로서 다양한 층을 기재하기는 하나, 물질, 예컨대 호스트 및 도펀트의 혼합물 또는 보다 일반적으로 혼합물을 사용할 수 있다. 또한, 층은 다수의 하부층을 가질 수 있다. 본원에서 다양한 층에 제시된 명칭은 엄격하게 제한하고자 하는 것은 아니다. 예를 들면, 소자(200)에서 정공 수송층(225)은 정공을 수송하며, 정공을 발광층(220)에 주입하며, 정공 수송층 또는 정공 주입층으로서 기재될 수 있다. 하나의 구체예에서, OLED는 캐소드와 애노드 사이에 배치된 "유기층"을 갖는 것으로 기재될 수 있다. 이러한 유기층은 단일층을 포함할 수 있거나 또는 예를 들면 도 1 및 도 2와 관련하여 기재된 바와 같은 상이한 유기 물질의 복수의 층을 더 포함할 수 있다.
- [0041] 구체적으로 기재하지 않은 구조 및 물질, 예컨대 미국 특허 제5,247,190호(Friend 등)에 기재된 바와 같은 중합체 물질(PLED)을 포함하는 OLED를 사용할 수 있으며, 이 특허 문헌은 그 전문이 본원에 참고로 포함된다. 추가의 예로서, 단일 유기층을 갖는 OLED를 사용할 수 있다. OLED는 예를 들면 미국 특허 제5,707,745호(Forrest 등)에 기재된 바와 같이 적층될 수 있으며, 이 특허 문헌은 그 전문이 본원에 참고로 포함된다. OLED 구조는 도 1 및 도 2에 도시된 단순 적층된 구조로부터 벗어날 수 있다. 예를 들면, 기관은 미국 특허 제6,091,195호(Forrest 등)에 기재된 바와 같은 메사형(mesa) 구조 및/또는 미국 특허 제5,834,893호(Bulovic 등)에 기재된 피트형(pit) 구조와 같은 아웃-커플링(out-coupling)을 개선시키기 위한 각진 반사면을 포함할 수 있으며, 이들 특허 문헌은 그 전문이 본원에 참고로 포함된다.
- [0042] 반대의 의미로 명시하지 않는 한, 다양한 구체예의 임의의 층은 임의의 적절한 방법에 의하여 적층될 수 있다. 유기층의 경우, 바람직한 방법으로는 미국 특허 제6,013,982호 및 제6,087,196호(이 특허 문헌은 그 전문이 본원에 참고로 포함됨)에 기재된 바와 같은 열 증발, 잉크-젯, 미국 특허 제6,337,102호(Forrest 등)(이 특허 문헌은 그 전문이 본원에 참고로 포함됨)에 기재된 바와 같은 유기 증기상 증착(OVPD), 미국 특허 제7,431,968호(이 특허 문헌은 그 전문이 본원에 참고로 포함됨)에 기재된 바와 같은 유기 증기 제트 프린팅(OVJP)에 의한 증착을 들 수 있다. 기타의 적절한 증착 방법은 스�핀 코팅 및 기타의 용액계 공정을 포함한다. 용액계 공정은 질소 또는 불활성 분위기 중에서 실시되는 것이 바람직하다. 기타의 층의 경우, 바람직한 방법은 열 증발을 포함한다. 바람직한 패턴 형성 방법은 마스크를 통한 증착, 미국 특허 제6,294,398호 및 제6,468,819호(이 특허 문헌은 그 전문이 본원에 참고로 포함됨)에 기재된 바와 같은 냉간 용접 및, 잉크-젯 및 OVJD와 같은 일부 증착 방법과 관련된 패턴 형성을 포함한다. 증착시키고자 하는 물질은 특정한 증착 방법과 상용성을 갖도록 변형될 수 있다. 예를 들면, 분지형 또는 비분지형, 바람직하게는 3개 이상의 탄소를 포함하는 알킬 및 아릴 기와 같은 치환기는 이의 용액 가공의 처리 능력을 향상시키기 위하여 소분자에 사용될 수 있다. 20개 이상의 탄소를 갖는 치환기를 사용할 수 있으며, 3 내지 20개의 탄소가 바람직한 범위이다. 비대칭 구조를 갖는 물질은 대칭 구조를 갖는 것보다 더 우수한 용액 가공성을 가질 수 있는데, 비대칭 물질은 재결정화되는 경향이 낮을 수 있기 때문이다. 텐드러머 치환기는 용액 가공을 처리하는 소분자의 능력을 향상시키기 위하여 사용될 수 있다.
- [0043] 본 발명의 구체예에 의하여 제조된 소자는 차단층을 추가로 임의로 포함할 수 있다. 차단층의 하나의 목적은 전극 및 유기층이 수분, 증기 및/또는 기체 등을 포함하는 환경에서 유해한 종에 대한 노출로 인하여 손상되지 않도록 한다. 차단층은 기관의 위에서, 기관의 아래에서 또는 기관의 옆에서, 전극 또는, 옅지를 포함하는 소자의 임의의 기타 부분의 위에서 증착될 수 있다. 차단층은 단일층 또는 다중층을 포함할 수 있다. 차단층은 각종 공지의 화학적 증착 기법에 의하여 형성될 수 있으며 복수의 상을 갖는 조성물뿐 아니라 단일 상을 갖는 조성물을 포함할 수 있다. 임의의 적절한 물질 또는 물질의 조합을 차단층에 사용할 수 있다. 차단층은 무기 또는 유기 화합물 또는 둘다를 혼입할 수 있다. 바람직한 차단층은 미국 특허 제7,968,146호, PCT 특허 출원 번호 PCT/US2007/023098 및 PCT/US2009/042829에 기재된 바와 같은 중합체 물질 및 비-중합체 물질의 혼합물을 포함하며, 이들 문헌의 개시내용은 본원에 그 전문이 참고로 포함된다. "혼합물"을 고려하면, 차단층을 포함하는 전

술한 중합체 및 비-중합체 물질은 동일한 반응 조건하에서 및/또는 동일한 시간에서 증착되어야만 한다. 중합체 대 비-중합체 물질의 중량비는 95:5 내지 5:95 범위내일 수 있다. 중합체 및 비-중합체 물질은 동일한 전구체 물질로부터 생성될 수 있다. 한 예에서, 중합체 및 비-중합체 물질의 혼합물은 본질적으로 중합체 규소 및 무기 규소로 이루어진다.

- [0044] 본 발명의 구체예에 따라 제작되는 소자는 다양한 전자 제품 또는 중간 부품에 투입될 수 있는 광범위한 전자 부품 모듈 (또는 유닛)에 투입될 수 있다. 상기 전자 제품 또는 중간 부품의 예는 최종 사용자 제품 제조자에 의해 이용될 수 있는 디스플레이 스크린, 개별 광원 소자 또는 조명 패널과 같은 조명 소자 등을 포함한다. 상기 전자 부품 모듈은 경우에 따라 구동 전자장치 및/또는 전력원(들)을 포함할 수 있다. 본 발명의 구체예에 따라 제작되는 소자는 내부에 투입되는 하나 이상의 전자 부품 모듈 (또는 유닛)을 갖는 광범위하게 다양한 소비자 제품에 투입될 수 있다. 상기 소비자 제품은 하나 이상의 광원(들) 및/또는 일부 유형의 영상 디스플레이 중 하나 이상을 포함하는 임의 유형의 제품을 포함한다. 상기 소비자 제품의 일부 예는 평면 패널 디스플레이, 컴퓨터 모니터, 의료용 모니터, 텔레비전, 광고판, 실내 또는 실외 조명 및/또는 신호용 라이트, 헤드업 디스플레이, 완전 또는 부분 투명 디스플레이, 플렉시블 디스플레이, 레이저 프린터, 전화기, 휴대폰, 태블릿, 패블릿, 개인용 정보 단말기(PDA), 웨어러블 디바이스, 랩탑 컴퓨터, 디지털 카메라, 캠코더, 뷰파인더, 마이크로디스플레이(대각선 2 인치 미만인 디스플레이), 3-D 디스플레이, 가상 현실 또는 증강 현실 디스플레이, 차량, 함께 타일화된 다중 디스플레이를 포함한 비디오 벽, 극장 또는 스타디움 스크린 또는 간판을 포함한다. 패시브 매트릭스 및 액티브 매트릭스를 비롯한 다양한 조절 메커니즘을 사용하여 본 발명에 의한 소자를 조절할 수 있다. 다수의 소자는 사람에게 안락감을 주는 온도 범위, 예컨대 18°C 내지 30°C, 더욱 바람직하게는 실온(20°C 내지 25°C)에서 사용하고자 하지만, 상기 온도 범위 밖의 온도, 예컨대 -40°C 내지 +80°C에서도 사용될 수 있다.
- [0045] 본원에 기재된 물질 및 구조는 OLED를 제외한 소자에서의 적용예를 가질 수 있다. 예를 들면, 기타의 광전자 소자, 예컨대 유기 태양 전지 및 유기 광검출기는 물질 및 구조를 사용할 수 있다. 보다 일반적으로, 유기 소자, 예컨대 유기 트랜지스터는 물질 및 구조를 사용할 수 있다.
- [0046] 본원에서 사용될 때 "할로", "할로젠" 또는 "할라이드"는 불소, 염소, 브롬 및 요오드를 포함한다.
- [0047] 본원에서 사용될 때 "알킬"은 직쇄 또는 분지쇄 알킬 라디칼을 모두 의미한다. 바람직한 알킬기는 1~15 개의 탄소 원자를 함유하는 것으로서, 메틸, 에틸, 프로필, 이소프로필, 부틸, 이소부틸, tert-부틸 등을 포함한다. 추가로, 알킬기는 임의 치환될 수 있다.
- [0048] 본원에서 사용될 때 "시클로알킬"은 시클릭 알킬 라디칼을 의미한다. 바람직한 시클로알킬기는 3~7 개의 탄소 원자를 함유하는 것으로서, 시클로프로필, 시클로헥실 등을 포함한다. 추가로, 시클로알킬기는 임의 치환될 수 있다.
- [0049] 본원에서 사용될 때 "알케닐"은 직쇄 및 분지쇄 알켄 라디칼을 모두 의미한다. 바람직한 알케닐기는 2~15 개의 탄소 원자를 함유하는 것이다. 추가로, 알케닐기는 임의 치환될 수 있다.
- [0050] 본원에서 사용될 때 "알킬닐"은 직쇄 및 분지쇄 알킨 라디칼을 모두 의미한다. 바람직한 알킬닐기는 2~15 개의 탄소 원자를 함유하는 것이다. 추가로, 알킬닐기는 임의 치환될 수 있다.
- [0051] 본원에서 사용될 때 "아르알킬" 또는 "아릴알킬"은 상호 혼용되며 치환기로서 방향족 기를 갖는 알킬기를 의미한다. 추가로, 알킬아릴기는 임의 치환될 수 있다.
- [0052] 본원에서 사용될 때 "헤테로시클릭 기"는 방향족 및 비방향족 시클릭 라디칼이 고려된다. 헤테로-방향족 시클릭 라디칼은 또한 헤테로아릴을 의미한다. 바람직한 헤테로-비방향족 시클릭 기는 하나 이상의 헤테로 원자를 포함하고 모르폴리노, 피페리디노, 피롤리디노 등과 같은 시클릭 아민 및 테트라히드로푸란, 테트라히드로피란 등과 같은 시클릭 에테르를 포함하는 3 또는 7개의 고리 원자를 함유하는 것들이다. 추가로, 헤테로시클릭 기는 임의 치환될 수 있다.
- [0053] 본원에서 사용될 때 "아릴" 또는 "방향족 기"는 단일 고리 기 및 폴리시클릭 고리계가 고려된다. 폴리시클릭 고리는 2개의 탄소가 두 인접 고리에 공통인 2개 이상의 고리("축합" 고리)를 가질 수 있으며, 고리들 중 하나 이상은 예컨대 방향족이고, 다른 고리들은 시클로알킬, 시클로알케닐, 아릴, 헤테로사이클 및/또는 헤테로아릴일 수 있다. 바람직한 아릴기는 6 내지 30개의 탄소 원자, 바람직하게는 6 내지 20개의 탄소 원자, 더 바람직하게는 6 내지 12개의 탄소 원자를 함유하는 것들이다. 6개의 탄소, 10개의 탄소 또는 12개의 탄소를 가진 아릴 기가 특히 바람직하다. 적합한 아릴 기는 페닐, 비페닐, 트리페닐, 트리페닐렌, 테트라페닐렌, 나프탈렌, 안트라센, 페날렌, 페난트렌, 플루오렌, 피렌, 크리센, 페릴렌, 및 아줄렌, 바람직하게는 페닐, 비페닐, 트리페닐, 트



리페닐렌, 플루오렌, 및 나프탈렌을 포함한다. 추가로, 아릴 기는 임의 치환될 수 있다.

[0054] 본원에서 사용된 용어 "헤테로아릴"은 1 내지 5개의 헤테로원자를 포함할 수 있는 단일-고리 헤테로-방향족 기를 포함한다. 용어 헤테로아릴은 또한 2개의 원자가 두 인접 고리에 공통인 2 이상의 고리("축합" 고리)를 갖는 폴리시클릭 헤테로방향족계를 포함하며, 여기서, 고리들 중 하나 이상은 예컨대 헤테로아릴이고, 다른 고리들은 시클로알킬, 시클로알케닐, 아릴, 헤테로사이클 및/또는 헤테로아릴일 수 있다. 바람직한 헤테로아릴기는 3 내지 30개의 탄소 원자, 바람직하게는 3 내지 20개의 탄소 원자, 더 바람직하게는 3 내지 12개의 탄소 원자를 함유하는 것들이다. 적합한 헤테로아릴기는 디벤조티오펜, 디벤조퓨란, 디벤조셀레노펜, 퓨란, 티오펜, 벤조퓨란, 벤조티오펜, 벤조셀레노펜, 카바졸, 인돌로카바졸, 피리딘인돌, 피롤로디피리딘, 피라졸, 이미다졸, 트리아졸, 옥사졸, 티아졸, 옥사디아졸, 옥사트리아졸, 디옥사졸, 티아디아졸, 피리딘, 피리다진, 피리미딘, 피라진, 트리아진, 옥사진, 옥사티아진, 옥사디아진, 인돌, 벤즈이미다졸, 인다졸, 인독사진, 벤족사졸, 벤즈이속사졸, 벤조티아졸, 퀴놀린, 이소퀴놀린, 신놀린, 퀴나졸린, 퀴녹살린, 나프티리딘, 프탈라진, 프테리딘, 크산텐, 아크리딘, 페나진, 페노티아진, 페녹사진, 벤조푸로피리딘, 푸로디피리딘, 벤조티에노피리딘, 티에노디피리딘, 벤조셀레노페노피리딘, 및 셀레노페노디피리딘, 바람직하게는 디벤조티오펜, 디벤조퓨란, 디벤조셀레노펜, 카바졸, 인돌로카바졸, 이미다졸, 피리딘, 트리아진, 벤즈이미다졸, 1,2-아자보린, 1,3-아자보린, 1,4-아자보린, 보라진 및 이의 아자-유사체를 포함한다. 추가로, 헤테로아릴 기는 임의 치환될 수 있다.

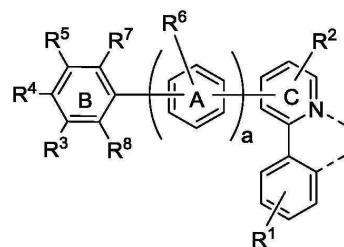
[0055] 알킬, 시클로알킬, 알케닐, 알키닐, 아르알킬, 헤테로시클릭 기, 아릴, 및 헤테로아릴은 비치환될 수 있거나, 또는 중수소, 할로젠, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 시클릭 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알키닐, 아릴, 헤테로아릴, 아실, 카르보닐, 카르복실산, 에테르, 에스테르, 니트릴, 이소니트릴, 설파닐, 설피닐, 설포닐, 포스포노 및 이의 조합으로 이루어진 군으로부터 선택된 하나 이상의 치환기로 치환될 수 있다.

[0056] 본원에서 사용된 "치환된"은 H 이외의 치환기가 관련 위치, 예컨대 탄소에 결합됨을 나타낸다. 따라서, 예를 들어, R<sup>1</sup>이 단일 치환되는 경우, 하나의 R<sup>1</sup>은 H 이외의 것이어야 한다. 유사하게, R<sup>1</sup>이 이치환된 경우, R<sup>1</sup> 중 2개는 H 이외의 것이어야 한다. 유사하게, R<sup>1</sup>이 비치환된 경우, R<sup>1</sup>은 모든 가능한 위치에 대하여 수소이다.

[0057] 본원에 기술된 분절, 즉 아자-디벤조퓨란, 아자-디벤조티오펜 등에서 "아자" 표기는 각각의 분절에서의 C-H 기 중 하나 이상이 질소 원자로 치환될 수 있다는 것을 의미하며, 예를 들면(이에 한정되지 않음) 아자트리페닐렌은 디벤조[f,h]퀴녹살린 및 디벤조[f,h]퀴놀린 모두를 포함한다. 당업자는 상기 기술된 아자-유도체의 기타 질소 유사체를 용이하게 고려할 수 있으며, 상기 모든 유사체는 본원에 기술된 용어를 포괄하는 것으로 간주된다.

[0058] 당업자라면 분자 분절이 치환기인 것으로 기술되거나 그렇지 않은 경우 또다른 모이어티에 결합될 때 이의 명칭은 분절(예, 페닐, 페닐렌, 나프틸, 디벤조퓨릴)인 것처럼 또는 전체 분자(예, 벤젠, 나프탈렌, 디벤조퓨란)인 것처럼 기재될 수 있다는 것을 이해할 것이다. 본원에 사용된 바와 같이, 이러한 치환기 또는 결합된 분절의 상이한 표기 방식은 동일한 것으로 간주된다.

[0059] 일 구체예에 따르면, 하기 화학식 I을 갖는 리간드 L을 포함하는 화합물이 기술된다:



. 상기 화학식 I의 구조에서,

[0061] R<sup>1</sup> 및 R<sup>6</sup>은 일치환, 이치환, 삼치환 또는 사치환, 또는 비치환을 나타내고;

[0062] R<sup>2</sup>는 일치환, 이치환 또는 삼치환, 또는 비치환을 나타내고;

[0063] 각각의 R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, 및 R<sup>8</sup>은 수소, 중수소, 할라이드, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알키닐, 아릴, 헤테로아릴, 아실, 카르보닐, 카르복실산, 에스테르, 니트릴, 이소니트릴, 설파닐, 설피닐, 설포닐, 포스포노, 및 이의 조합으로 이루어

어진 군에서 독립적으로 선택되고;

[0064]  $R^1, R^2, R^3, R^4, R^5, R^6, R^7$ , 및  $R^8$ 의 임의의 인접 치환기는 임의의 연결 또는 축합되어 고리가 되고;

[0065]  $R^3, R^4$ , 및  $R^5$  중 하나 이상은 수소가 아니고;

[0066] a는 0~10의 정수이고;

[0067] (i) a가 0인 경우,  $R^7, R^8$ , 및 고리 B에 인접한  $R^2$  중 하나 이상은 수소가 아니고, (ii) a가 1~10인 경우, 고리 A에 인접한  $R^2$  및 고리 C에 인접한  $R^6$  중 하나 이상은 수소가 아니고;

[0068] 리간드 L은 원자량이 40을 초과하는 금속 M에 배위 결합되고;

[0069] 리간드 L은 다른 리간드와 임의의 연결되어 세자리, 네자리, 다섯자리 또는 여섯자리 리간드를 포함한다.

[0070] 일부 구체예에서, 고리 A는 고리 C의 N에 대하여 파라 위치에서 고리 C에 결합된다. 일부 구체예에서, 고리 A는 고리 C의 N에 대하여 메타 위치로서 고리 C에 결합된다. 일부 구체예에서, 고리 B는 고리 C의 N에 대하여 파라 위치에서 고리 C에 결합되거나, 또는 고리 B는 고리 C에 대하여 파라 위치에서 인접 고리 A에, 또는 인접 고리 A에 결합된다. 일부 구체예에서, 고리 B는 고리 C의 N에 대하여 메타 위치에서 고리 C에 결합되거나, 또는 고리 B는 고리 C에 대하여 메타 위치에서 인접 고리 A에, 또는 인접 고리 A에 결합된다.

[0071] 일부 구체예에서, M은 Ir, Rh, Re, Ru, Os, Pt, Au, 및 Cu로 이루어진 군에서 선택된다. 일부 구체예에서, M은 Ir 또는 Pt이다.

[0072] 일부 구체예에서, 화합물은 동종리간드이다. 다른 구체예에서, 화합물은 이종리간드이다.

[0073] 일부 구체예에서, (i) a가 0인 경우,  $R^7, R^8$ , 및 고리 B에 인접한  $R^2$  중 하나 이상은 알킬, 시클로알킬, 일부 또는 전부 중수소화된 이의 변형체, 및 이의 조합으로 이루어진 군에서 선택되고, (ii) a가 1~10인 경우, 고리 A에 인접한  $R^2$  및 고리 C에 인접한  $R^6$  중 하나 이상은 알킬, 시클로알킬, 일부 또는 전부 중수소화된 이의 변형체, 및 이의 조합으로 이루어진 군에서 선택된다.

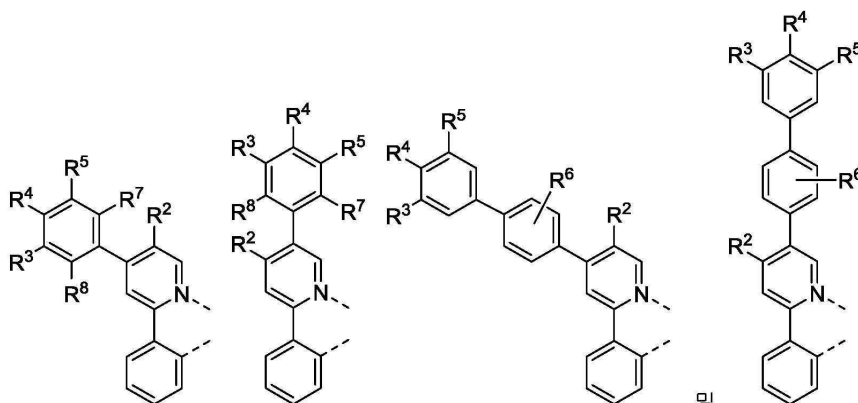
[0074] 일부 구체예에서,  $R^3, R^4$ , 및  $R^5$  중 하나 이상은 알킬, 시클로알킬, 플루오르, 일부 또는 전부 중수소화된 이의 변형체, 및 이의 조합으로 이루어진 군에서 선택된다.

[0075] 일부 구체예에서,  $R^1$ 은 수소이다.

[0076] 일부 구체예에서, (i) a가 0인 경우, 고리 B에 인접한 하나 이상의  $R^2$ 는 수소가 아니고,  $R^7$  및  $R^8$  중 하나 이상은 수소가 아니고, (ii) a가 1~10인 경우, 고리 A에 인접한 하나 이상의  $R^2$ 는 수소가 아니고, 고리 C에 인접한 하나 이상의  $R^6$ 은 수소가 아니다.

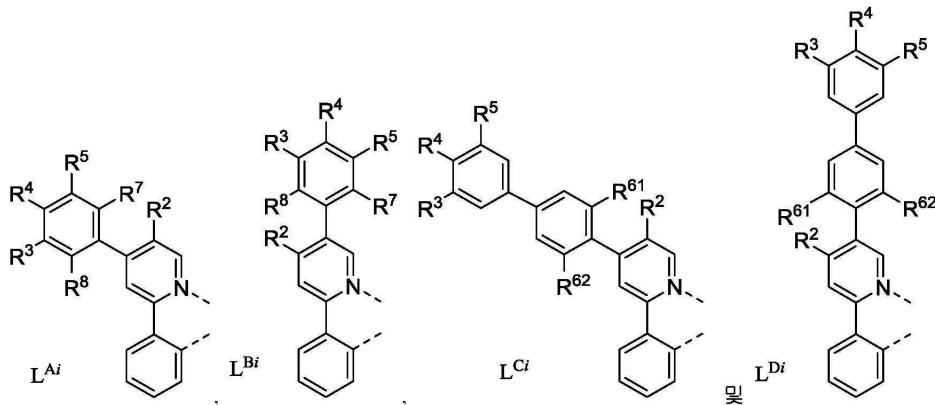
[0077] 일부 구체예에서, a가 1~10인 경우,  $R^7$  및  $R^8$ 은 수소이다. 일부 구체예에서, a는 2~10이다.

[0078] 일부 구체예에서, 리간드 L은 하기 화학식으로 이루어진 군에서 선택된다:



[0079]

[0080] 일부 구체예에서, 리간드 L은 하기 화학식의 구조를 기초로 하기 표에 정의된 L<sup>A1</sup> 내지 L<sup>A1432</sup>, L<sup>B1</sup> 내지 L<sup>B1432</sup>, L<sup>C1</sup> 내지 L<sup>C1432</sup>, L<sup>D1</sup> 내지 L<sup>D1432</sup>로 이루어진 군에서 선택된다:



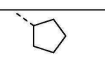
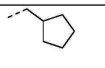


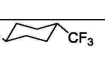
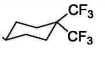


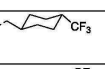
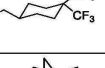
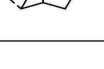


[0081]

L <sup>Ai</sup> , L <sup>Bi</sup> , L <sup>Ci</sup> , L <sup>Di</sup> 에서 i	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>7</sup> 또는 R <sup>61</sup>	R <sup>8</sup> 또는 R <sup>62</sup>
1.	CH <sub>3</sub>	H	CH <sub>3</sub>	H	H	CH <sub>3</sub>
2.	CH <sub>3</sub>	H	CH <sub>2</sub> CH <sub>3</sub>	H	H	CH <sub>3</sub>
3.	CH <sub>3</sub>	H	CH(CH <sub>3</sub> ) <sub>2</sub>	H	H	CH <sub>3</sub>
4.	CH <sub>3</sub>	H	CH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	H	H	CH <sub>3</sub>
5.	CH <sub>3</sub>	H	C(CH <sub>3</sub> ) <sub>3</sub>	H	H	CH <sub>3</sub>
6.	CH <sub>3</sub>	H	CH <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	H	H	CH <sub>3</sub>
7.	CH <sub>3</sub>	H	CH <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	H	H	CH <sub>3</sub>
8.	CH <sub>3</sub>	H	CH <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub>	H	H	CH <sub>3</sub>
9.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
10.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
11.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
12.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>










[0082]

$L^{A^i}$ , $L^{B^i}, L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
13.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
14.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
15.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
16.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
17.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
18.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
19.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
20.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
21.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
22.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
23.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
24.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
25.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
26.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
27.	CH <sub>3</sub>	H	CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
28.	CH <sub>3</sub>	H	CH <sub>2</sub> CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
29.	CH <sub>3</sub>	H	CH(CH <sub>3</sub> ) <sub>2</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>

[0083]

$L^{A_i}$ , $L^{B_i}$ , $L^{C_i}$ , $L^{D_i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
30.	CH <sub>3</sub>	H	CH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
31.	CH <sub>3</sub>	H	C(CH <sub>3</sub> ) <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
32.	CH <sub>3</sub>	H	CH <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
33.	CH <sub>3</sub>	H	CH <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
34.	CH <sub>3</sub>	H	CH <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) 2	H	CH <sub>3</sub>	CH <sub>3</sub>
35.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
36.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
37.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
38.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
39.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
40.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
41.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
42.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
43.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
44.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
45.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
46.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
47.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>














[0084]

$L^{Ar}$ , $L^{Bi}$ , $L^{Ci}$ , $L^{Di}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
48.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
49.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
50.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
51.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
52.	CH <sub>3</sub>	H		H	CH <sub>3</sub>	CH <sub>3</sub>
53.	H	H	CH <sub>3</sub>	H	H	CH <sub>3</sub>
54.	H	H	CH <sub>2</sub> CH <sub>3</sub>	H	H	CH <sub>3</sub>
55.	H	H	CH(CH <sub>3</sub> ) <sub>2</sub>	H	H	CH <sub>3</sub>
56.	H	H	CH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	H	H	CH <sub>3</sub>
57.	H	H	C(CH <sub>3</sub> ) <sub>3</sub>	H	H	CH <sub>3</sub>
58.	H	H	CH <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	H	H	CH <sub>3</sub>
59.	H	H	CH <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	H	H	CH <sub>3</sub>
60.	H	H	CH <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) 2	H	H	CH <sub>3</sub>
61.	H	H		H	H	CH <sub>3</sub>
62.	H	H		H	H	CH <sub>3</sub>
63.	H	H		H	H	CH <sub>3</sub>
64.	H	H		H	H	CH <sub>3</sub>

[0085]










$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
65.	H	H		H	H	CH <sub>3</sub>
66.	H	H		H	H	CH <sub>3</sub>
67.	H	H		H	H	CH <sub>3</sub>
68.	H	H		H	H	CH <sub>3</sub>
69.	H	H		H	H	CH <sub>3</sub>
70.	H	H		H	H	CH <sub>3</sub>
71.	H	H		H	H	CH <sub>3</sub>
72.	H	H		H	H	CH <sub>3</sub>
73.	H	H		H	H	CH <sub>3</sub>
74.	H	H		H	H	CH <sub>3</sub>
75.	H	H		H	H	CH <sub>3</sub>
76.	H	H		H	H	CH <sub>3</sub>
77.	H	H		H	H	CH <sub>3</sub>
78.	H	H		H	H	CH <sub>3</sub>
79.	H	H	CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
80.	H	H	CH <sub>2</sub> CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
81.	H	H	CH(CH <sub>3</sub> ) <sub>2</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>

[0086]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
82.	H	H	$CH_2CH(CH_3)_2$	H	$CH_3$	$CH_3$
83.	H	H	$C(CH_3)_3$	H	$CH_3$	$CH_3$
84.	H	H	$CH_2C(CH_3)_3$	H	$CH_3$	$CH_3$
85.	H	H	$CH_2CH_2CF_3$	H	$CH_3$	$CH_3$
86.	H	H	$CH_2CCF_3(CH_3)$ 2	H	$CH_3$	$CH_3$
87.	H	H		H	$CH_3$	$CH_3$
88.	H	H		H	$CH_3$	$CH_3$
89.	H	H		H	$CH_3$	$CH_3$
90.	H	H		H	$CH_3$	$CH_3$
91.	H	H		H	$CH_3$	$CH_3$
92.	H	H		H	$CH_3$	$CH_3$
93.	H	H		H	$CH_3$	$CH_3$
94.	H	H		H	$CH_3$	$CH_3$
95.	H	H		H	$CH_3$	$CH_3$
96.	H	H		H	$CH_3$	$CH_3$
97.	H	H		H	$CH_3$	$CH_3$
98.	H	H		H	$CH_3$	$CH_3$
99.	H	H		H	$CH_3$	$CH_3$

[0087]
















$L^{A^i}$ , $L^{B^i}, L^{C^i},$ $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
100.	H	H		H	CH <sub>3</sub>	CH <sub>3</sub>
101.	H	H		H	CH <sub>3</sub>	CH <sub>3</sub>
102.	H	H		H	CH <sub>3</sub>	CH <sub>3</sub>
103.	H	H		H	CH <sub>3</sub>	CH <sub>3</sub>
104.	H	H		H	CH <sub>3</sub>	CH <sub>3</sub>
105.	CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
106.	CH <sub>3</sub>	H	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
107.	CH <sub>3</sub>	H	CH(CH <sub>3</sub> ) <sub>2</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
108.	CH <sub>3</sub>	H	CH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
109.	CH <sub>3</sub>	H	C(CH <sub>3</sub> ) <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
110.	CH <sub>3</sub>	H	CH <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
111.	CH <sub>3</sub>	H	CH <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
112.	CH <sub>3</sub>	H	CH <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) 2	CH <sub>3</sub>	H	CH <sub>3</sub>
113.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
114.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
115.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
116.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>

[0088]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^1$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
117.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
118.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
119.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
120.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
121.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
122.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
123.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
124.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
125.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
126.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
127.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
128.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
129.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
130.	CH <sub>3</sub>	H		CH <sub>3</sub>	H	CH <sub>3</sub>
131.	CH <sub>3</sub>	CH <sub>3</sub>	CH <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
132.	CH <sub>3</sub>	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
133.	CH <sub>3</sub>	CH <sub>3</sub>	CH(CH <sub>3</sub> ) <sub>2</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>














[0089]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
134.	CH <sub>3</sub>	CH <sub>3</sub>	CH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
135.	CH <sub>3</sub>	CH <sub>3</sub>	C(CH <sub>3</sub> ) <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
136.	CH <sub>3</sub>	CH <sub>3</sub>	CH <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
137.	CH <sub>3</sub>	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
138.	CH <sub>3</sub>	CH <sub>3</sub>	CH <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) 2	CH <sub>3</sub>	H	CH <sub>3</sub>
139.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
140.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
141.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
142.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
143.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
144.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
145.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
146.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
147.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
148.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
149.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
150.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
151.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>








[0090]

$L^{Ar}$ , $L^{Bi}$ , $L^{Ci}$ , $L^{Di}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
152.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
153.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
154.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
155.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
156.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
157.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
158.	CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>	H	CH <sub>3</sub>
159.	CD <sub>3</sub>	H	CD <sub>3</sub>	H	H	CD <sub>3</sub>
160.	CD <sub>3</sub>	H	CD <sub>2</sub> CD <sub>3</sub>	H	H	CD <sub>3</sub>
161.	CD <sub>3</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	H	H	CD <sub>3</sub>
162.	CD <sub>3</sub>	H	CD(CD <sub>3</sub> ) <sub>2</sub>	H	H	CD <sub>3</sub>
163.	CD <sub>3</sub>	H	CD(CH <sub>3</sub> ) <sub>2</sub>	H	H	CD <sub>3</sub>
164.	CD <sub>3</sub>	H	CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	H	H	CD <sub>3</sub>
165.	CD <sub>3</sub>	H	CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	H	H	CD <sub>3</sub>
166.	CD <sub>3</sub>	H	CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	H	H	CD <sub>3</sub>
167.	CD <sub>3</sub>	H	CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	H	H	CD <sub>3</sub>
168.	CD <sub>3</sub>	H	CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	H	H	CD <sub>3</sub>
169.	CD <sub>3</sub>	H	CD <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	H	H	CD <sub>3</sub>
170.	CD <sub>3</sub>	H	CD <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) 2	H	H	CD <sub>3</sub>










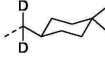
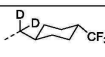
[0091]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
171.	$CD_3$	H		H	H	$CD_3$
172.	$CD_3$	H		H	H	$CD_3$
173.	$CD_3$	H		H	H	$CD_3$
174.	$CD_3$	H		H	H	$CD_3$
175.	$CD_3$	H		H	H	$CD_3$
176.	$CD_3$	H		H	H	$CD_3$
177.	$CD_3$	H		H	H	$CD_3$
178.	$CD_3$	H		H	H	$CD_3$
179.	$CD_3$	H		H	H	$CD_3$
180.	$CD_3$	H		H	H	$CD_3$
181.	$CD_3$	H		H	H	$CD_3$
182.	$CD_3$	H		H	H	$CD_3$
183.	$CD_3$	H		H	H	$CD_3$


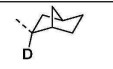
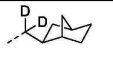
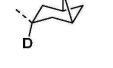
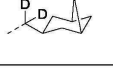
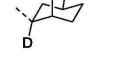
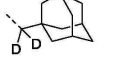
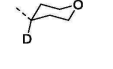

[0092]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
184.	$CD_3$	H		H	H	$CD_3$
185.	$CD_3$	H		H	H	$CD_3$
186.	$CD_3$	H		H	H	$CD_3$
187.	$CD_3$	H		H	H	$CD_3$
188.	$CD_3$	H		H	H	$CD_3$
189.	$CD_3$	H		H	H	$CD_3$
190.	$CD_3$	H		H	H	$CD_3$
191.	$CD_3$	H	$CD_3$	H	$CD_3$	$CD_3$
192.	$CD_3$	H	$CD_2CD_3$	H	$CD_3$	$CD_3$
193.	$CD_3$	H	$CD_2CH_3$	H	$CD_3$	$CD_3$
194.	$CD_3$	H	$CD(CD_3)_2$	H	$CD_3$	$CD_3$
195.	$CD_3$	H	$CD(CH_3)_2$	H	$CD_3$	$CD_3$
196.	$CD_3$	H	$CD_2CD(CD_3)_2$	H	$CD_3$	$CD_3$
197.	$CD_3$	H	$CD_2CH(CH_3)_2$	H	$CD_3$	$CD_3$
198.	$CD_3$	H	$CD_2C(CD_3)_3$	H	$CD_3$	$CD_3$
199.	$CD_3$	H	$CD_2C(CH_3)_3$	H	$CD_3$	$CD_3$
200.	$CD_3$	H	$CD_2CD_2CF_3$	H	$CD_3$	$CD_3$

[0093]










$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
201.	$CD_3$	H	$CD_2CH_2CF_3$	H	$CD_3$	$CD_3$
202.	$CD_3$	H	$CD_2CCF_3(CH_3)$ 2	H	$CD_3$	$CD_3$
203.	$CD_3$	H		H	$CD_3$	$CD_3$
204.	$CD_3$	H		H	$CD_3$	$CD_3$
205.	$CD_3$	H		H	$CD_3$	$CD_3$
206.	$CD_3$	H		H	$CD_3$	$CD_3$
207.	$CD_3$	H		H	$CD_3$	$CD_3$
208.	$CD_3$	H		H	$CD_3$	$CD_3$
209.	$CD_3$	H		H	$CD_3$	$CD_3$
210.	$CD_3$	H		H	$CD_3$	$CD_3$
211.	$CD_3$	H		H	$CD_3$	$CD_3$
212.	$CD_3$	H		H	$CD_3$	$CD_3$
213.	$CD_3$	H		H	$CD_3$	$CD_3$

[0094]

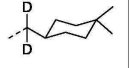
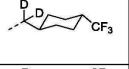
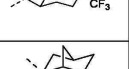
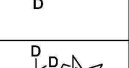

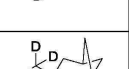


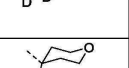
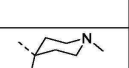
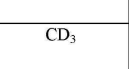
$L^{A_i}$ , $L^{B_i}$ , $L^{C_i}$ , $L^{D_i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
214.	$CD_3$	H		H	$CD_3$	$CD_3$
215.	$CD_3$	H		H	$CD_3$	$CD_3$
216.	$CD_3$	H		H	$CD_3$	$CD_3$
217.	$CD_3$	H		H	$CD_3$	$CD_3$
218.	$CD_3$	H		H	$CD_3$	$CD_3$
219.	$CD_3$	H		H	$CD_3$	$CD_3$
220.	$CD_3$	H		H	$CD_3$	$CD_3$
221.	$CD_3$	H		H	$CD_3$	$CD_3$
222.	$CD_3$	H		H	$CD_3$	$CD_3$
223.	H	H	$CD_3$	H	H	$CD_3$
224.	H	H	$CD_2CD_3$	H	H	$CD_3$
225.	H	H	$CD_2CH_3$	H	H	$CD_3$
226.	H	H	$CD(CD_3)_2$	H	H	$CD_3$
227.	H	H	$CD(CH_3)_2$	H	H	$CD_3$
228.	H	H	$CD_2CD(CD_3)_2$	H	H	$CD_3$
229.	H	H	$CD_2CH(CH_3)_2$	H	H	$CD_3$

[0095]










$L^{A^1}$ , $L^{B^1}$ , $L^{C^1}$ , $L^{D^1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
230.	H	H	$CD_2C(CD_3)_3$	H	H	$CD_3$
231.	H	H	$CD_2C(CH_3)_3$	H	H	$CD_3$
232.	H	H	$CD_2CD_2CF_3$	H	H	$CD_3$
233.	H	H	$CD_2CH_2CF_3$	H	H	$CD_3$
234.	H	H	$CD_2CCF_3(CH_3)$ 2	H	H	$CD_3$
235.	H	H		H	H	$CD_3$
236.	H	H		H	H	$CD_3$
237.	H	H		H	H	$CD_3$
238.	H	H		H	H	$CD_3$
239.	H	H		H	H	$CD_3$
240.	H	H		H	H	$CD_3$
241.	H	H		H	H	$CD_3$
242.	H	H		H	H	$CD_3$
243.	H	H		H	H	$CD_3$














[0096]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
244.	H	H		H	H	CD <sub>3</sub>
245.	H	H		H	H	CD <sub>3</sub>
246.	H	H		H	H	CD <sub>3</sub>
247.	H	H		H	H	CD <sub>3</sub>
248.	H	H		H	H	CD <sub>3</sub>
249.	H	H		H	H	CD <sub>3</sub>
250.	H	H		H	H	CD <sub>3</sub>
251.	H	H		H	H	CD <sub>3</sub>
252.	H	H		H	H	CD <sub>3</sub>
253.	H	H		H	H	CD <sub>3</sub>
254.	H	H		H	H	CD <sub>3</sub>
255.	H	H	CD <sub>3</sub>	H	CD <sub>3</sub>	CD <sub>3</sub>
256.	H	H	CD <sub>2</sub> CD <sub>3</sub>	H	CD <sub>3</sub>	CD <sub>3</sub>
257.	H	H	CD <sub>2</sub> CH <sub>3</sub>	H	CD <sub>3</sub>	CD <sub>3</sub>






[0097]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
258.	H	H	$CD(CD_3)_2$	H	$CD_3$	$CD_3$
259.	H	H	$CD(CH_3)_2$	H	$CD_3$	$CD_3$
260.	H	H	$CD_2CD(CD_3)_2$	H	$CD_3$	$CD_3$
261.	H	H	$CD_2CH(CH_3)_2$	H	$CD_3$	$CD_3$
262.	H	H	$CD_2C(CD_3)_3$	H	$CD_3$	$CD_3$
263.	H	H	$CD_2C(CH_3)_3$	H	$CD_3$	$CD_3$
264.	H	H	$CD_2CD_2CF_3$	H	$CD_3$	$CD_3$
265.	H	H	$CD_2CH_2CF_3$	H	$CD_3$	$CD_3$
266.	H	H	$CD_2CCF_3(CH_3)$ 2	H	$CD_3$	$CD_3$
267.	H	H		H	$CD_3$	$CD_3$
268.	H	H		H	$CD_3$	$CD_3$
269.	H	H		H	$CD_3$	$CD_3$
270.	H	H		H	$CD_3$	$CD_3$
271.	H	H		H	$CD_3$	$CD_3$
272.	H	H		H	$CD_3$	$CD_3$
273.	H	H		H	$CD_3$	$CD_3$

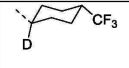
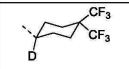
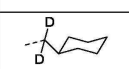

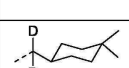
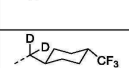
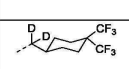
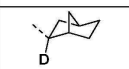
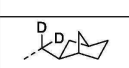
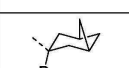
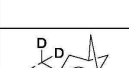

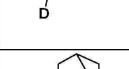
[0098]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
274.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
275.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
276.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
277.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
278.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
279.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
280.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
281.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
282.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
283.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
284.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
285.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>
286.	H	H		H	CD <sub>3</sub>	CD <sub>3</sub>












[0099]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^1$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
287.	$CD_3$	H	$CD_3$	$CD_3$	$CD_3$	$CD_3$
288.	$CD_3$	H	$CD_2CD_3$	$CD_3$	$CD_3$	$CD_3$
289.	$CD_3$	H	$CD_2CH_3$	$CD_3$	$CD_3$	$CD_3$
290.	$CD_3$	H	$CD(CD_3)_2$	$CD_3$	$CD_3$	$CD_3$
291.	$CD_3$	H	$CD(CH_3)_2$	$CD_3$	$CD_3$	$CD_3$
292.	$CD_3$	H	$CD_2CD(CD_3)_2$	$CD_3$	$CD_3$	$CD_3$
293.	$CD_3$	H	$CD_2CH(CH_3)_2$	$CD_3$	$CD_3$	$CD_3$
294.	$CD_3$	H	$CD_2C(CD_3)_3$	$CD_3$	$CD_3$	$CD_3$
295.	$CD_3$	H	$CD_2C(CH_3)_3$	$CD_3$	$CD_3$	$CD_3$
296.	$CD_3$	H	$CD_2CD_2CF_3$	$CD_3$	$CD_3$	$CD_3$
297.	$CD_3$	H	$CD_2CH_2CF_3$	$CD_3$	$CD_3$	$CD_3$
298.	$CD_3$	H	$CD_2CCF_3(CH_3)$ 2	$CD_3$	$CD_3$	$CD_3$
299.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
300.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
301.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
302.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
303.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$

[0100]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{Di}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
304.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
305.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
306.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
307.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
308.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
309.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
310.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
311.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
312.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
313.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
314.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
315.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
316.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$

[0101]











$L^{Ar}$ , $L^{Bi}$ , $L^{Ci}$ , $L^{Di}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
317.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
318.	$CD_3$	H		$CD_3$	$CD_3$	$CD_3$
319.	$CH_3$	$CH_2CH_3$	$CH_3$	$CH_3$	H	$CH_3$
320.	$CH_3$	$CH(CH_3)_2$	$CH_3$	$CH_3$		$CH_3$
321.	$CH_3$	$CH_2CH(CH_3)_2$	$CH_3$	$CH_3$	H	$CH_3$
322.	$CH_3$	$C(CH_3)_3$	$CH_3$	$CH_3$		$CH_3$
323.	$CH_3$	$CH_2C(CH_3)_3$	$CH_3$	$CH_3$	H	$CH_3$
324.	$CH_3$	$CH_2CH_2CF_3$	$CH_3$	$CH_3$		$CH_3$
325.	$CH_3$	$CH_2CCF_3(CH_3)_2$	$CH_3$	$CH_3$	H	$CH_3$
326.	$CH_3$		$CH_3$	$CH_3$		$CH_3$
327.	$CH_3$		$CH_3$	$CH_3$	H	$CH_3$
328.	$CH_3$		$CH_3$	$CH_3$		$CH_3$
329.	$CH_3$		$CH_3$	$CH_3$	H	$CH_3$
330.	$CH_3$		$CH_3$	$CH_3$		$CH_3$
331.	$CH_3$		$CH_3$	$CH_3$	H	$CH_3$
332.	$CH_3$		$CH_3$	$CH_3$		$CH_3$
333.	$CH_3$		$CH_3$	$CH_3$	H	$CH_3$
334.	$CH_3$		$CH_3$	$CH_3$		$CH_3$

[0102]











$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
335.	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
336.	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>
337.	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
338.	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>
339.	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
340.	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>
341.	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
342.	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>
343.	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
344.	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>3</sub>		CH <sub>3</sub>
345.	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>3</sub>	H	CH <sub>3</sub>
346.	CD <sub>3</sub>	CD <sub>2</sub> CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>
347.	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>		CD <sub>3</sub>
348.	CD <sub>3</sub>	CD(CD <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>
349.	CD <sub>3</sub>	CD(CH <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD <sub>3</sub>		CD <sub>3</sub>
350.	CD <sub>3</sub>	CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>
351.	CD <sub>3</sub>	CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD <sub>3</sub>		CD <sub>3</sub>
352.	CD <sub>3</sub>	CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>

[0103]












$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
353.	$CD_3$	$CD_2C(CH_3)_3$	$CD_3$	$CD_3$		$CD_3$
354.	$CD_3$	$CD_2CD_2CF_3$	$CD_3$	$CD_3$	H	$CD_3$
355.	$CD_3$	$CD_2CH_2CF_3$	$CD_3$	$CD_3$		$CD_3$
356.	$CD_3$	$CD_2CCF_3(CH_3)_2$	$CD_3$	$CD_3$	H	$CD_3$
357.	$CD_3$		$CD_3$	$CD_3$	H	$CD_3$
358.	$CD_3$		$CD_3$	$CD_3$	H	$CD_3$
359.	$CD_3$		$CD_3$	$CD_3$		$CD_3$
360.	$CD_3$		$CD_3$	$CD_3$	H	$CD_3$
361.	$CD_3$		$CD_3$	$CD_3$		$CD_3$
362.	$CD_3$		$CD_3$	$CD_3$	H	$CD_3$
363.	$CD_3$		$CD_3$	$CD_3$		$CD_3$
364.	$CD_3$		$CD_3$	$CD_3$	H	$CD_3$
365.	$CD_3$		$CD_3$	$CD_3$		$CD_3$
366.	$CD_3$		$CD_3$	$CD_3$	H	$CD_3$

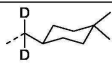
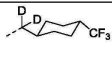
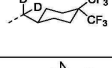
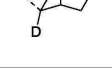
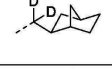
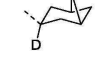
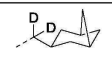

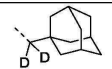
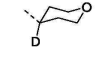
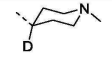
[0104]

$L^{A^1}$ , $L^{B^1}$ , $L^{C^1}$ , $L^{D^1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
367.	$CD_3$		$CD_3$	$CD_3$		$CD_3$
368.	$CD_3$		$CD_3$	$CD_3$	H	$CD_3$
369.	$CD_3$		$CD_3$	$CD_3$		$CD_3$
370.	$CD_3$		$CD_3$	$CD_3$	H	$CD_3$
371.	$CD_3$		$CD_3$	$CD_3$		$CD_3$
372.	$CD_3$		$CD_3$	$CD_3$	H	$CD_3$
373.	$CD_3$		$CD_3$	$CD_3$		$CD_3$
374.	$CD_3$		$CD_3$	$CD_3$	H	$CD_3$
375.	$CD_3$		$CD_3$	$CD_3$		$CD_3$
376.	$CD_3$		$CD_3$	$CD_3$	H	$CD_3$
377.	$CD_3$	$CD_2CD_3$	$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
378.	$CD_3$	$CD_2CH_3$	$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
379.	$CD_3$	$CD(CD_3)_2$	$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
380.	$CD_3$	$CD(CH_3)_2$	$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
381.	$CD_3$	$CD_2CD(CD_3)_2$	$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$














[0105]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
382.	$CD_3$	$CD_2CH(CH_3)_2$	$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
383.	$CD_3$	$CD_2C(CD_3)_3$	$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
384.	$CD_3$	$CD_2C(CH_3)_3$	$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
385.	$CD_3$	$CD_2CD_2CF_3$	$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
386.	$CD_3$	$CD_2CH_2CF_3$	$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
387.	$CD_3$	$CD_2CCF_3(CH_3)_2$	$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
388.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
389.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
390.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
391.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
392.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
393.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
394.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
395.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
396.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$








[0106]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
397.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
398.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
399.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
400.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
401.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
402.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
403.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
404.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
405.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
406.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
407.	$CD_3$		$CD_3$	$CD_3$	$CD_2CD_3$	$CD_3$
408.	$CH_3$	$CH_3$	H	H	H	$CH_3$
409.	$CH_3$	$CH_2CH_3$	H	H	H	$CH_3$
410.	$CH_3$	$CH(CH_3)_2$	H	H	H	$CH_3$














[0107]

$L^A$ , $L^B$ , $L^C$ , $L^D$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
411.	CH <sub>3</sub>	CH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	H	H	H	CH <sub>3</sub>
412.	CH <sub>3</sub>	C(CH <sub>3</sub> ) <sub>3</sub>	H	H	H	CH <sub>3</sub>
413.	CH <sub>3</sub>	CH <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	H	H	H	CH <sub>3</sub>
414.	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	H	H	H	CH <sub>3</sub>
415.	CH <sub>3</sub>	CH <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub>	H	H	H	CH <sub>3</sub>
416.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
417.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
418.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
419.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
420.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
421.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
422.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
423.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
424.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
425.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
426.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
427.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
428.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>









[0108]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
429.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
430.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
431.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
432.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
433.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
434.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
435.	CH <sub>3</sub>		H	H	H	CH <sub>3</sub>
436.	CD <sub>3</sub>	CD <sub>3</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>
437.	CD <sub>3</sub>	CD <sub>2</sub> CD <sub>3</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>
438.	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>
439.	CD <sub>3</sub>	CD(CD <sub>3</sub> ) <sub>2</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>
440.	CD <sub>3</sub>	CD(CH <sub>3</sub> ) <sub>2</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>
441.	CD <sub>3</sub>	CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>
442.	CD <sub>3</sub>	CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>
443.	CD <sub>3</sub>	CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>
444.	CD <sub>3</sub>	CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>
445.	CD <sub>3</sub>	CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>
446.	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>
447.	CD <sub>3</sub>	CD <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) <sub>2</sub>	H	H	H	CD <sub>2</sub> CD <sub>3</sub>

[0109]

















$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
448.	$CD_3$		H	H	H	$CD_2CD_3$
449.	$CD_3$		H	H	H	$CD_2CD_3$
450.	$CD_3$		H	H	H	$CD_2CD_3$
451.	$CD_3$		H	H	H	$CD_2CD_3$
452.	$CD_3$		H	H	H	$CD_2CD_3$
453.	$CD_3$		H	H	H	$CD_2CD_3$
454.	$CD_3$		H	H	H	$CD_2CD_3$
455.	$CD_3$		H	H	H	$CD_2CD_3$
456.	$CD_3$		H	H	H	$CD_2CD_3$
457.	$CD_3$		H	H	H	$CD_2CD_3$
458.	$CD_3$		H	H	H	$CD_2CD_3$
459.	$CD_3$		H	H	H	$CD_2CD_3$
460.	$CD_3$		H	H	H	$CD_2CD_3$

[0110]







$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
461.	$CD_3$		H	H	H	$CD_2CD_3$
462.	$CD_3$		H	H	H	$CD_2CD_3$
463.	$CD_3$		H	H	H	$CD_2CD_3$
464.	$CD_3$		H	H	H	$CD_2CD_3$
465.	$CD_3$		H	H	H	$CD_2CD_3$
466.	$CD_3$		H	H	H	$CD_2CD_3$
467.	$CD_3$		H	H	H	$CD_2CD_3$
468.	$CH_3$	H	$CH_3$	H	H	$CH_3$
469.	$CH_3$	H	$CH_2CH_3$	H	H	$CH_3$
470.	$CH_3$	H	$CH(CH_3)_2$	H	H	$CH_3$
471.	$CH_3$	H	$CH_2CH(CH_3)_2$	H	H	$CH_3$
472.	$CH_3$	H	$C(CH_3)_3$	H	H	$CH_3$
473.	$CH_3$	H	$CH_2C(CH_3)_3$	H	H	$CH_3$
474.	$CH_3$	H	$CH_2CH_2CF_3$	H	H	$CH_3$
475.	$CH_3$	H	$CH_2CCF_3(CH_3)$ 2	H	H	$CH_3$
476.	$CH_3$	H		H	H	$CH_3$

[0111]
















$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
477.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
478.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
479.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
480.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
481.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
482.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
483.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
484.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
485.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
486.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
487.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
488.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
489.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
490.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
491.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
492.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>









[0112]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
493.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
494.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
495.	CH <sub>3</sub>	H		H	H	CH <sub>3</sub>
496.	CD <sub>3</sub>	H	CD <sub>3</sub>	H	H	CD <sub>2</sub> CD <sub>3</sub>
497.	CD <sub>3</sub>	H	CD <sub>2</sub> CD <sub>3</sub>	H	H	CD <sub>2</sub> CD <sub>3</sub>
498.	CD <sub>3</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	H	H	CD <sub>2</sub> CD <sub>3</sub>
499.	CD <sub>3</sub>	H	CD(CD <sub>3</sub> ) <sub>2</sub>	H	H	CD <sub>2</sub> CD <sub>3</sub>
500.	CD <sub>3</sub>	H	CD(CH <sub>3</sub> ) <sub>2</sub>	H	H	CD <sub>2</sub> CD <sub>3</sub>
501.	CD <sub>3</sub>	H	CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	H	H	CD <sub>2</sub> CD <sub>3</sub>
502.	CD <sub>3</sub>	H	CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	H	H	CD <sub>2</sub> CD <sub>3</sub>
503.	CD <sub>3</sub>	H	CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	H	H	CD <sub>2</sub> CD <sub>3</sub>
504.	CD <sub>3</sub>	H	CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	H	H	CD <sub>2</sub> CD <sub>3</sub>
505.	CD <sub>3</sub>	H	CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	H	H	CD <sub>2</sub> CD <sub>3</sub>
506.	CD <sub>3</sub>	H	CD <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	H	H	CD <sub>2</sub> CD <sub>3</sub>
507.	CD <sub>3</sub>	H	CD <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) 2	H	H	CD <sub>2</sub> CD <sub>3</sub>
508.	CD <sub>3</sub>	H		H	H	CD <sub>2</sub> CD <sub>3</sub>
509.	CD <sub>3</sub>	H		H	H	CD <sub>2</sub> CD <sub>3</sub>
510.	CD <sub>3</sub>	H		H	H	CD <sub>2</sub> CD <sub>3</sub>

[0113]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
511.	$CD_3$	H		H	H	$CD_2CD_3$
512.	$CD_3$	H		H	H	$CD_2CD_3$
513.	$CD_3$	H		H	H	$CD_2CD_3$
514.	$CD_3$	H		H	H	$CD_2CD_3$
515.	$CD_3$	H		H	H	$CD_2CD_3$
516.	$CD_3$	H		H	H	$CD_2CD_3$
517.	$CD_3$	H		H	H	$CD_2CD_3$
518.	$CD_3$	H		H	H	$CD_2CD_3$
519.	$CD_3$	H		H	H	$CD_2CD_3$
520.	$CD_3$	H		H	H	$CD_2CD_3$
521.	$CD_3$	H		H	H	$CD_2CD_3$
522.	$CD_3$	H		H	H	$CD_2CD_3$
523.	$CD_3$	H		H	H	$CD_2CD_3$






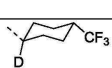
[0114]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
524.	$CD_3$	H		H	H	$CD_2CD_3$
525.	$CD_3$	H		H	H	$CD_2CD_3$
526.	$CD_3$	H		H	H	$CD_2CD_3$
527.	$CD_3$	H		H	H	$CD_2CD_3$
528.	$CH(CH_3)_2$	H	H	$CH_3$	$CH_3$	$CH_3$
529.	$CH(CH_3)_2$	H	H	$CH_2CH_3$	$CH_3$	$CH_3$
530.	$CH(CH_3)_2$	H	H	$CH(CH_3)_2$	$CH_3$	$CH_3$
531.	$CH(CH_3)_2$	H	H	$CH_2CH(CH_3)_2$	$CH_3$	$CH_3$
532.	$CH(CH_3)_2$	H	H	$C(CH_3)_3$	$CH_3$	$CH_3$
533.	$CH(CH_3)_2$	H	H	$CH_2C(CH_3)_3$	$CH_3$	$CH_3$
534.	$CH(CH_3)_2$	H	H	$CH_2CH_2CF_3$	$CH_3$	$CH_3$
535.	$CH(CH_3)_2$	H	H	$CH_2CCF_3(CH_3)$ 2	$CH_3$	$CH_3$
536.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
537.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
538.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
539.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$

[0115]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
540.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
541.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
542.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
543.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
544.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
545.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
546.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
547.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
548.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
549.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
550.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
551.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
552.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
553.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
554.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
555.	$CH(CH_3)_2$	H	H		$CH_3$	$CH_3$
556.	$CD_3$	H	H	$CD_3$	$CD_3$	$CD_3$












[0116]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
557.	$CD_3$	H	H	$CD_2CD_3$	$CD_3$	$CD_3$
558.	$CD_3$	H	H	$CD_2CH_3$	$CD_3$	$CD_3$
559.	$CD_3$	H	H	$CD(CD_3)_2$	$CD_3$	$CD_3$
560.	$CD_3$	H	H	$CD(CH_3)_2$	$CD_3$	$CD_3$
561.	$CD_3$	H	H	$CD_2CD(CD_3)_2$	$CD_3$	$CD_3$
562.	$CD_3$	H	H	$CD_2CH(CH_3)_2$	$CD_3$	$CD_3$
563.	$CD_3$	H	H	$CD_2C(CD_3)_3$	$CD_3$	$CD_3$
564.	$CD_3$	H	H	$CD_2C(CH_3)_3$	$CD_3$	$CD_3$
565.	$CD_3$	H	H	$CD_2CD_2CF_3$	$CD_3$	$CD_3$
566.	$CD_3$	H	H	$CD_2CH_2CF_3$	$CD_3$	$CD_3$
567.	$CD_3$	H	H	$CD_2CCF_3(CH_3)$	$CD_3$	$CD_3$
568.	$CD_3$	H	H		$CD_3$	$CD_3$
569.	$CD_3$	H	H		$CD_3$	$CD_3$
570.	$CD_3$	H	H		$CD_3$	$CD_3$
571.	$CD_3$	H	H		$CD_3$	$CD_3$
572.	$CD_3$	H	H		$CD_3$	$CD_3$
573.	$CD_3$	H	H		$CD_3$	$CD_3$

[0117]











$L^{A_i}$ , $L^{B_i}$ , $L^{C_i}$ , $L^{D_i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
574.	$CD_3$	H	H		$CD_3$	$CD_3$
575.	$CD_3$	H	H		$CD_3$	$CD_3$
576.	$CD_3$	H	H		$CD_3$	$CD_3$
577.	$CD_3$	H	H		$CD_3$	$CD_3$
578.	$CD_3$	H	H		$CD_3$	$CD_3$
579.	$CD_3$	H	H		$CD_3$	$CD_3$
580.	$CD_3$	H	H		$CD_3$	$CD_3$
581.	$CD_3$	H	H		$CD_3$	$CD_3$
582.	$CD_3$	H	H		$CD_3$	$CD_3$
583.	$CD_3$	H	H		$CD_3$	$CD_3$
584.	$CD_3$	H	H		$CD_3$	$CD_3$
585.	$CD_3$	H	H		$CD_3$	$CD_3$
586.	$CD_3$	H	H		$CD_3$	$CD_3$

[0118]











$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
587.	$CD_3$	H	H		$CD_3$	$CD_3$
588.	H	$CH_3$	$CH_3$	H	$CH_3$	$CH_3$
589.	H	$CH_2CH_3$	$CH_3$	H	$CH_3$	$CH_3$
590.	H	$CH(CH_3)_2$	$CH_3$	H	$CH_3$	$CH_3$
591.	H	$CH_2CH(CH_3)_2$	$CH_3$	H	$CH_3$	$CH_3$
592.	H	$C(CH_3)_3$	$CH_3$	H	$CH_3$	$CH_3$
593.	H	$CH_2C(CH_3)_3$	$CH_3$	H	$CH_3$	$CH_3$
594.	H	$CH_2CH_2CF_3$	$CH_3$	H	$CH_3$	$CH_3$
595.	H	$CH_2CCF_3(CH_3)_2$	$CH_3$	H	$CH_3$	$CH_3$
596.	H		$CH_3$	H	$CH_3$	$CH_3$
597.	H		$CH_3$	H	$CH_3$	$CH_3$
598.	H		$CH_3$	H	$CH_3$	$CH_3$
599.	H		$CH_3$	H	$CH_3$	$CH_3$
600.	H		$CH_3$	H	$CH_3$	$CH_3$
601.	H		$CH_3$	H	$CH_3$	$CH_3$
602.	H		$CH_3$	H	$CH_3$	$CH_3$
603.	H		$CH_3$	H	$CH_3$	$CH_3$
604.	H		$CH_3$	H	$CH_3$	$CH_3$
605.	H		$CH_3$	H	$CH_3$	$CH_3$

[0119]













$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
606.	H		CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
607.	H		CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
608.	H		CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
609.	H		CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
610.	H		CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
611.	H		CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
612.	H		CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
613.	H		CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
614.	H		CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
615.	H		CH <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>3</sub>
616.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>	CD <sub>3</sub>
617.	CD <sub>3</sub>	CD <sub>2</sub> CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>	CD <sub>3</sub>
618.	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>	CD <sub>3</sub>
619.	CD <sub>3</sub>	CD(CD <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>	CD <sub>3</sub>
620.	CD <sub>3</sub>	CD(CH <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>	CD <sub>3</sub>
621.	CD <sub>3</sub>	CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>	CD <sub>3</sub>
622.	CD <sub>3</sub>	CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>	CD <sub>3</sub>
623.	CD <sub>3</sub>	CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>	CD <sub>3</sub>
















[0120]

$L^{A^1}$ , $L^{B^1}$ , $L^{C^1}$ , $L^{D^1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
624.	$CD_3$	$CD_2C(CH_3)_3$	$CD_3$	H	$CD_3$	$CD_3$
625.	$CD_3$	$CD_2CD_2CF_3$	$CD_3$	H	$CD_3$	$CD_3$
626.	$CD_3$	$CD_2CH_2CF_3$	$CD_3$	H	$CD_3$	$CD_3$
627.	$CD_3$	$CD_2CCF_3(CH_3)_2$	$CD_3$	H	$CD_3$	$CD_3$
628.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
629.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
630.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
631.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
632.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
633.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
634.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
635.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
636.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
637.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$







[0121]

$L^{A^1}$ , $L^{B^1}$ , $L^{C^1}$ , $L^{D^1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
638.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
639.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
640.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
641.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
642.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
643.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
644.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
645.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
646.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
647.	$CD_3$		$CD_3$	H	$CD_3$	$CD_3$
648.	$CH_3$	$CH_3$	$CH_2CH_3$	H	$CH_3$	$CH_2CH_3$
649.	$CH_3$	$CH_3$	$CH(CH_3)_2$	H	$CH_3$	$CH_2CH_3$
650.	$CH_3$	$CH_3$	$CH_2CH(CH_3)_2$	H	$CH_3$	$CH_2CH_3$
651.	$CH_3$	$CH_3$	$C(CH_3)_3$	H	$CH_3$	$CH_2CH_3$
652.	$CH_3$	$CH_3$	$CH_2C(CH_3)_3$	H	$CH_3$	$CH_2CH_3$














[0122]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
653.	CH <sub>3</sub>	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
654.	CH <sub>3</sub>	CH <sub>3</sub>	CH <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) 2	H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
655.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
656.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
657.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
658.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
659.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
660.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
661.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
662.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
663.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
664.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
665.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
666.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
667.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
668.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
669.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>









[0123]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
670.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
671.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
672.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
673.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
674.	CH <sub>3</sub>	CH <sub>3</sub>		H	CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
675.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CD <sub>3</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
676.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
677.	CD <sub>3</sub>	CD <sub>3</sub>	CD(CD <sub>3</sub> ) <sub>2</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
678.	CD <sub>3</sub>	CD <sub>3</sub>	CD(CH <sub>3</sub> ) <sub>2</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
679.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
680.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
681.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
682.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
683.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
684.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
685.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) 2	H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
686.	CD <sub>3</sub>	CD <sub>3</sub>		H	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>

[0124]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
687.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
688.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
689.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
690.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
691.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
692.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
693.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
694.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
695.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
696.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
697.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
698.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
699.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$

[0125]







$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
700.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
701.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
702.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
703.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
704.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
705.	$CD_3$	$CD_3$		H	$CD_2CH_3$	$CD_2CH_3$
706.	H	$CH_3$	$CH_3$	$CH_3$	$CH_2CH_3$	$CH_2CH_3$
707.	H	$CH_3$	$CH_2CH_3$	$CH_3$	$CH_2CH_3$	$CH_2CH_3$
708.	H	$CH_3$	$CH(CH_3)_2$	$CH_3$	$CH_2CH_3$	$CH_2CH_3$
709.	H	$CH_3$	$CH_2CH(CH_3)_2$	$CH_3$	$CH_2CH_3$	$CH_2CH_3$
710.	H	$CH_3$	$C(CH_3)_3$	$CH_3$	$CH_2CH_3$	$CH_2CH_3$
711.	H	$CH_3$	$CH_2C(CH_3)_3$	$CH_3$	$CH_2CH_3$	$CH_2CH_3$
712.	H	$CH_3$	$CH_2CH_2CF_3$	$CH_3$	$CH_2CH_3$	$CH_2CH_3$
713.	H	$CH_3$	$CH_2CCF_3(CH_3)$ 2	$CH_3$	$CH_2CH_3$	$CH_2CH_3$
714.	H	$CH_3$		$CH_3$	$CH_2CH_3$	$CH_2CH_3$
715.	H	$CH_3$		$CH_3$	$CH_2CH_3$	$CH_2CH_3$

[0126]

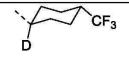
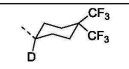

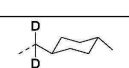

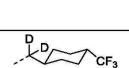
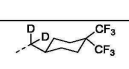


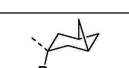
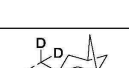

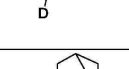
$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
716.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
717.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
718.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
719.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
720.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
721.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
722.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
723.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
724.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
725.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
726.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
727.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
728.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
729.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
730.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
731.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
732.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>

[0127]























$L^{Ar}$ , $L^{Bi}$ , $L^{Ci}$ , $L^{Di}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
733.	H	CH <sub>3</sub>		CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>
734.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
735.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
736.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
737.	CD <sub>3</sub>	CD <sub>3</sub>	CD(CD <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
738.	CD <sub>3</sub>	CD <sub>3</sub>	CD(CH <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
739.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
740.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
741.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
742.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
743.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CD <sub>2</sub> CF <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
744.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
745.	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> ) 2	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
746.	CD <sub>3</sub>	CD <sub>3</sub>		CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
747.	CD <sub>3</sub>	CD <sub>3</sub>		CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
748.	CD <sub>3</sub>	CD <sub>3</sub>		CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
749.	CD <sub>3</sub>	CD <sub>3</sub>		CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>
750.	CD <sub>3</sub>	CD <sub>3</sub>		CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>

[0128]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
751.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
752.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
753.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
754.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
755.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
756.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
757.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
758.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
759.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
760.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
761.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
762.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
763.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$





















[0129]

$L^{Ar}$ , $L^{Bi}$ , $L^{Ci}$ , $L^{Di}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
764.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
765.	$CD_3$	$CD_3$		$CD_3$	$CD_2CH_3$	$CD_2CH_3$
766.	$CH_3$	$CH_2CH_3$	$CH_3$	$CH_2CH_3$	H	$CH_2CH_3$
767.	$CH_3$	$CH(CH_3)_2$	$CH_3$	$CH(CH_3)_2$	H	$CH_2CH_3$
768.	$CH_3$	$CH_2CH(CH_3)_2$	$CH_3$	$CH_2CH(CH_3)_2$	H	$CH_2CH_3$
769.	$CH_3$	$C(CH_3)_3$	$CH_3$	$C(CH_3)_3$	H	$CH_2CH_3$
770.	$CH_3$	$CH_2C(CH_3)_3$	$CH_3$	$CH_2C(CH_3)_3$	H	$CH_2CH_3$
771.	$CH_3$	$CH_2CH_2CF_3$	$CH_3$	$CH_2CH_2CF_3$	H	$CH_2CH_3$
772.	$CH_3$	$CH_2CCF_3(CH_3)_2$	$CH_3$	$CH_2CCF_3(CH_3)_2$ 2	H	$CH_2CH_3$
773.	$CH_3$		$CH_3$		H	$CH_2CH_3$
774.	$CH_3$		$CH_3$		H	$CH_2CH_3$
775.	$CH_3$		$CH_3$		H	$CH_2CH_3$
776.	$CH_3$		$CH_3$		H	$CH_2CH_3$
777.	$CH_3$		$CH_3$		H	$CH_2CH_3$
778.	$CH_3$		$CH_3$		H	$CH_2CH_3$
779.	$CH_3$		$CH_3$		H	$CH_2CH_3$
780.	$CH_3$		$CH_3$		H	$CH_2CH_3$
781.	$CH_3$		$CH_3$		H	$CH_2CH_3$





















[0130]

$L^{A^i}$ , $L^{B^i}, L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
782.	CH <sub>3</sub>		CH <sub>3</sub>		H	CH <sub>2</sub> CH <sub>3</sub>
783.	CH <sub>3</sub>		CH <sub>3</sub>		H	CH <sub>2</sub> CH <sub>3</sub>
784.	CH <sub>3</sub>		CH <sub>3</sub>		H	CH <sub>2</sub> CH <sub>3</sub>
785.	CH <sub>3</sub>		CH <sub>3</sub>		H	CH <sub>2</sub> CH <sub>3</sub>
786.	CH <sub>3</sub>		CH <sub>3</sub>		H	CH <sub>2</sub> CH <sub>3</sub>
787.	CH <sub>3</sub>		CH <sub>3</sub>		H	CH <sub>2</sub> CH <sub>3</sub>
788.	CH <sub>3</sub>		CH <sub>3</sub>		H	CH <sub>2</sub> CH <sub>3</sub>
789.	CH <sub>3</sub>		CH <sub>3</sub>		H	CH <sub>2</sub> CH <sub>3</sub>
790.	CH <sub>3</sub>		CH <sub>3</sub>		H	CH <sub>2</sub> CH <sub>3</sub>
791.	CH <sub>3</sub>		CH <sub>3</sub>		H	CH <sub>2</sub> CH <sub>3</sub>
792.	CH <sub>3</sub>		CH <sub>3</sub>		H	CH <sub>2</sub> CH <sub>3</sub>
793.	CD <sub>3</sub>	CD <sub>2</sub> CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CD <sub>3</sub>	H	CD <sub>2</sub> CH <sub>3</sub>
794.	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH <sub>3</sub>	H	CD <sub>2</sub> CH <sub>3</sub>
795.	CD <sub>3</sub>	CD(CD <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD(CD <sub>3</sub> ) <sub>2</sub>	H	CD <sub>2</sub> CH <sub>3</sub>
796.	CD <sub>3</sub>	CD(CH <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD(CH <sub>3</sub> ) <sub>2</sub>	H	CD <sub>2</sub> CH <sub>3</sub>
797.	CD <sub>3</sub>	CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD <sub>2</sub> CD(CD <sub>3</sub> ) <sub>2</sub>	H	CD <sub>2</sub> CH <sub>3</sub>
798.	CD <sub>3</sub>	CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	CD <sub>3</sub>	CD <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	H	CD <sub>2</sub> CH <sub>3</sub>
799.	CD <sub>3</sub>	CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	CD <sub>3</sub>	CD <sub>2</sub> C(CD <sub>3</sub> ) <sub>3</sub>	H	CD <sub>2</sub> CH <sub>3</sub>
















[0131]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
800.	$CD_3$	$CD_2C(CH_3)_3$	$CD_3$	$CD_2C(CH_3)_3$	H	$CD_2CH_3$
801.	$CD_3$	$CD_2CD_2CF_3$	$CD_3$	$CD_2CD_2CF_3$	H	$CD_2CH_3$
802.	$CD_3$	$CD_2CH_2CF_3$	$CD_3$	$CD_2CH_2CF_3$	H	$CD_2CH_3$
803.	$CD_3$	$CD_2CCF_3(CH_3)_2$	$CD_3$	$CD_2CCF_3(CH_3)_2$	H	$CD_2CH_3$
804.	$CD_3$		$CD_3$		H	$CD_2CH_3$
805.	$CD_3$		$CD_3$		H	$CD_2CH_3$
806.	$CD_3$		$CD_3$		H	$CD_2CH_3$
807.	$CD_3$		$CD_3$		H	$CD_2CH_3$
808.	$CD_3$		$CD_3$		H	$CD_2CH_3$
809.	$CD_3$		$CD_3$		H	$CD_2CH_3$
810.	$CD_3$		$CD_3$		H	$CD_2CH_3$
811.	$CD_3$		$CD_3$		H	$CD_2CH_3$
812.	$CD_3$		$CD_3$		H	$CD_2CH_3$
813.	$CD_3$		$CD_3$		H	$CD_2CH_3$







[0132]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
814.	CD <sub>3</sub>		CD <sub>3</sub>		H	CD <sub>2</sub> CH <sub>3</sub>
815.	CD <sub>3</sub>		CD <sub>3</sub>		H	CD <sub>2</sub> CH <sub>3</sub>
816.	CD <sub>3</sub>		CD <sub>3</sub>		H	CD <sub>2</sub> CH <sub>3</sub>
817.	CD <sub>3</sub>		CD <sub>3</sub>		H	CD <sub>2</sub> CH <sub>3</sub>
818.	CD <sub>3</sub>		CD <sub>3</sub>		H	CD <sub>2</sub> CH <sub>3</sub>
819.	CD <sub>3</sub>		CD <sub>3</sub>		H	CD <sub>2</sub> CH <sub>3</sub>
820.	CD <sub>3</sub>		CD <sub>3</sub>		H	CD <sub>2</sub> CH <sub>3</sub>
821.	CD <sub>3</sub>		CD <sub>3</sub>		H	CD <sub>2</sub> CH <sub>3</sub>
822.	CD <sub>3</sub>		CD <sub>3</sub>		H	CD <sub>2</sub> CH <sub>3</sub>
823.	CD <sub>3</sub>		CD <sub>3</sub>		H	CD <sub>2</sub> CH <sub>3</sub>
824.	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>3</sub>	H	H	H	CH(CH <sub>3</sub> ) <sub>2</sub>
825.	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH <sub>3</sub>	H	H	H	CH(CH <sub>3</sub> ) <sub>2</sub>
826.	CH <sub>2</sub> CH <sub>3</sub>	CH(CH <sub>3</sub> ) <sub>2</sub>	H	H	H	CH(CH <sub>3</sub> ) <sub>2</sub>
827.	CH <sub>2</sub> CH <sub>3</sub>	CH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	H	H	H	CH(CH <sub>3</sub> ) <sub>2</sub>
828.	CH <sub>2</sub> CH <sub>3</sub>	C(CH <sub>3</sub> ) <sub>3</sub>	H	H	H	CH(CH <sub>3</sub> ) <sub>2</sub>

[0133]














$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
829.	$CH_2CH_3$	$CH_2C(CH_3)_3$	H	H	H	$CH(CH_3)_2$
830.	$CH_2CH_3$	$CH_2CH_2CF_3$	H	H	H	$CH(CH_3)_2$
831.	$CH_2CH_3$	$CH_2CCF_3(CH_3)_2$	H	H	H	$CH(CH_3)_2$
832.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
833.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
834.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
835.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
836.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
837.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
838.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
839.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
840.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
841.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
842.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
843.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
844.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
845.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
846.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$

[0134]







$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
847.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
848.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
849.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
850.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
851.	$CH_2CH_3$		H	H	H	$CH(CH_3)_2$
852.	$CD_2CH_3$	$CD_3$	H	H	$CD_2CH_3$	$CD_2CH_3$
853.	$CD_2CH_3$	$CD_2CD_3$	H	H	$CD_2CH_3$	$CD_2CH_3$
854.	$CD_2CH_3$	$CD_2CH_3$	H	H	$CD_2CH_3$	$CD_2CH_3$
855.	$CD_2CH_3$	$CD(CD_3)_2$	H	H	$CD_2CH_3$	$CD_2CH_3$
856.	$CD_2CH_3$	$CD(CH_3)_2$	H	H	$CD_2CH_3$	$CD_2CH_3$
857.	$CD_2CH_3$	$CD_2CD(CD_3)_2$	H	H	$CD_2CH_3$	$CD_2CH_3$
858.	$CD_2CH_3$	$CD_2CH(CH_3)_2$	H	H	$CD_2CH_3$	$CD_2CH_3$
859.	$CD_2CH_3$	$CD_2C(CD_3)_3$	H	H	$CD_2CH_3$	$CD_2CH_3$
860.	$CD_2CH_3$	$CD_2C(CH_3)_3$	H	H	$CD_2CH_3$	$CD_2CH_3$
861.	$CD_2CH_3$	$CD_2CD_2CF_3$	H	H	$CD_2CH_3$	$CD_2CH_3$
862.	$CD_2CH_3$	$CD_2CH_2CF_3$	H	H	$CD_2CH_3$	$CD_2CH_3$
863.	$CD_2CH_3$	$CD_2CCF_3(CH_3)_2$	H	H	$CD_2CH_3$	$CD_2CH_3$
864.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$

[0135]















$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
865.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
866.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
867.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
868.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
869.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
870.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
871.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
872.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
873.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
874.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
875.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
876.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
877.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$









[0136]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
878.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
879.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
880.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
881.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
882.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
883.	$CD_2CH_3$		H	H	$CD_2CH_3$	$CD_2CH_3$
884.	$CD_2CD_3$	$CD_3$	H	H	H	$CD(CH_3)_2$
885.	$CD_2CD_3$	$CD_2CD_3$	H	H	H	$CD(CH_3)_2$
886.	$CD_2CD_3$	$CD_2CH_3$	H	H	H	$CD(CH_3)_2$
887.	$CD_2CD_3$	$CD(CD_3)_2$	H	H	H	$CD(CH_3)_2$
888.	$CD_2CD_3$	$CD(CH_3)_2$	H	H	H	$CD(CH_3)_2$
889.	$CD_2CD_3$	$CD_2CD(CD_3)_2$	H	H	H	$CD(CH_3)_2$
890.	$CD_2CD_3$	$CD_2CH(CH_3)_2$	H	H	H	$CD(CH_3)_2$
891.	$CD_2CD_3$	$CD_2C(CD_3)_3$	H	H	H	$CD(CH_3)_2$
892.	$CD_2CD_3$	$CD_2C(CH_3)_3$	H	H	H	$CD(CH_3)_2$
893.	$CD_2CD_3$	$CD_2CD_2CF_3$	H	H	H	$CD(CH_3)_2$
894.	$CD_2CD_3$	$CD_2CH_2CF_3$	H	H	H	$CD(CH_3)_2$

[0137]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
895.	$CD_2CD_3$	$CD_2CCF_3(CH_3)_2$	H	H	H	$CD(CH_3)_2$
896.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
897.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
898.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
899.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
900.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
901.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
902.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
903.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
904.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
905.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
906.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
907.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$







[0138]

$L^{A^i}$ , $L^{B^i}, L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
908.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
909.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
910.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
911.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
912.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
913.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
914.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
915.	$CD_2CD_3$		H	H	H	$CD(CH_3)_2$
916.	$CH_2CH_3$	H	$CH_2CH_3$	H	$CH_2CH_3$	$CH_2CH_3$
917.	$CH_2CH_3$	H	$CH(CH_3)_2$	H	$CH_2CH_3$	$CH_2CH_3$
918.	$CH_2CH_3$	H	$CH_2CH(CH_3)_2$	H	$CH_2CH_3$	$CH_2CH_3$
919.	$CH_2CH_3$	H	$C(CH_3)_3$	H	$CH_2CH_3$	$CH_2CH_3$
920.	$CH_2CH_3$	H	$CH_2C(CH_3)_3$	H	$CH_2CH_3$	$CH_2CH_3$
921.	$CH_2CH_3$	H	$CH_2CH_2CF_3$	H	$CH_2CH_3$	$CH_2CH_3$
922.	$CH_2CH_3$	H	$CH_2CCF_3(CH_3)$	H	$CH_2CH_3$	$CH_2CH_3$














[0139]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
923.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
924.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
925.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
926.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
927.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
928.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
929.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
930.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
931.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
932.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
933.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
934.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
935.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
936.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
937.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
938.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
939.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$






[0140]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
940.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
941.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
942.	$CH_2CH_3$	H		H	$CH_2CH_3$	$CH_2CH_3$
943.	$CD_2CH_3$	H	$CD_3$	H	$CD(CH_3)_2$	$CD(CH_3)_2$
944.	$CD_2CH_3$	H	$CD_2CD_3$	H	$CD(CH_3)_2$	$CD(CH_3)_2$
945.	$CD_2CH_3$	H	$CD_2CH_3$	H	$CD(CH_3)_2$	$CD(CH_3)_2$
946.	$CD_2CH_3$	H	$CD(CD_3)_2$	H	$CD(CH_3)_2$	$CD(CH_3)_2$
947.	$CD_2CH_3$	H	$CD(CH_3)_2$	H	$CD(CH_3)_2$	$CD(CH_3)_2$
948.	$CD_2CH_3$	H	$CD_2CD(CD_3)_2$	H	$CD(CH_3)_2$	$CD(CH_3)_2$
949.	$CD_2CH_3$	H	$CD_2CH(CH_3)_2$	H	$CD(CH_3)_2$	$CD(CH_3)_2$
950.	$CD_2CH_3$	H	$CD_2C(CD_3)_3$	H	$CD(CH_3)_2$	$CD(CH_3)_2$
951.	$CD_2CH_3$	H	$CD_2C(CH_3)_3$	H	$CD(CH_3)_2$	$CD(CH_3)_2$
952.	$CD_2CH_3$	H	$CD_2CD_2CF_3$	H	$CD(CH_3)_2$	$CD(CH_3)_2$
953.	$CD_2CH_3$	H	$CD_2CH_2CF_3$	H	$CD(CH_3)_2$	$CD(CH_3)_2$
954.	$CD_2CH_3$	H	$CD_2CCF_3(CH_3)$ 2	H	$CD(CH_3)_2$	$CD(CH_3)_2$
955.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
956.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
957.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$

[0141]














$L^{A_i}$ , $L^{B_i}$ , $L^{C_i}$ , $L^{D_i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
958.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
959.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
960.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
961.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
962.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
963.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
964.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
965.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
966.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
967.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
968.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
969.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
970.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$

[0142]







$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
971.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
972.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
973.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
974.	$CD_2CH_3$	H		H	$CD(CH_3)_2$	$CD(CH_3)_2$
975.	$CD_2CD_3$	$CD_3$	$CD_3$	H	H	$CD_2CD(CD_3)_2$
976.	$CD_2CD_3$	$CD_3$	$CD_2CD_3$	H	H	$CD_2CD(CD_3)_2$
977.	$CD_2CD_3$	$CD_3$	$CD_2CH_3$	H	H	$CD_2CD(CD_3)_2$
978.	$CD_2CD_3$	$CD_3$	$CD(CD_3)_2$	H	H	$CD_2CD(CD_3)_2$
979.	$CD_2CD_3$	$CD_3$	$CD(CH_3)_2$	H	H	$CD_2CD(CD_3)_2$
980.	$CD_2CD_3$	$CD_3$	$CD_2CD(CD_3)_2$	H	H	$CD_2CD(CD_3)_2$
981.	$CD_2CD_3$	$CD_3$	$CD_2CH(CH_3)_2$	H	H	$CD_2CD(CD_3)_2$
982.	$CD_2CD_3$	$CD_3$	$CD_2C(CD_3)_3$	H	H	$CD_2CD(CD_3)_2$
983.	$CD_2CD_3$	$CD_3$	$CD_2C(CH_3)_3$	H	H	$CD_2CD(CD_3)_2$
984.	$CD_2CD_3$	$CD_3$	$CD_2CD_2CF_3$	H	H	$CD_2CD(CD_3)_2$
985.	$CD_2CD_3$	$CD_3$	$CD_2CH_2CF_3$	H	H	$CD_2CD(CD_3)_2$
986.	$CD_2CD_3$	$CD_3$	$CD_2CCF_3(CH_3)$	H	H	$CD_2CD(CD_3)_2$
987.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$

[0143]






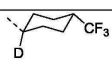
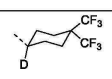



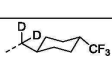
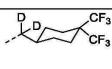


$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
988.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
989.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
990.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
991.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
992.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
993.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
994.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
995.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
996.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
997.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
998.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
999.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
1000.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$






[0144]

$L^{A^i}$ , $L^{B^i}, L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1001.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
1002.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
1003.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
1004.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
1005.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
1006.	$CD_2CD_3$	$CD_3$		H	H	$CD_2CD(CD_3)_2$
1007.	$CD_2CH_3$	H	H	$CD_3$	$CD_2CH_3$	$CD_2CH_3$
1008.	$CD_2CH_3$	H	H	$CD_2CD_3$	$CD_2CH_3$	$CD_2CH_3$
1009.	$CD_2CH_3$	H	H	$CD_2CH_3$	$CD_2CH_3$	$CD_2CH_3$
1010.	$CD_2CH_3$	H	H	$CD(CD_3)_2$	$CD_2CH_3$	$CD_2CH_3$
1011.	$CD_2CH_3$	H	H	$CD(CH_3)_2$	$CD_2CH_3$	$CD_2CH_3$
1012.	$CD_2CH_3$	H	H	$CD_2CD(CD_3)_2$	$CD_2CH_3$	$CD_2CH_3$
1013.	$CD_2CH_3$	H	H	$CD_2CH(CH_3)_2$	$CD_2CH_3$	$CD_2CH_3$
1014.	$CD_2CH_3$	H	H	$CD_2C(CD_3)_3$	$CD_2CH_3$	$CD_2CH_3$
1015.	$CD_2CH_3$	H	H	$CD_2C(CH_3)_3$	$CD_2CH_3$	$CD_2CH_3$
1016.	$CD_2CH_3$	H	H	$CD_2CD_2CF_3$	$CD_2CH_3$	$CD_2CH_3$
1017.	$CD_2CH_3$	H	H	$CD_2CH_2CF_3$	$CD_2CH_3$	$CD_2CH_3$














[0145]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1018.	$CD_2CH_3$	H	H	$CD_2CCF_3(CH_3)$ 2	$CD_2CH_3$	$CD_2CH_3$
1019.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1020.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1021.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1022.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1023.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1024.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1025.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1026.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1027.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1028.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1029.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1030.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$













[0146]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1031.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1032.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1033.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1034.	$CD_2CH_3$	H	H		$CD_2CH_3$	$CD_2CH_3$
1035.	$CD_2CH_3$	$CD_3$	H	$CD_3$	$CD(CH_3)_2$	$CD(CH_3)_2$
1036.	$CD_2CH_3$	$CD_3$	H	$CD_2CD_3$	$CD(CH_3)_2$	$CD(CH_3)_2$
1037.	$CD_2CH_3$	$CD_3$	H	$CD_2CH_3$	$CD(CH_3)_2$	$CD(CH_3)_2$
1038.	$CD_2CH_3$	$CD_3$	H	$CD(CD_3)_2$	$CD(CH_3)_2$	$CD(CH_3)_2$
1039.	$CD_2CH_3$	$CD_3$	H	$CD(CH_3)_2$	$CD(CH_3)_2$	$CD(CH_3)_2$
1040.	$CD_2CH_3$	$CD_3$	H	$CD_2CD(CD_3)_2$	$CD(CH_3)_2$	$CD(CH_3)_2$
1041.	$CD_2CH_3$	$CD_3$	H	$CD_2CH(CH_3)_2$	$CD(CH_3)_2$	$CD(CH_3)_2$
1042.	$CD_2CH_3$	$CD_3$	H	$CD_2C(CD_3)_3$	$CD(CH_3)_2$	$CD(CH_3)_2$
1043.	$CD_2CH_3$	$CD_3$	H	$CD_2C(CH_3)_3$	$CD(CH_3)_2$	$CD(CH_3)_2$
1044.	$CD_2CH_3$	$CD_3$	H	$CD_2CD_2CF_3$	$CD(CH_3)_2$	$CD(CH_3)_2$
1045.	$CD_2CH_3$	$CD_3$	H	$CD_2CH_2CF_3$	$CD(CH_3)_2$	$CD(CH_3)_2$
1046.	$CD_2CH_3$	$CD_3$	H	$CD_2CCF_3(CH_3)$ 2	$CD(CH_3)_2$	$CD(CH_3)_2$
1047.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$

[0147]

$L^{A_i}$ , $L^{B_i}$ , $L^{C_i}$ , $L^{D_i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1048.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1049.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1050.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1051.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1052.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1053.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1054.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1055.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1056.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1057.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1058.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1059.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1060.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$

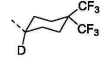

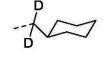

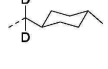

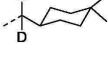





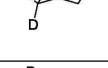

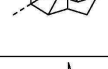

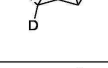



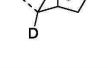

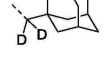

[0148]

$L^{Ar}$ , $L^{Bi}$ , $L^{Ci}$ , $L^{Di}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1061.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1062.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1063.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1064.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1065.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1066.	$CD_2CH_3$	$CD_3$	H		$CD(CH_3)_2$	$CD(CH_3)_2$
1067.	$CD(CH_3)_2$	$CD_3$	H	H	H	
1068.	$CD(CH_3)_2$	$CD_2CD_3$	H	H	H	
1069.	$CD(CH_3)_2$	$CD_2CH_3$	H	H	H	
1070.	$CD(CH_3)_2$	$CD(CD_3)_2$	H	H	H	
1071.	$CD(CH_3)_2$	$CD(CH_3)_2$	H	H	H	
1072.	$CD(CH_3)_2$	$CD_2CD(CD_3)_2$	H	H	H	

[0149]














$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1073.	$CD(CH_3)_2$	$CD_2CH(CH_3)_2$	H	H	H	
1074.	$CD(CH_3)_2$	$CD_2C(CD_3)_3$	H	H	H	
1075.	$CD(CH_3)_2$	$CD_2C(CH_3)_3$	H	H	H	
1076.	$CD(CH_3)_2$	$CD_2CD_2CF_3$	H	H	H	
1077.	$CD(CH_3)_2$	$CD_2CH_2CF_3$	H	H	H	
1078.	$CD(CH_3)_2$	$CD_2CCF_3(CH_3)_2$	H	H	H	
1079.	$CD(CH_3)_2$		H	H	H	
1080.	$CD(CH_3)_2$		H	H	H	
1081.	$CD(CH_3)_2$		H	H	H	
1082.	$CD(CH_3)_2$		H	H	H	
1083.	$CD(CH_3)_2$		H	H	H	
1084.	$CD(CH_3)_2$		H	H	H	

[0150]




















$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1085.	$CD(CH_3)_2$		H	H	H	
1086.	$CD(CH_3)_2$		H	H	H	
1087.	$CD(CH_3)_2$		H	H	H	
1088.	$CD(CH_3)_2$		H	H	H	
1089.	$CD(CH_3)_2$		H	H	H	
1090.	$CD(CH_3)_2$		H	H	H	
1091.	$CD(CH_3)_2$		H	H	H	
1092.	$CD(CH_3)_2$		H	H	H	
1093.	$CD(CH_3)_2$		H	H	H	
1094.	$CD(CH_3)_2$		H	H	H	
1095.	$CD(CH_3)_2$		H	H	H	
1096.	$CD(CH_3)_2$		H	H	H	

[0151]

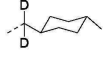
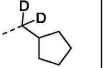
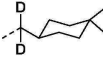
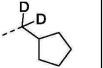
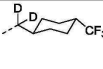
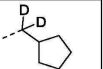
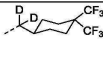
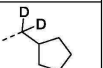

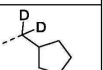
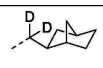
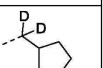
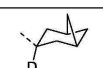
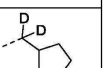

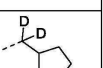

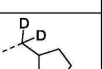
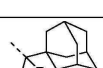
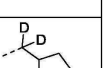


$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1097.	$CD(CH_3)_2$		H	H	H	
1098.	$CD(CH_3)_2$		H	H	H	
1099.	$CD(CD_3)_2$	$CD_3$	H	H	H	
1100.	$CD(CD_3)_2$	$CD_2CD_3$	H	H	H	
1101.	$CD(CD_3)_2$	$CD_2CH_3$	H	H	H	
1102.	$CD(CD_3)_2$	$CD(CD_3)_2$	H	H	H	
1103.	$CD(CD_3)_2$	$CD(CH_3)_2$	H	H	H	
1104.	$CD(CD_3)_2$	$CD_2CD(CD_3)_2$	H	H	H	
1105.	$CD(CD_3)_2$	$CD_2CH(CH_3)_2$	H	H	H	
1106.	$CD(CD_3)_2$	$CD_2C(CD_3)_3$	H	H	H	
1107.	$CD(CD_3)_2$	$CD_2C(CH_3)_3$	H	H	H	




























[0152]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1108.	$CD(CD_3)_2$	$CD_2CD_2CF_3$	H	H	H	
1109.	$CD(CD_3)_2$	$CD_2CH_2CF_3$	H	H	H	
1110.	$CD(CD_3)_2$	$CD_2CCF_3(CH_3)_2$	H	H	H	
1111.	$CD(CD_3)_2$		H	H	H	
1112.	$CD(CD_3)_2$		H	H	H	
1113.	$CD(CD_3)_2$		H	H	H	
1114.	$CD(CD_3)_2$		H	H	H	
1115.	$CD(CD_3)_2$		H	H	H	
1116.	$CD(CD_3)_2$		H	H	H	
1117.	$CD(CD_3)_2$		H	H	H	
1118.	$CD(CD_3)_2$		H	H	H	

[0153]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1119.	$CD(CD_3)_2$		H	H	H	
1120.	$CD(CD_3)_2$		H	H	H	
1121.	$CD(CD_3)_2$		H	H	H	
1122.	$CD(CD_3)_2$		H	H	H	
1123.	$CD(CD_3)_2$		H	H	H	
1124.	$CD(CD_3)_2$		H	H	H	
1125.	$CD(CD_3)_2$		H	H	H	
1126.	$CD(CD_3)_2$		H	H	H	
1127.	$CD(CD_3)_2$		H	H	H	
1128.	$CD(CD_3)_2$		H	H	H	














[0154]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1129.	$CD(CD_3)_2$		H	H	H	
1130.	$CD(CD_3)_2$		H	H	H	
1131.	$CH(CH_3)_2$	H	$CH_2CH_3$	H	H	
1132.	$CH(CH_3)_2$	H	$CH(CH_3)_2$	H	H	
1133.	$CH(CH_3)_2$	H	$CH_2CH(CH_3)_2$	H	H	
1134.	$CH(CH_3)_2$	H	$C(CH_3)_3$	H	H	
1135.	$CH(CH_3)_2$	H	$CH_2C(CH_3)_3$	H	H	
1136.	$CH(CH_3)_2$	H	$CH_2CH_2CF_3$	H	H	
1137.	$CH(CH_3)_2$	H	$CH_2CCF_3(CH_3)$ 2	H	H	
1138.	$CH(CH_3)_2$	H		H	H	
1139.	$CH(CH_3)_2$	H		H	H	
1140.	$CH(CH_3)_2$	H		H	H	
1141.	$CH(CH_3)_2$	H		H	H	
1142.	$CH(CH_3)_2$	H		H	H	
1143.	$CH(CH_3)_2$	H		H	H	
1144.	$CH(CH_3)_2$	H		H	H	
1145.	$CH(CH_3)_2$	H		H	H	























[0155]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1146.	$CH(CH_3)_2$	H		H	H	
1147.	$CH(CH_3)_2$	H		H	H	
1148.	$CH(CH_3)_2$	H		H	H	
1149.	$CH(CH_3)_2$	H		H	H	
1150.	$CH(CH_3)_2$	H		H	H	
1151.	$CH(CH_3)_2$	H		H	H	
1152.	$CH(CH_3)_2$	H		H	H	
1153.	$CH(CH_3)_2$	H		H	H	
1154.	$CH(CH_3)_2$	H		H	H	
1155.	$CH(CH_3)_2$	H		H	H	
1156.	$CH(CH_3)_2$	H		H	H	
1157.	$CH(CH_3)_2$	H		H	H	
1158.	$CD(CH_3)_2$	H	$CD_3$	H		$CD_3$
1159.	$CD(CH_3)_2$	H	$CD_2CD_3$	H		$CD_3$
1160.	$CD(CH_3)_2$	H	$CD_2CH_3$	H		$CD_3$















[0156]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1161.	$CD(CH_3)_2$	H	$CD(CD_3)_2$	H		$CD_3$
1162.	$CD(CH_3)_2$	H	$CD(CH_3)_2$	H		$CD_3$
1163.	$CD(CH_3)_2$	H	$CD_2CD(CD_3)_2$	H		$CD_3$
1164.	$CD(CH_3)_2$	H	$CD_2CH(CH_3)_2$	H		$CD_3$
1165.	$CD(CH_3)_2$	H	$CD_2C(CD_3)_3$	H		$CD_3$
1166.	$CD(CH_3)_2$	H	$CD_2C(CH_3)_3$	H		$CD_3$
1167.	$CD(CH_3)_2$	H	$CD_2CD_2CF_3$	H		$CD_3$
1168.	$CD(CH_3)_2$	H	$CD_2CH_2CF_3$	H		$CD_3$
1169.	$CD(CH_3)_2$	H	$CD_2CCF_3(CH_3)$ 2	H		$CD_3$
1170.	$CD(CH_3)_2$	H		H		$CD_3$
1171.	$CD(CH_3)_2$	H		H		$CD_3$

[0157]











$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1172.	$CD(CH_3)_2$	H		H		$CD_3$
1173.	$CD(CH_3)_2$	H		H		$CD_3$
1174.	$CD(CH_3)_2$	H		H		$CD_3$
1175.	$CD(CH_3)_2$	H		H		$CD_3$
1176.	$CD(CH_3)_2$	H		H		$CD_3$
1177.	$CD(CH_3)_2$	H		H		$CD_3$
1178.	$CD(CH_3)_2$	H		H		$CD_3$
1179.	$CD(CH_3)_2$	H		H		$CD_3$
1180.	$CD(CH_3)_2$	H		H		$CD_3$
1181.	$CD(CH_3)_2$	H		H		$CD_3$
1182.	$CD(CH_3)_2$	H		H		$CD_3$

[0158]

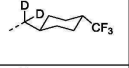
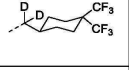
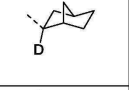
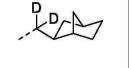
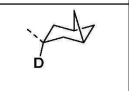

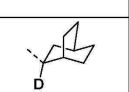
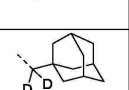
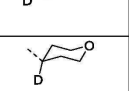
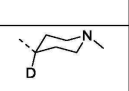
$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1183.	$CD(CH_3)_2$	H		H		$CD_3$
1184.	$CD(CH_3)_2$	H		H		$CD_3$
1185.	$CD(CH_3)_2$	H		H		$CD_3$
1186.	$CD(CH_3)_2$	H		H		$CD_3$
1187.	$CD(CH_3)_2$	H		H		$CD_3$
1188.	$CD(CH_3)_2$	H		H		$CD_3$
1189.	$CD(CH_3)_2$	H		H		$CD_3$
1190.	$CD(CD_3)_2$	H	$CD_3$	H	$CD(CD_3)_2$	$CD(CD_3)_2$
1191.	$CD(CD_3)_2$	H	$CD_2CD_3$	H	$CD(CD_3)_2$	$CD(CD_3)_2$
1192.	$CD(CD_3)_2$	H	$CD_2CH_3$	H	$CD(CD_3)_2$	$CD(CD_3)_2$
1193.	$CD(CD_3)_2$	H	$CD(CD_3)_2$	H	$CD(CD_3)_2$	$CD(CD_3)_2$
1194.	$CD(CD_3)_2$	H	$CD(CH_3)_2$	H	$CD(CD_3)_2$	$CD(CD_3)_2$
1195.	$CD(CD_3)_2$	H	$CD_2CD(CD_3)_2$	H	$CD(CD_3)_2$	$CD(CD_3)_2$
1196.	$CD(CD_3)_2$	H	$CD_2CH(CH_3)_2$	H	$CD(CD_3)_2$	$CD(CD_3)_2$
1197.	$CD(CD_3)_2$	H	$CD_2C(CD_3)_3$	H	$CD(CD_3)_2$	$CD(CD_3)_2$

[0159]

















$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1198.	$CD(CD_3)_2$	H	$CD_2C(CH_3)_3$	H	$CD(CD_3)_2$	$CD(CD_3)_2$
1199.	$CD(CD_3)_2$	H	$CD_2CD_2CF_3$	H	$CD(CD_3)_2$	$CD(CD_3)_2$
1200.	$CD(CD_3)_2$	H	$CD_2CH_2CF_3$	H	$CD(CD_3)_2$	$CD(CD_3)_2$
1201.	$CD(CD_3)_2$	H	$CD_2CCF_3(CH_3)$ 2	H	$CD(CD_3)_2$	$CD(CD_3)_2$
1202.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1203.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1204.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1205.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1206.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1207.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1208.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1209.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1210.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1211.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$











[0160]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^1$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1212.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1213.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1214.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1215.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1216.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1217.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1218.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1219.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1220.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1221.	$CD(CD_3)_2$	H		H	$CD(CD_3)_2$	$CD(CD_3)_2$
1222.	$CH(CH_3)_2$	H	H	$CH_3$	H	$CH_3$
1223.	$CH(CH_3)_2$	H	H	$CH_2CH_3$	H	$CH_3$
1224.	$CH(CH_3)_2$	H	H	$CH(CH_3)_2$	H	$CH_3$
1225.	$CH(CH_3)_2$	H	H	$CH_2CH(CH_3)_2$	H	$CH_3$
1226.	$CH(CH_3)_2$	H	H	$C(CH_3)_3$	H	$CH_3$

[0161]

$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1227.	$CH(CH_3)_2$	H	H	$CH_2C(CH_3)_3$	H	$CH_3$
1228.	$CH(CH_3)_2$	H	H	$CH_2CH_2CF_3$	H	$CH_3$
1229.	$CH(CH_3)_2$	H	H	$CH_2CCF_3(CH_3)$ 2	H	$CH_3$
1230.	$CH(CH_3)_2$	H	H		H	$CH_3$
1231.	$CH(CH_3)_2$	H	H		H	$CH_3$
1232.	$CH(CH_3)_2$	H	H		H	$CH_3$
1233.	$CH(CH_3)_2$	H	H		H	$CH_3$
1234.	$CH(CH_3)_2$	H	H		H	$CH_3$
1235.	$CH(CH_3)_2$	H	H		H	$CH_3$
1236.	$CH(CH_3)_2$	H	H		H	$CH_3$
1237.	$CH(CH_3)_2$	H	H		H	$CH_3$
1238.	$CH(CH_3)_2$	H	H		H	$CH_3$
1239.	$CH(CH_3)_2$	H	H		H	$CH_3$
1240.	$CH(CH_3)_2$	H	H		H	$CH_3$
1241.	$CH(CH_3)_2$	H	H		H	$CH_3$
1242.	$CH(CH_3)_2$	H	H		H	$CH_3$
1243.	$CH(CH_3)_2$	H	H		H	$CH_3$







[0162]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1244.	$CH(CH_3)_2$	H	H		H	$CH_3$
1245.	$CH(CH_3)_2$	H	H		H	$CH_3$
1246.	$CH(CH_3)_2$	H	H		H	$CH_3$
1247.	$CH(CH_3)_2$	H	H		H	$CH_3$
1248.	$CH(CH_3)_2$	H	H		H	$CH_3$
1249.	$CH(CH_3)_2$	H	H		H	$CH_3$
1250.	$CH(CH_3)_2$	$CH_3$	$CH_3$	H	$CH_3$	$CH_3$
1251.	$CH(CH_3)_2$	$CH_2CH_3$	$CH_3$	H	$CH_3$	$CH_3$
1252.	$CH(CH_3)_2$	$CH(CH_3)_2$	$CH_3$	H	$CH_3$	$CH_3$
1253.	$CH(CH_3)_2$	$CH_2CH(CH_3)_2$	$CH_3$	H	$CH_3$	$CH_3$
1254.	$CH(CH_3)_2$	$C(CH_3)_3$	$CH_3$	H	$CH_3$	$CH_3$
1255.	$CH(CH_3)_2$	$CH_2C(CH_3)_3$	$CH_3$	H	$CH_3$	$CH_3$
1256.	$CH(CH_3)_2$	$CH_2CH_2CF_3$	$CH_3$	H	$CH_3$	$CH_3$
1257.	$CH(CH_3)_2$	$CH_2CCF_3(CH_3)_2$	$CH_3$	H	$CH_3$	$CH_3$
1258.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1259.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1260.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1261.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$

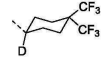
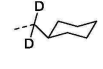
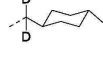
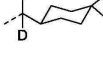

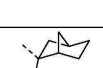
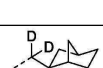
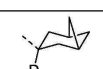
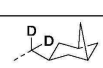

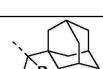
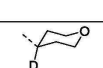
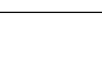
[0163]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1262.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1263.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1264.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1265.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1266.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1267.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1268.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1269.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1270.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1271.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1272.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1273.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1274.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1275.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1276.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1277.	$CH(CH_3)_2$		$CH_3$	H	$CH_3$	$CH_3$
1278.	$CD(CH_3)_2$	$CD_3$	$CD_3$	H	$CH_3$	$CH_3$







[0164]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1279.	$CD(CH_3)_2$	$CD_2CD_3$	$CD_3$	H	$CH_3$	$CH_3$
1280.	$CD(CH_3)_2$	$CD_2CH_3$	$CD_3$	H	$CH_3$	$CH_3$
1281.	$CD(CH_3)_2$	$CD(CD_3)_2$	$CD_3$	H	$CH_3$	$CH_3$
1282.	$CD(CH_3)_2$	$CD(CH_3)_2$	$CD_3$	H	$CH_3$	$CH_3$
1283.	$CD(CH_3)_2$	$CD_2CD(CD_3)_2$	$CD_3$	H	$CH_3$	$CH_3$
1284.	$CD(CH_3)_2$	$CD_2CH(CH_3)_2$	$CD_3$	H	$CH_3$	$CH_3$
1285.	$CD(CH_3)_2$	$CD_2C(CD_3)_3$	$CD_3$	H	$CH_3$	$CH_3$
1286.	$CD(CH_3)_2$	$CD_2C(CH_3)_3$	$CD_3$	H	$CH_3$	$CH_3$
1287.	$CD(CH_3)_2$	$CD_2CD_2CF_3$	$CD_3$	H	$CH_3$	$CH_3$
1288.	$CD(CH_3)_2$	$CD_2CH_2CF_3$	$CD_3$	H	$CH_3$	$CH_3$
1289.	$CD(CH_3)_2$	$CD_2CCF_3(CH_3)_2$	$CD_3$	H	$CH_3$	$CH_3$
1290.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1291.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1292.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1293.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1294.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1295.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$

[0165]

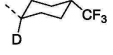
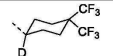


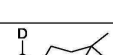
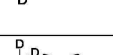

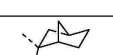
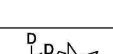
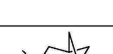
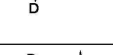

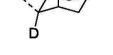
$L^{A_i}$ , $L^{B_i}$ , $L^{C_i}$ , $L^{D_i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1296.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1297.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1298.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1299.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1300.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1301.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1302.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1303.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1304.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1305.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1306.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1307.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1308.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$

[0166]












$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1309.	$CD(CH_3)_2$		$CD_3$	H	$CH_3$	$CH_3$
1310.	$CD(CD_3)_2$	$CD_2CD_3$	$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1311.	$CD(CD_3)_2$	$CD_2CH_3$	$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1312.	$CD(CD_3)_2$	$CD(CD_3)_2$	$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1313.	$CD(CD_3)_2$	$CD(CH_3)_2$	$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1314.	$CD(CD_3)_2$	$CD_2CD(CD_3)_2$	$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1315.	$CD(CD_3)_2$	$CD_2CH(CH_3)_2$	$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1316.	$CD(CD_3)_2$	$CD_2C(CD_3)_3$	$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1317.	$CD(CD_3)_2$	$CD_2C(CH_3)_3$	$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1318.	$CD(CD_3)_2$	$CD_2CD_2CF_3$	$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1319.	$CD(CD_3)_2$	$CD_2CH_2CF_3$	$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1320.	$CD(CD_3)_2$	$CD_2CCF_3(CH_3)_2$	$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1321.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1322.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1323.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1324.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1325.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$

[0167]



$L^{A1}$ , $L^{B1}$ , $L^{C1}$ , $L^{D1}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1326.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1327.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1328.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1329.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1330.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1331.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1332.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1333.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1334.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1335.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1336.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1337.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1338.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$











[0168]

$L^{Ar}$ , $L^{Bz}$ , $L^{Ct}$ , $L^{Di}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1339.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1340.	$CD(CD_3)_2$		$CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1341.	$CH(CH_3)_2$	$CH_3$	$CH_2CH_3$	H	$CD_2CD_3$	$CD_2CD_3$
1342.	$CH(CH_3)_2$	$CH_3$	$CH(CH_3)_2$	H	$CD_2CD_3$	$CD_2CD_3$
1343.	$CH(CH_3)_2$	$CH_3$	$CH_2CH(CH_3)_2$	H	$CD_2CD_3$	$CD_2CD_3$
1344.	$CH(CH_3)_2$	$CH_3$	$C(CH_3)_3$	H	$CD_2CD_3$	$CD_2CD_3$
1345.	$CH(CH_3)_2$	$CH_3$	$CH_2C(CH_3)_3$	H	$CD_2CD_3$	$CD_2CD_3$
1346.	$CH(CH_3)_2$	$CH_3$	$CH_2CH_2CF_3$	H	$CD_2CD_3$	$CD_2CD_3$
1347.	$CH(CH_3)_2$	$CH_3$	$CH_2CCF_3(CH_3)$ 2	H	$CD_2CD_3$	$CD_2CD_3$
1348.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1349.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1350.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1351.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1352.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1353.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1354.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1355.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1356.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$


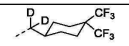

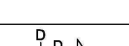
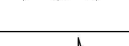
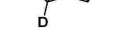
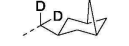

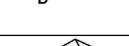
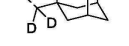



[0169]

$L^{Ar}$ , $L^{Bz}$ , $L^{Cl}$ , $L^{Di}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1357.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1358.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1359.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1360.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1361.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1362.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1363.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1364.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1365.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1366.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1367.	$CH(CH_3)_2$	$CH_3$		H	$CD_2CD_3$	$CD_2CD_3$
1368.	$CD(CH_3)_2$	$CD_3$	$CD_2CD_3$	H	$CD_2CD_3$	$CD_2CD_3$
1369.	$CD(CH_3)_2$	$CD_3$	$CD_2CH_3$	H	$CD_2CD_3$	$CD_2CD_3$
1370.	$CD(CH_3)_2$	$CD_3$	$CD(CD_3)_2$	H	$CD_2CD_3$	$CD_2CD_3$
1371.	$CD(CH_3)_2$	$CD_3$	$CD(CH_3)_2$	H	$CD_2CD_3$	$CD_2CD_3$
1372.	$CD(CH_3)_2$	$CD_3$	$CD_2CD(CD_3)_2$	H	$CD_2CD_3$	$CD_2CD_3$
1373.	$CD(CH_3)_2$	$CD_3$	$CD_2CH(CH_3)_2$	H	$CD_2CD_3$	$CD_2CD_3$
1374.	$CD(CH_3)_2$	$CD_3$	$CD_2C(CD_3)_3$	H	$CD_2CD_3$	$CD_2CD_3$













[0170]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1375.	$CD(CH_3)_2$	$CD_3$	$CD_2C(CH_3)_3$	H	$CD_2CD_3$	$CD_2CD_3$
1376.	$CD(CH_3)_2$	$CD_3$	$CD_2CD_2CF_3$	H	$CD_2CD_3$	$CD_2CD_3$
1377.	$CD(CH_3)_2$	$CD_3$	$CD_2CH_2CF_3$	H	$CD_2CD_3$	$CD_2CD_3$
1378.	$CD(CH_3)_2$	$CD_3$	$CD_2CCF_3(CH_3)$ 2	H	$CD_2CD_3$	$CD_2CD_3$
1379.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1380.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1381.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1382.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1383.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1384.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1385.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1386.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1387.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1388.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$











[0171]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1389.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1390.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1391.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1392.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1393.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1394.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1395.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1396.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1397.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1398.	$CD(CH_3)_2$	$CD_3$		H	$CD_2CD_3$	$CD_2CD_3$
1399.		$CD_3$	H	H	H	$CD_3$
1400.		$CD_3$	$CD_3$	H	H	$CD_3$
1401.		$CD_3$	H	$CD_3$	H	$CD_3$









[0172]

$L^{A^i}$ , $L^{B^i}$ , $L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1402.		CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>
1403.		CD <sub>3</sub>	H	H	H	CD <sub>3</sub>
1404.		CD <sub>3</sub>	CD <sub>3</sub>	H	H	CD <sub>3</sub>
1405.		CD <sub>3</sub>	H	CD <sub>3</sub>	H	CD <sub>3</sub>
1406.		CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>
1407.		CD <sub>3</sub>	H	H	H	CD <sub>3</sub>
1408.		CD <sub>3</sub>	CD <sub>3</sub>	H	H	CD <sub>3</sub>
1409.		CD <sub>3</sub>	H	CD <sub>3</sub>	H	CD <sub>3</sub>
1410.		CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>
1411.		CD <sub>3</sub>	H	H	H	CD <sub>3</sub>
1412.		CD <sub>3</sub>	CD <sub>3</sub>	H	H	CD <sub>3</sub>
1413.		CD <sub>3</sub>	H	CD <sub>3</sub>	H	CD <sub>3</sub>

[0173]

$L^{A^i}$ , $L^{B^i}, L^{C^i}$ , $L^{D^i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1414. 		CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>
1415. 		CD <sub>3</sub>	H	H	H	CD <sub>3</sub>
1416. 		CD <sub>3</sub>	CD <sub>3</sub>	H	H	CD <sub>3</sub>
1417. 		CD <sub>3</sub>	H	CD <sub>3</sub>	H	CD <sub>3</sub>
1418. 		CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>
1419. 		CD <sub>3</sub>	H	H	H	CD <sub>3</sub>
1420. 		CD <sub>3</sub>	CD <sub>3</sub>	H	H	CD <sub>3</sub>
1421. 		CD <sub>3</sub>	H	CD <sub>3</sub>	H	CD <sub>3</sub>
1422. 		CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>
1423. 		CD <sub>3</sub>	H	H	H	CD <sub>3</sub>

[0174]

$L^{A_i}$ , $L^{B_i}, L^{C_i}$ , $L^{D_i}$ 에서 $i$	$R^2$	$R^3$	$R^4$	$R^5$	$R^7$ 또는 $R^{61}$	$R^8$ 또는 $R^{62}$
1424. 		CD <sub>3</sub>	CD <sub>3</sub>	H	H	CD <sub>3</sub>
1425. 		CD <sub>3</sub>	H	CD <sub>3</sub>	H	CD <sub>3</sub>
1426. 		CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	CD <sub>3</sub>
1427. 		CD <sub>3</sub>	H	H	H	CD <sub>3</sub>
1428. 		CD <sub>3</sub>	CD <sub>3</sub>	H	H	CD <sub>3</sub>
1429. 		CD <sub>3</sub>	H	CD <sub>3</sub>	H	H
1430. 		CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	H
1431. CD <sub>3</sub>	H		H	H	H	H
1432. CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	CD <sub>3</sub>	H	H	H

[0175]

[0176]

일부 구체예에서, 화합물은  $ML_n(L_B)_{m-n}$ 의 화학식을 갖고, 이때 M은 Ir 또는 Pt이고;  $L_B$ 는 두자리 리간드이고; M이 Ir인 경우, m은 3이고, n은 1, 2, 또는 3이고; M이 Pt인 경우, m은 2이고, n은 1, 또는 2이다.

[0177]

이러한 일부 구체예에서, 화합물은  $IrL_3$ 의 화학식을 갖는다. 이러한 일부 구체예에서, 화합물은  $IrL(L_B)_2$ 의 화학식을 갖고;  $L_B$ 는 L과 상이하다.

[0178]

일부 구체예에서, 화합물은  $Ir(L)_2(L_B)$ 의 화학식을 갖고,  $L_B$ 는 L과 상이하다.

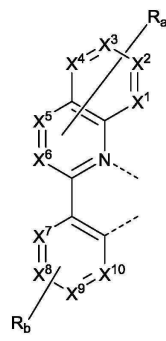
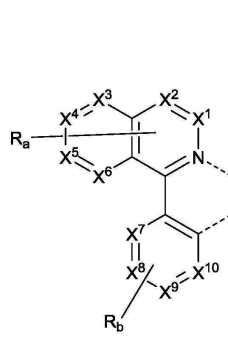
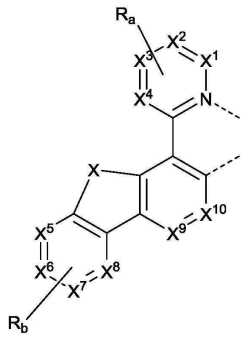
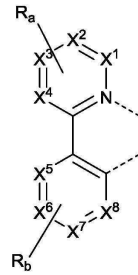
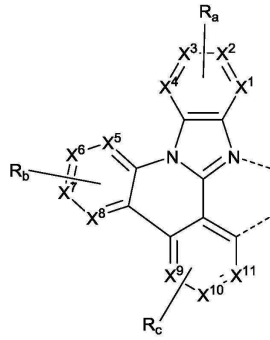
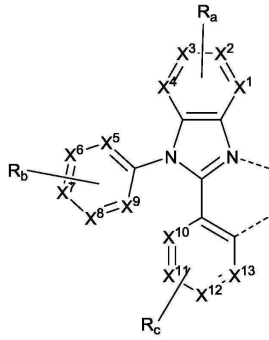
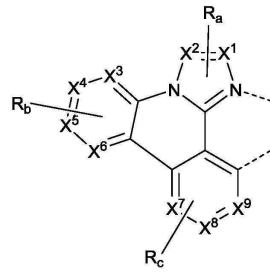
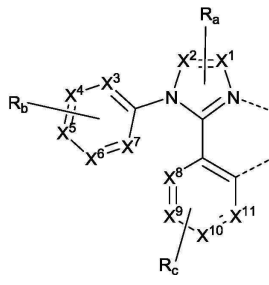
[0179]

일부 구체예에서, 화합물은  $Pt(L)(L_B)$ 의 화학식을 갖고, L 및  $L_B$ 는 동일하거나 상이할 수 있다. 이러한 일부 구체예에서, L 및  $L_B$ 는 연결되어 네자리 리간드를 형성한다. 일부 구체예에서, L 및  $L_B$ 는 두 위치에서 연결되어 매크로시클릭(macrocylic) 네자리 리간드를 형성한다.

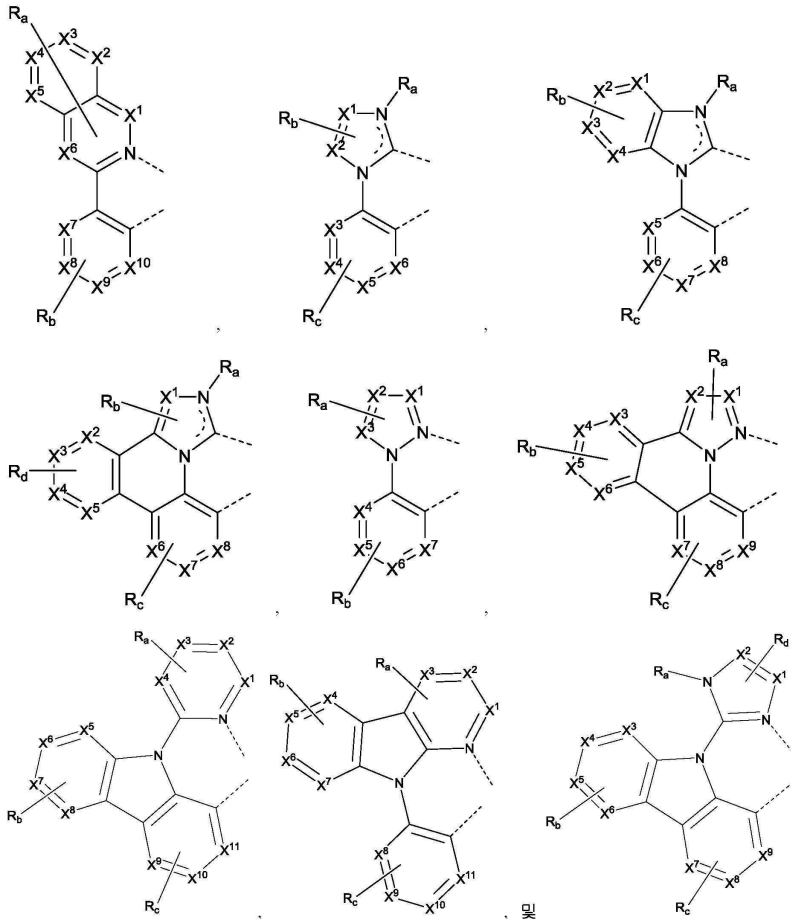
[0180]

화합물이  $ML_n(L_B)_{m-n}$ 의 화학식을 갖는 일부 경우에, (i) M은 Ir, m은 3, 그리고 n은 1 또는 2이거나, 또는 (ii) M은 Pt, m은 2, 그리고 n은 1이고;  $L_B$ 는 하기 화학식으로 이루어진 군에서 선택된다:





[0181]



[0182]

상기 식에서,

[0183]

각각의  $X^1$  내지  $X^{13}$ 은 탄소 및 질소로 이루어진 군에서 독립적으로 선택되고;

[0184]

$X$ 는  $BR'$ ,  $NR'$ ,  $PR'$ ,  $O$ ,  $S$ ,  $Se$ ,  $C=O$ ,  $S=O$ ,  $SO_2$ ,  $CR'R''$ ,  $SiR'R''$ , 및  $GeR'R''$ 로 이루어진 군에서 선택되고;

[0185]

$R'$  및  $R''$ 은 임의의 축합 또는 연결되어 고리를 형성하고;

[0186]

각각의  $R_a$ ,  $R_b$ ,  $R_c$ , 및  $R_d$ 는 일치환 내지 가능한 최대수의 치환, 또는 비치환을 나타낼 수 있고;

[0187]

$R'$ ,  $R''$ ,  $R_a$ ,  $R_b$ ,  $R_c$ , 및  $R_d$ 는 각각 수소, 중수소, 할라이드, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알키닐, 아릴, 헤테로아릴, 아실, 카르보닐, 카르복실산, 에스테르, 니트릴, 이소니트릴, 설페닐, 설피닐, 설포닐, 포스피노, 및 이의 조합으로 이루어진 군에서 독립적으로 선택되고;

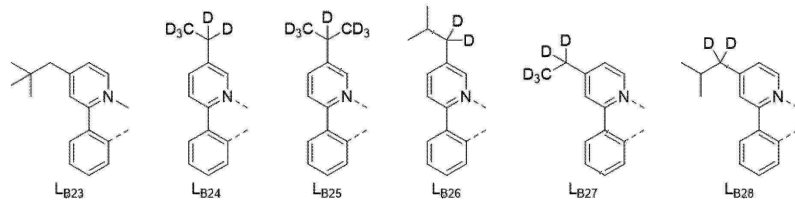
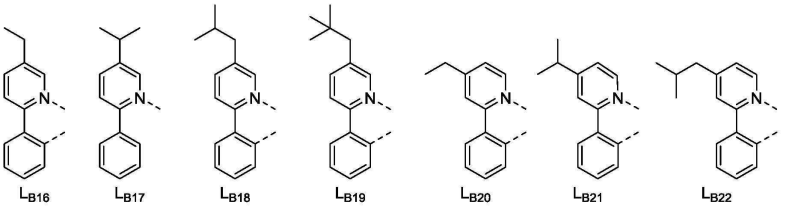
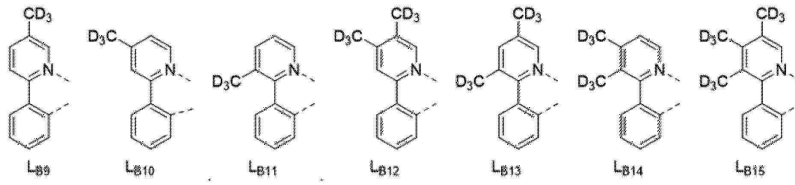
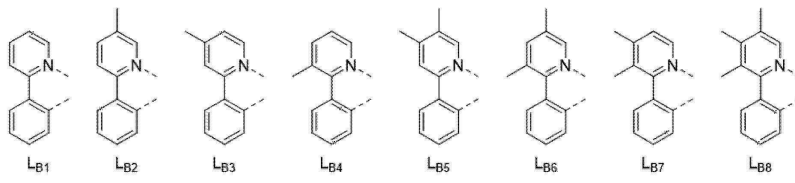
[0188]

$R_a$ ,  $R_b$ ,  $R_c$ , 및  $R_d$ 의 임의의 2개의 인접 치환기는 임의의 축합 또는 연결되어 고리를 형성하거나 다중자리 리간드를 형성한다.

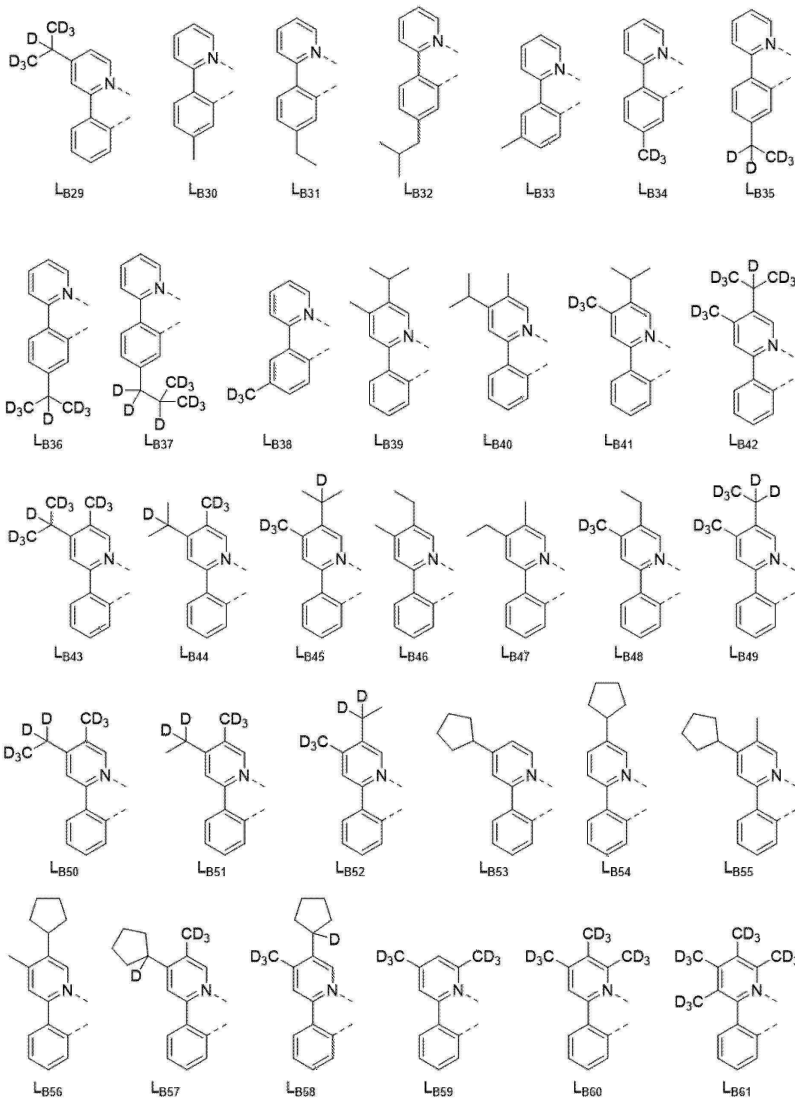
[0189]

화합물은  $ML_n(L_B)_{m-n}$ 의 화학식을 갖는 일부 구체예에서, (i)  $M$ 이  $Ir$ ,  $m$ 이 3, 그리고  $n$ 이 1 또는 2이거나, 또는 (ii)  $M$ 이  $Pt$ ,  $m$ 이 2, 그리고  $n$ 이 1이고;  $L_B$ 는 하기 제시된 바와 같이  $L_{B1}$  내지  $L_{B300}$ 으로 이루어진 군에서 선택된다:

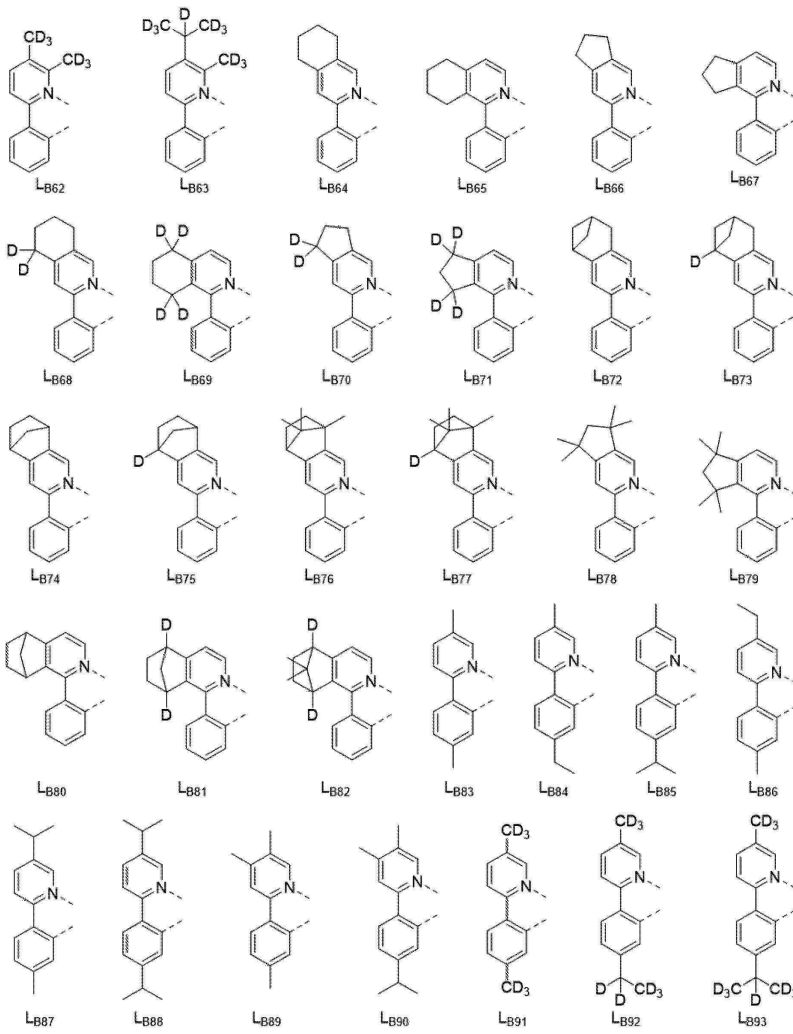
[0190]



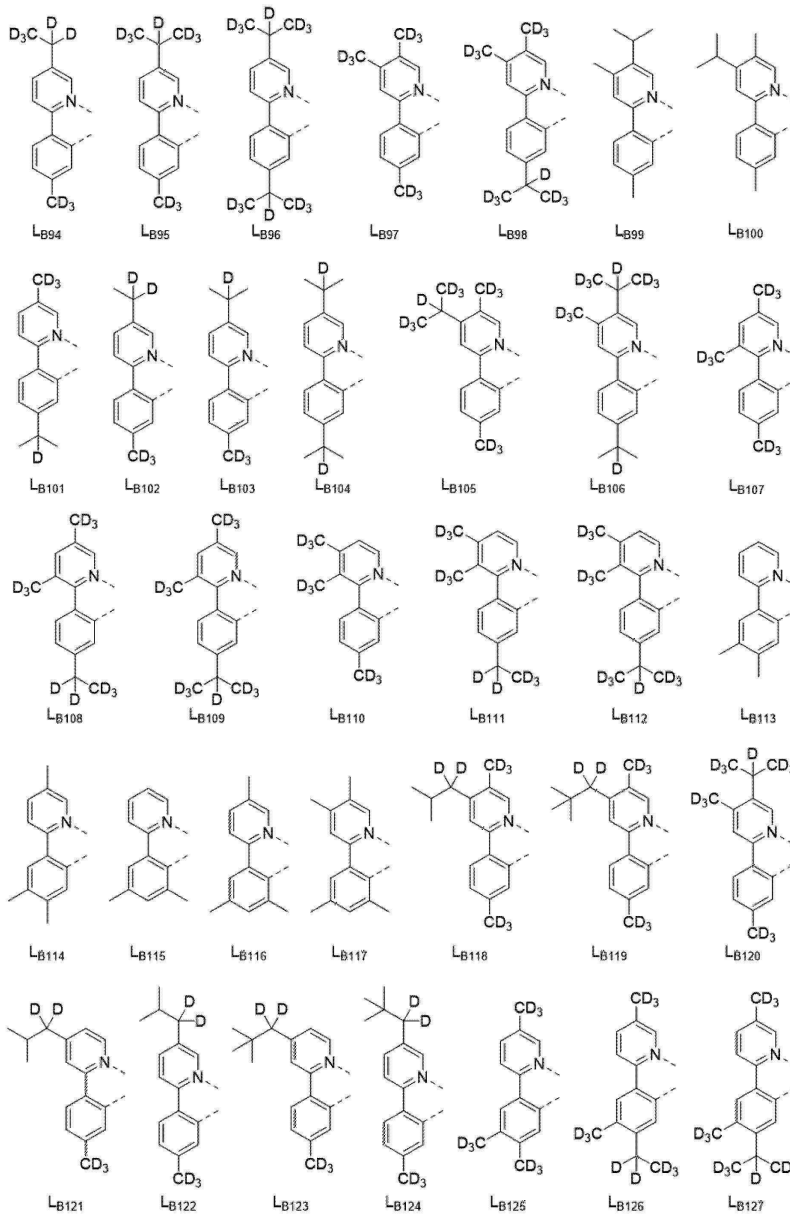
[0191]



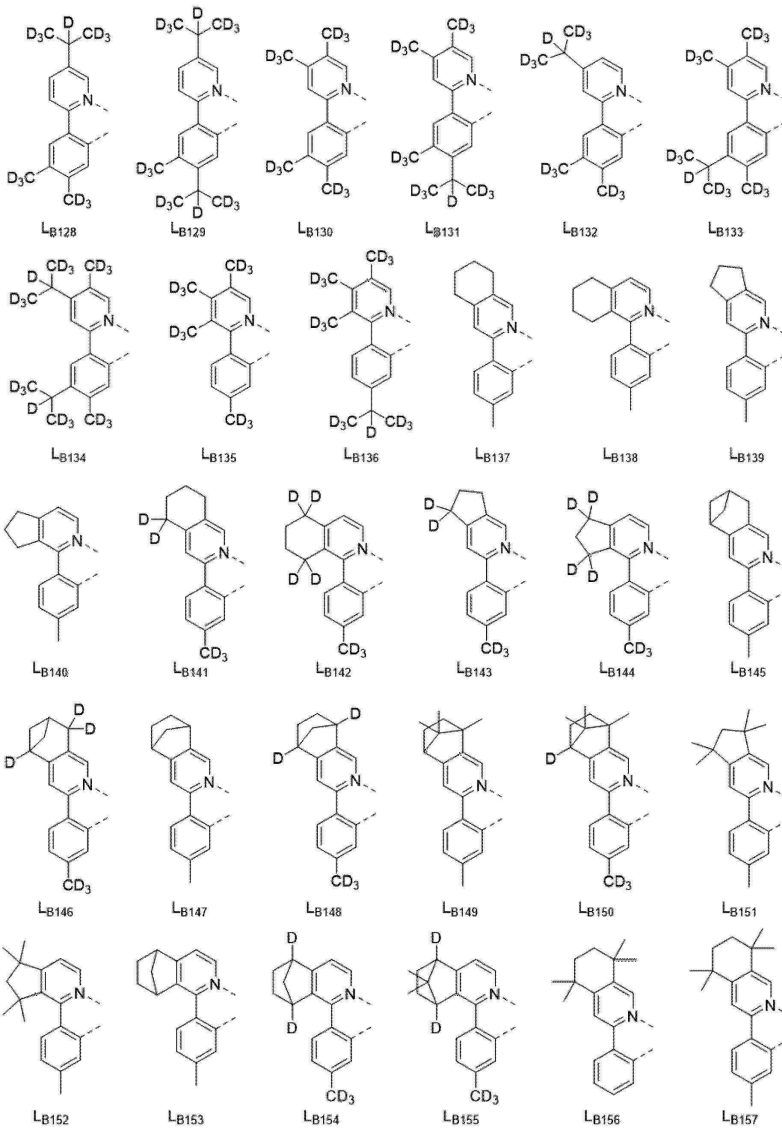
[0192]



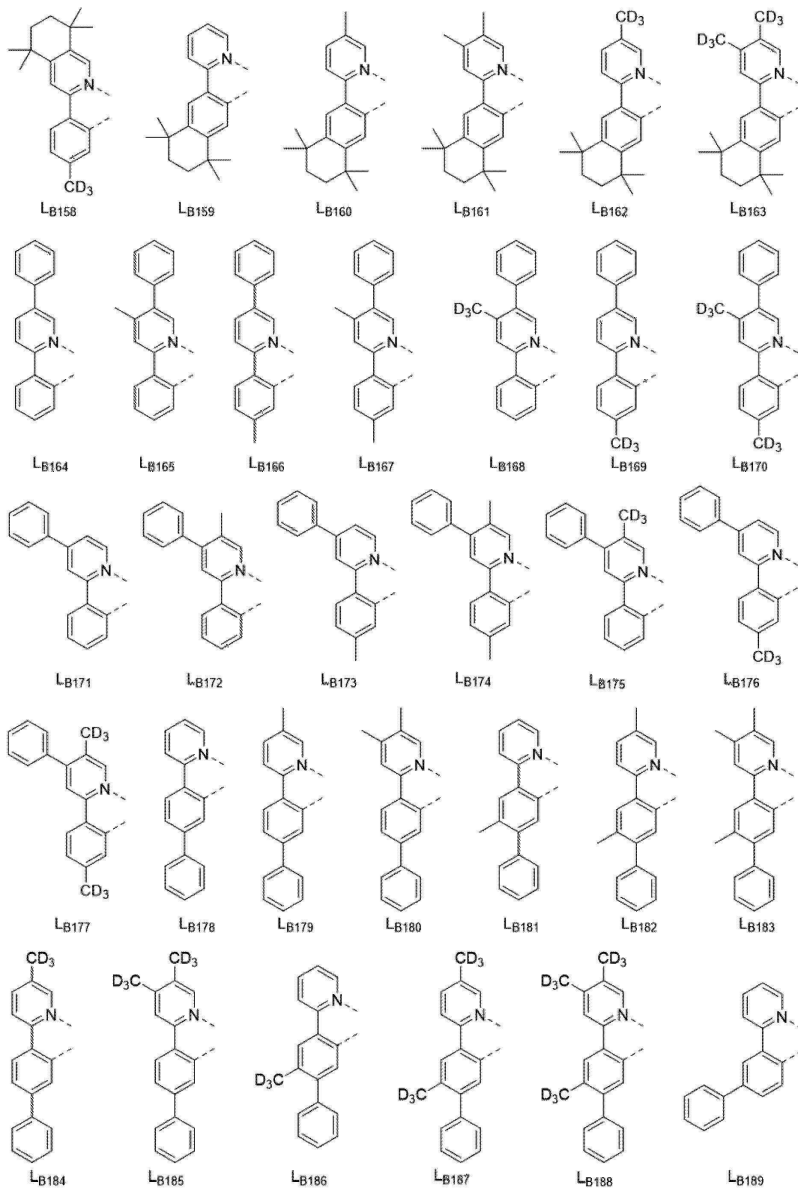
[0193]



[0194]

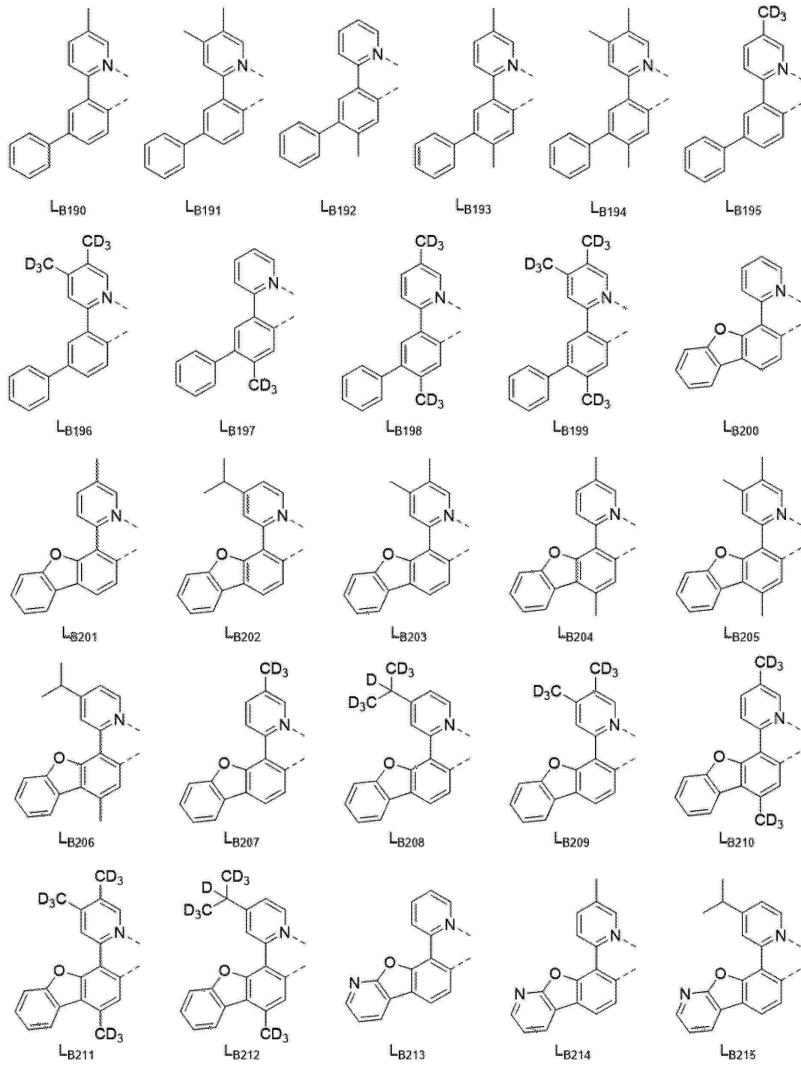


[0195]

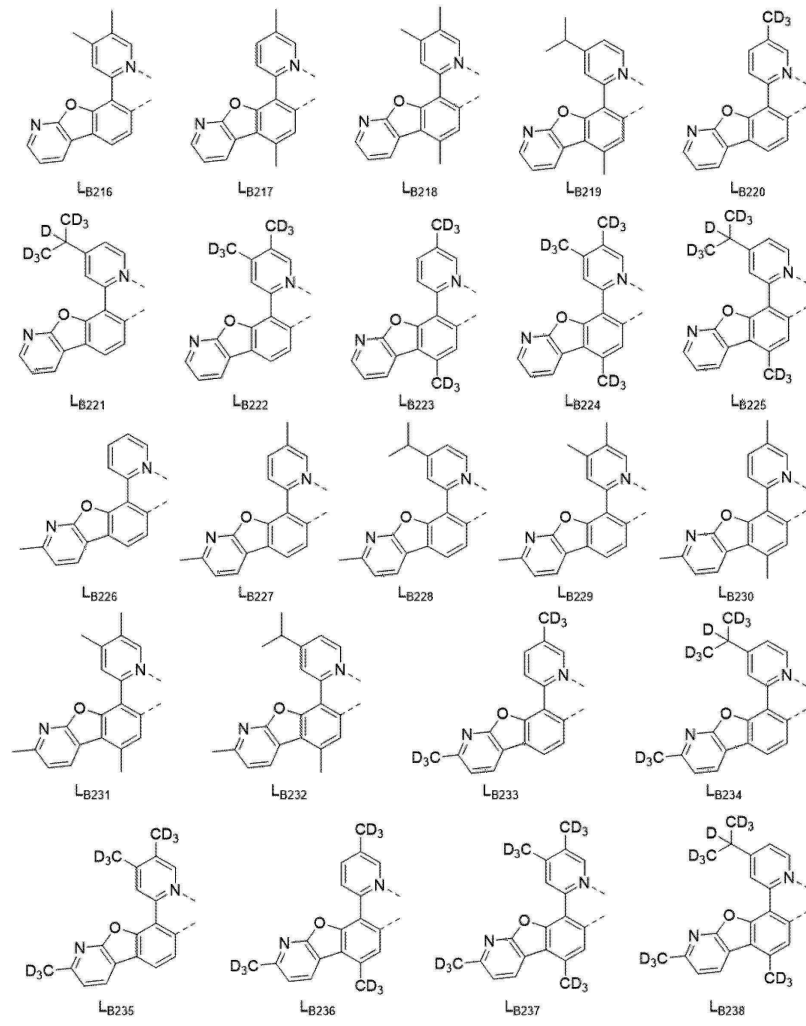


[0196]

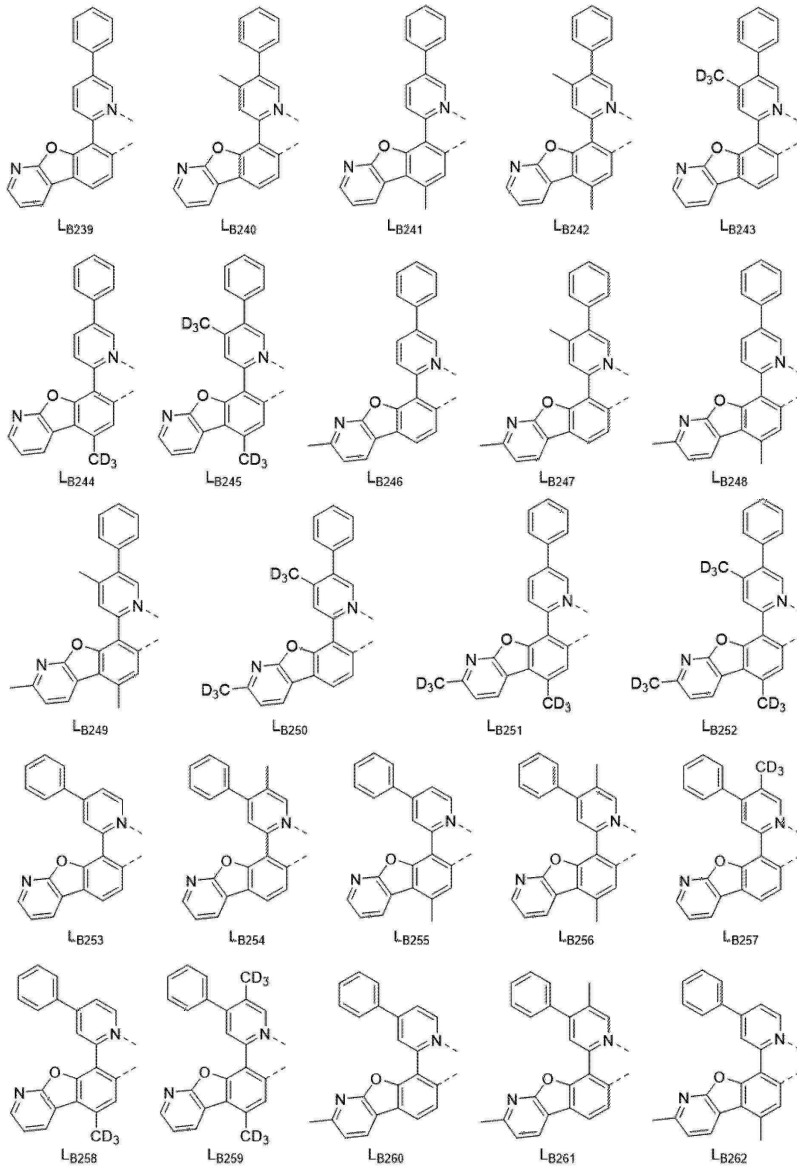




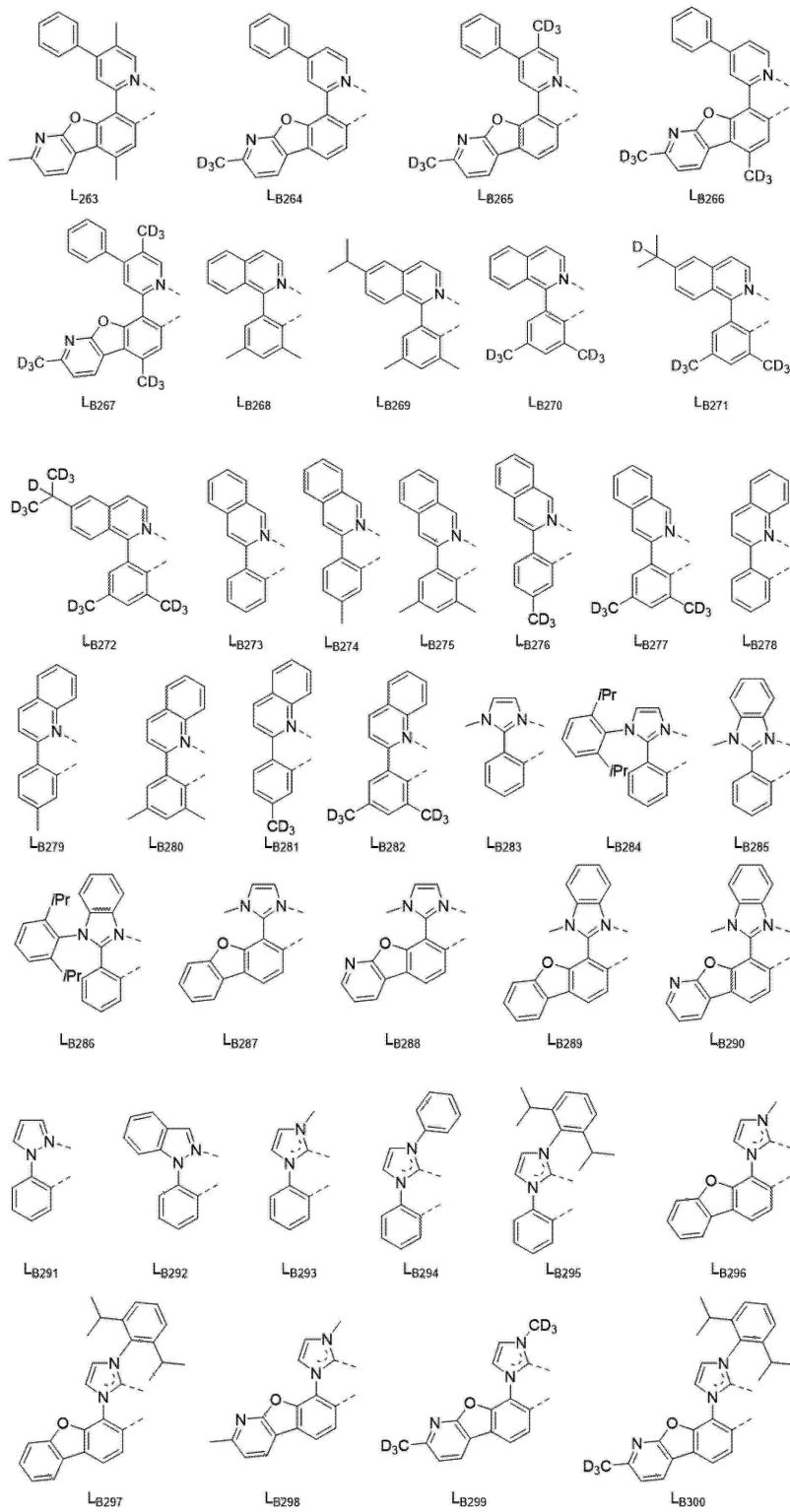
[0197]



[0198]



[0199]



[0200]

[0201]

[0202]

[0203]

[0204]

리간드 L은 L<sup>A1</sup> 내지 L<sup>A1432</sup>, L<sup>B1</sup> 내지 L<sup>B1432</sup>, L<sup>C1</sup> 내지 L<sup>C1432</sup>, 및 L<sup>D1</sup> 내지 L<sup>D1432</sup>일 수 있지만, L<sub>B</sub>는 유기금속 착물에서 또다른 리간드일 수 있다. 따라서, 리간드 L<sup>B1</sup> 내지 L<sup>B1432</sup>는 리간드 L<sub>B1</sub> 내지 L<sub>B300</sub>과 상이하고 대비되는 것을 쉽게 알 것이다.

일부 구체예에서, 화합물은 화합물 A-1 내지 화합물 A-429,600, 화합물 B-1 내지 화합물 B-429,600, 화합물 C-1 내지 화합물 C-429,600, 및 화합물 D-1 내지 화합물 D-429,600으로 이루어진 군에서 선택되고, 이때:

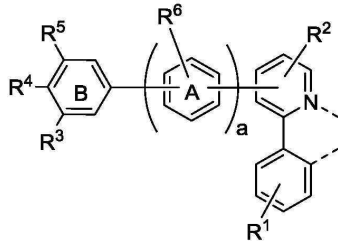
화합물 k-x는 화학식 Ir(L<sup>ki</sup>)(L<sub>Bj</sub>)<sub>2</sub>를 갖고;

[0205]  $x = 300i+j-300$ 이고;  $k$ 는 A, B, C, 또는 D이고;  $i$ 는 1~1430의 정수이고,  $j$ 는 1~300의 정수이고;

[0206]  $L_{B1}$  내지  $L_{B300}$ 은 본원에 제공된 구조를 갖는다.

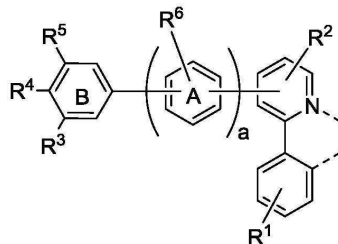
[0207] 일부 구체예에서, 화합물은 발광 도펀트일 수 있다. 일부 구체예에서, 화합물은 인광, 형광, 열 활성화 지연 형광, 즉, TADF(E-타입 지연 형광이라고도 함), 삼중항-삼중항 소멸, 또는 이들 프로세스의 조합을 통한 발광을 일으킬 수 있다.

[0208] 또다른 구체예에서, 애노드; 캐소드; 및 애노드와 캐소드 사이에 배치된 유기층을 포함하는 유기 발광 소자(OLED)가 기술된다. 일부 구체예에서, 본원에 기술된 OLED를 함유하는 소비자 제품이 기술된다. 유기층은 하기 화학식 I을 갖는 리간드 L을 갖는 화합물을 본원에 기술된 바와 같이 포함한다:



[0209]

[0210] 본 개시내용의 또다른 측면에 따르면, 하기 구조를 갖는 리간드 L을 갖는 화합물을 포함하는 배합물이 제공된다:

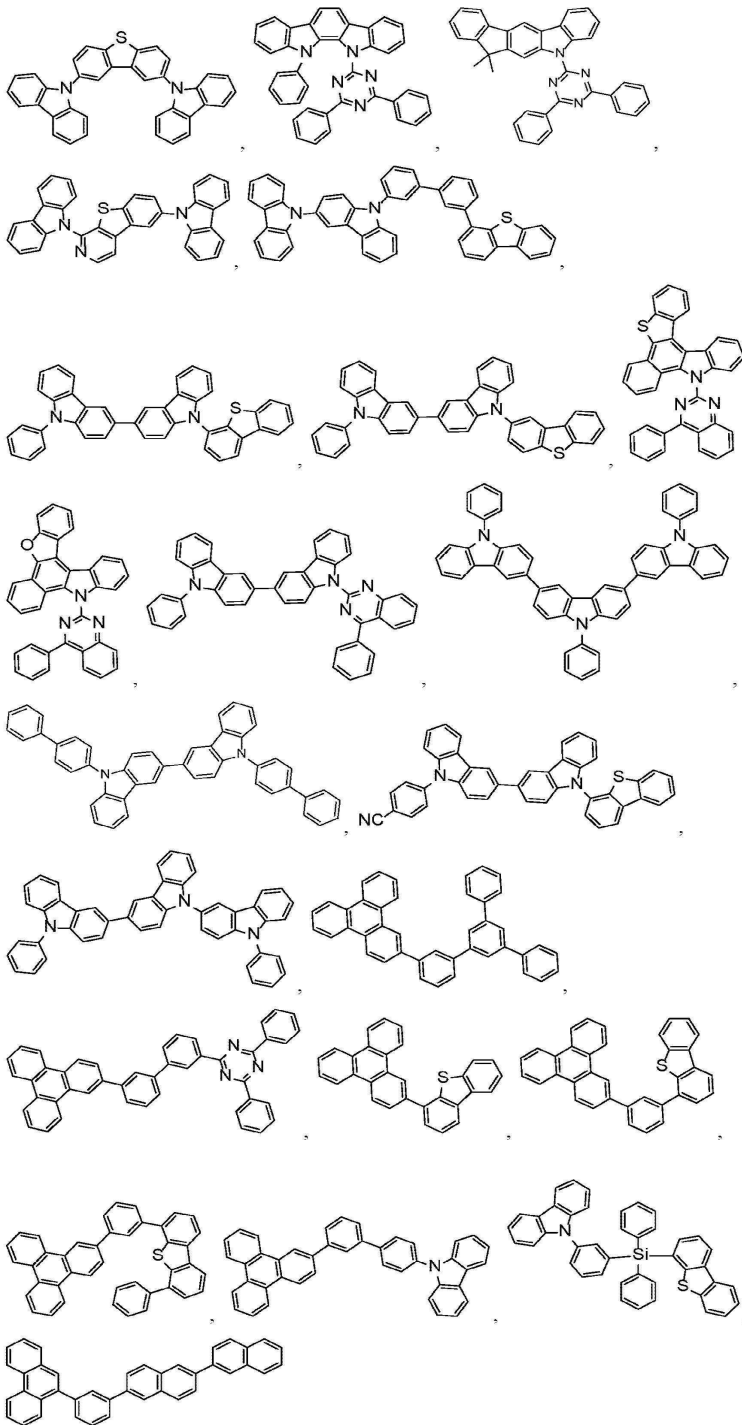


[0211]

[0212] 본원에 개시된 OLED는 소비자 제품, 전자 부품 모듈, 및 조명 패널 중 하나 이상에 통합될 수 있다. 유기층은 발광층일 수 있고 일부 구체예에서 화합물은 발광 도펀트일 수 있지만, 다른 구체예에서 화합물은 비발광 도펀트일 수 있다.

[0213] 유기층은 또한 호스트를 포함할 수 있다. 일부 구체예에서, 둘 이상의 호스트가 바람직하다. 일부 구체예에서, 사용된 호스트는 a) 이극성, b) 전자 수송, c) 정공 수송 또는 d) 전하 수송시 약간의 역할을 하는 와이드 밴드 갭 물질일 수 있다. 일부 구체예에서, 호스트는 금속 착물을 포함할 수 있다. 호스트는 트리페닐렌 함유 벤조 축합된 티오펜 또는 벤조 축합된 푸란일 수 있다. 호스트에서 임의의 치환기는  $C_nH_{2n+1}$ ,  $OC_nH_{2n+1}$ ,  $OAr_1$ ,  $N(C_nH_{2n+1})_2$ ,  $N(Ar_1)(Ar_2)$ ,  $CH=CH-C_nH_{2n+1}$ ,  $C\equiv C-C_nH_{2n+1}$ ,  $Ar_1$ ,  $Ar_1-Ar_2$ , 및  $C_nH_{2n}-Ar_1$ 로 이루어진 군에서 독립적으로 선택된 비축합된 치환기일 수 있거나, 또는 호스트는 비치환된다. 이전의 치환기에서  $n$ 은 1~10의 범위일 수 있고;  $Ar_1$  및  $Ar_2$ 는 벤젠, 비페닐, 나프탈렌, 트리페닐렌, 카르바졸, 및 이의 헤테로방향족 유사체로 이루어진 군에서 독립적으로 선택될 수 있다. 호스트는 무기 화합물일 수 있다. 예를 들면, Zn 함유 무기 물질, 예컨대 ZnS.

[0214] 호스트는 트리페닐렌, 카르바졸, 디벤조티오펜, 디벤조푸란, 디벤조셀레노펜, 아자트리페닐렌, 아자카르바졸, 아자-디벤조티오펜, 아자-디벤조푸란, 및 아자-디벤조셀레노펜으로 이루어진 군에서 선택된 하나 이상의 화학적기를 포함하는 화합물일 수 있다. 호스트는 금속 착물을 포함할 수 있다. 호스트는, 비제한적으로, 하기 화학식 및 이의 조합으로 이루어진 군에서 선택된 특정 화합물일 수 있다:



[0215]

[0216]

[0217]

[0218]

[0219]

[0220]

가능한 호스트의 추가 정보가 하기 제공된다.

본 개시내용의 또다른 측면에서, 화학식 I에 따른 화합물을 포함하는 배합물이 기술된다. 배합물은 본원에 개시된 용매, 호스트, 정공 주입 물질, 정공 수송 물질, 및 전자 수송 층 물질로 이루어진 균에서 선택된 하나 이상의 성분들을 포함할 수 있다.

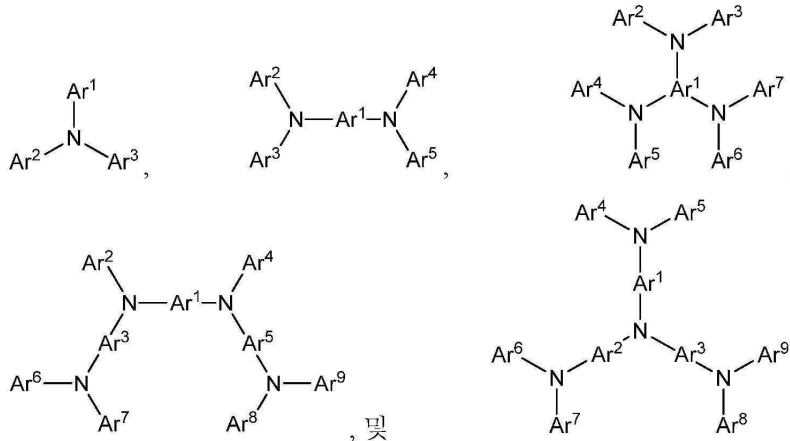
**다른 물질과의 조합**

유기 발광 소자에서 특정 층에 대하여 유용한 것으로 본원에 기재된 물질은 소자에 존재하는 다양한 다른 물질과 조합하여 사용될 수 있다. 예를 들면, 본원에 개시된 발광 도펀트는 다양한 호스트, 수송층, 차단층, 주입층, 전극 및 존재할 수 있는 기타의 층과 관련되어 사용될 수 있다. 하기에 기재되거나 또는 언급된 물질은 본원에 개시된 화합물과 조합하여 유용할 수 있는 물질들의 비제한적인 예이며, 당업자는 조합에 유용할 수 있는 기타의 물질을 확인하는 문헌을 용이하게 참조할 수 있다.





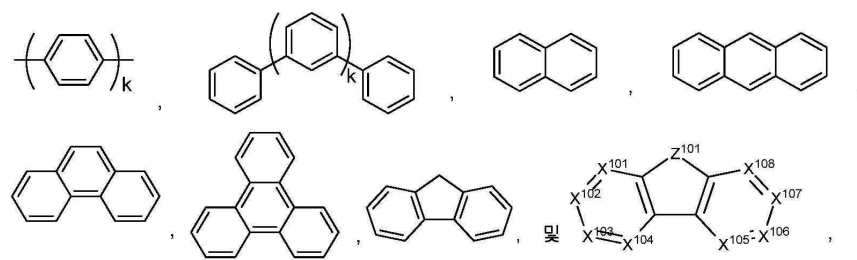
[0227] HIL 또는 HTL에 사용되는 방향족 아민 유도체의 비제한적인 예로는 하기 화학식을 들 수 있다:



[0228]

[0229] Ar<sup>1</sup> 내지 Ar<sup>9</sup> 각각은 벤젠, 비페닐, 트리페닐, 트리페닐렌, 나프탈렌, 안트라센, 페날렌, 페난트렌, 플루오렌, 피렌, 크리센, 페틸렌, 및 아줄렌과 같은 방향족 탄화수소 시클릭 화합물로 이루어진 군; 디벤조티오펜, 디벤조퓨란, 디벤조셀레노펜, 퓨란, 티오펜, 벤조퓨란, 벤조티오펜, 벤조셀레노펜, 카바졸, 인돌로카바졸, 피리딘인돌, 피롤로디피리딘, 피라졸, 이미다졸, 트리아졸, 옥사졸, 티아졸, 옥사디아졸, 옥사트리아졸, 디옥사졸, 티아디아졸, 피리딘, 피리다진, 피리미딘, 피라진, 트리아진, 옥사진, 옥사티아진, 옥사디아진, 인돌, 벤즈 이미다졸, 인다졸, 인독사진, 벤족사졸, 벤즈이속사졸, 벤조티아졸, 퀴놀린, 이소퀴놀린, 신놀린, 퀴나졸린, 퀴녹살린, 나프티리딘, 프탈라진, 프테리딘, 크산텐, 아크리딘, 페나진, 페노티아진, 펜옥사진, 벤조푸로피리딘, 푸로디피리딘, 벤조티에노피리딘, 티에노디피리딘, 벤조셀레노페노피리딘 및 셀레노페노디피리딘과 같은 방향족 헤테로시클릭 화합물로 이루어진 군; 및 방향족 탄화수소 시클릭 기 및 방향족 헤테로시클릭 기로부터 선택된 동일한 유형 또는 상이한 유형의 군이며 서로 직접 결합되거나 또는 산소 원자, 질소 원자, 황 원자, 규소 원자, 인 원자, 붕소 원자, 설페 구조 단위 및 지방족 시클릭 기 중 하나 이상을 통하여 결합되는 2 내지 10개의 시클릭 구조 단위로 이루어진 군으로부터 선택된다. 각각의 Ar은 비치환되거나 중수소, 할라이드, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알킬닐, 아릴, 헤테로아릴, 아실, 카르보닐, 카르복실산, 에스테르, 니트릴, 이소니트릴, 설페닐, 설피닐, 설포닐, 포스 피노 및 이들의 조합으로 이루어진 군으로부터 선택된 치환기로 치환될 수 있다.

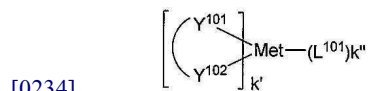
[0230] 하나의 측면에서, Ar<sup>1</sup> 내지 Ar<sup>9</sup>는 하기로 이루어진 군으로부터 독립적으로 선택되며:



[0231]

[0232] 여기서 k는 1 내지 20의 정수이며; X<sup>101</sup> 내지 X<sup>108</sup>은 C(CH 포함) 또는 N이고; Z<sup>101</sup>은 NAr<sup>1</sup>, O 또는 S이고; Ar<sup>1</sup>은 상기 정의된 바와 동일한 기를 갖는다.

[0233] HIL 또는 HTL에 사용된 금속 착물의 비제한적인 예는 하기를 들 수 있다:



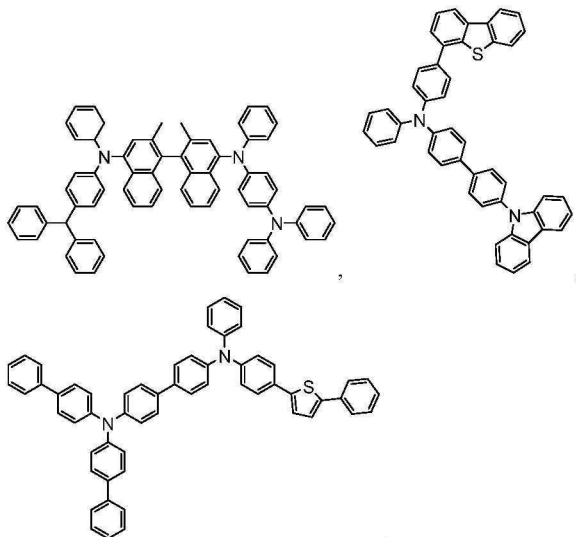
[0234]

[0235] 여기서 Met는 40 초과 원자 중량을 가질 수 있는 금속이고; (Y<sup>101</sup>-Y<sup>102</sup>)는 두자리 리간드이고, Y<sup>101</sup> 및 Y<sup>102</sup>는 독립적으로 C, N, O, P 및 S로부터 선택되며; L<sup>101</sup>은 보조 리간드이며; k'는 1 내지 금속에 결합될 수 있는 리간드 최대수의 정수값이고; k'+k'는 금속에 결합될 수 있는 리간드 최대수이다.

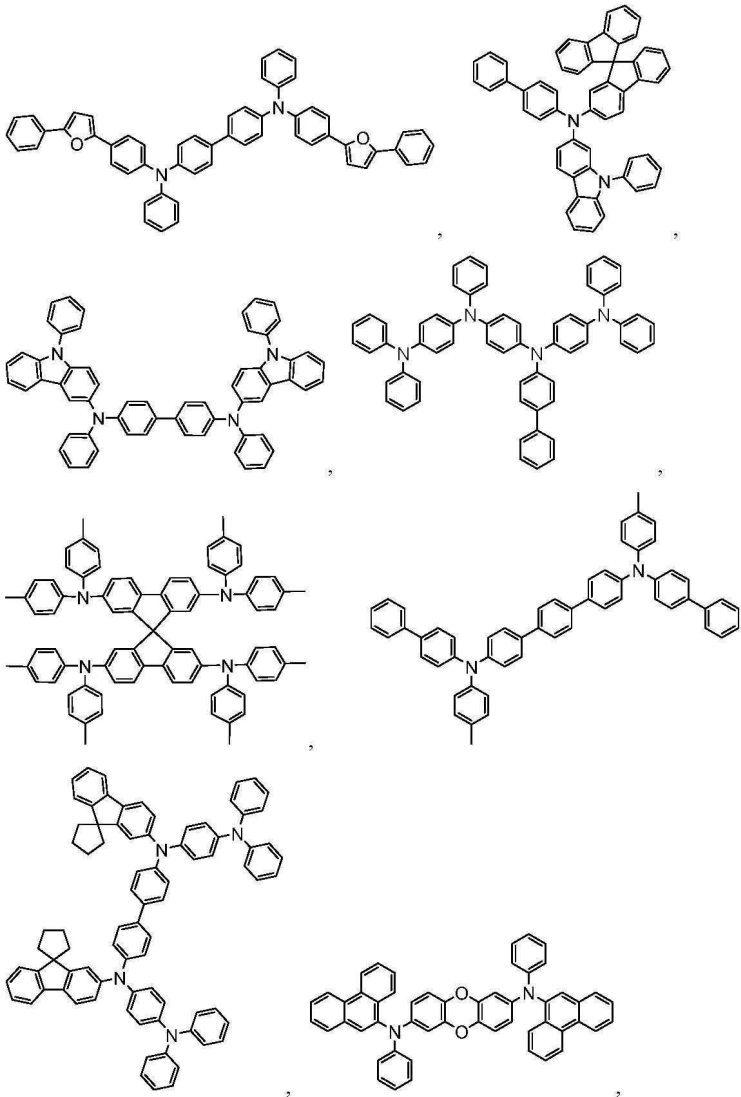


[0236] 일 측면에서, (Y<sup>101</sup>-Y<sup>102</sup>)는 2-페닐피리딘 유도체이다. 또 다른 측면에서, (Y<sup>101</sup>-Y<sup>102</sup>)는 카르벤 리간드이다. 또 다른 측면에서, Met은 Ir, Pt, Os 및 Zn으로부터 선택된다. 추가의 측면에서, 금속 착물은 약 0.6 V 미만의 용액 중의 최소 산화 전위 대 Fc<sup>+</sup>/Fc 커플을 갖는다.

[0237] 본원에 개시된 물질과 함께 OLED에 사용될 수 있는 HIL 및 HTL 물질의 비제한적인 예는 이들 물질을 개시하는 참고문헌과 함께 이하에 예시된다: CN102702075, DE102012005215, EP01624500, EP01698613, EP01806334, EP01930964, EP01972613, EP01997799, EP02011790, EP02055700, EP02055701, EP1725079, EP2085382, EP2660300, EP650955, JP07-073529, JP2005112765, JP2007091719, JP2008021687, JP2014-009196, KR20110088898, KR20130077473, TW201139402, US06517957, US20020158242, US20030162053, US20050123751, US20060182993, US20060240279, US20070145888, US20070181874, US20070278938, US20080014464, US20080091025, US20080106190, US20080124572, US20080145707, US20080220265, US20080233434, US20080303417, US2008107919, US20090115320, US20090167161, US2009066235, US2011007385, US20110163302, US2011240968, US2011278551, US2012205642, US2013241401, US20140117329, US2014183517, US5061569, US5639914, WO05075451, WO07125714, WO08023550, WO08023759, WO2009145016, WO2010061824, WO2011075644, WO2012177006, WO2013018530, WO2013039073, WO2013087142, WO2013118812, WO2013120577, WO2013157367, WO2013175747, WO2014002873, WO2014015935, WO2014015937, WO2014030872, WO2014030921, WO2014034791, WO2014104514, WO2014157018.

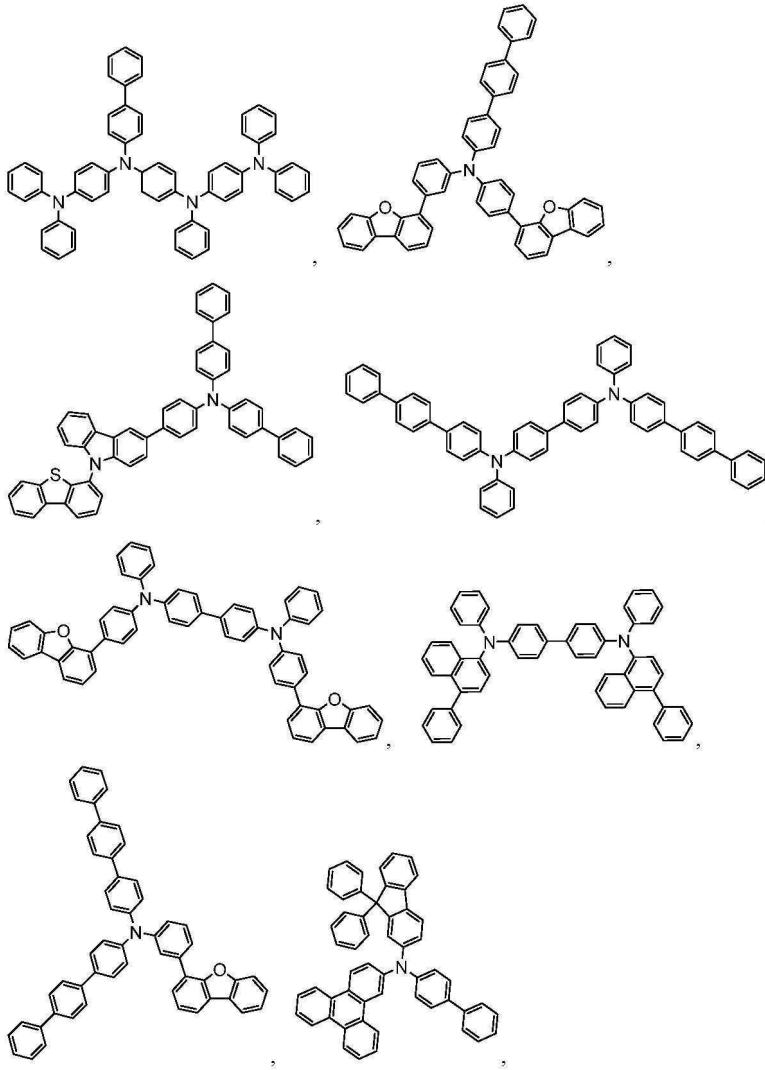


[0238]

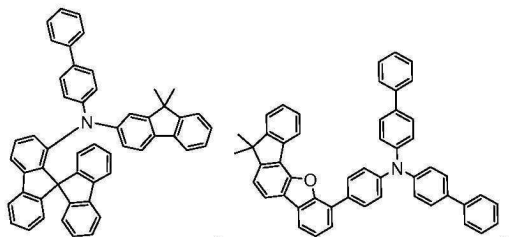
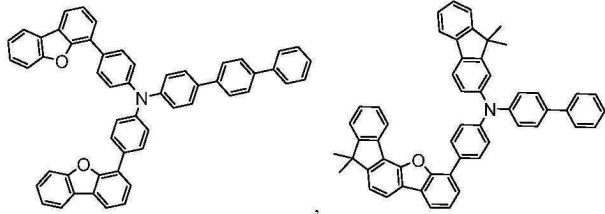
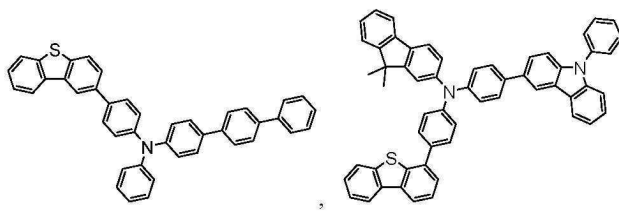
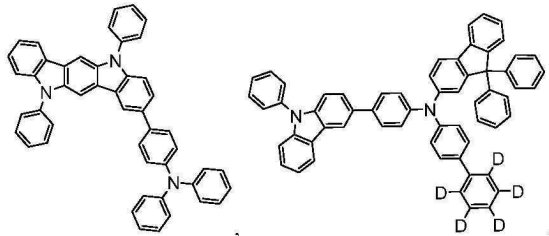
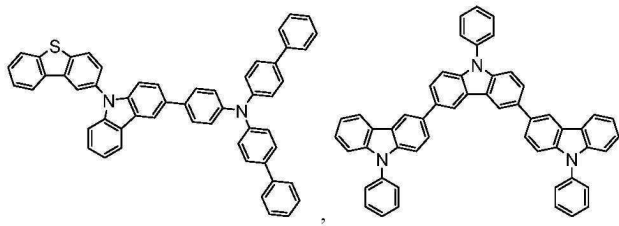


[0239]

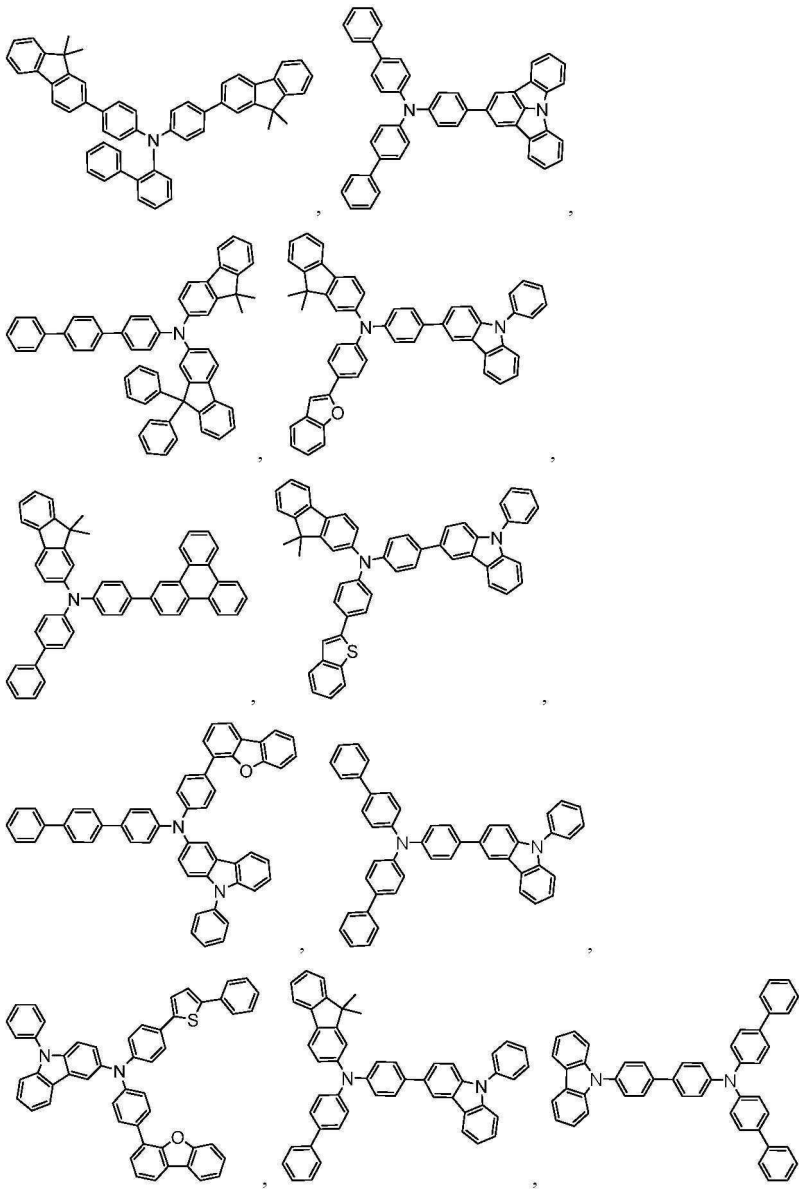




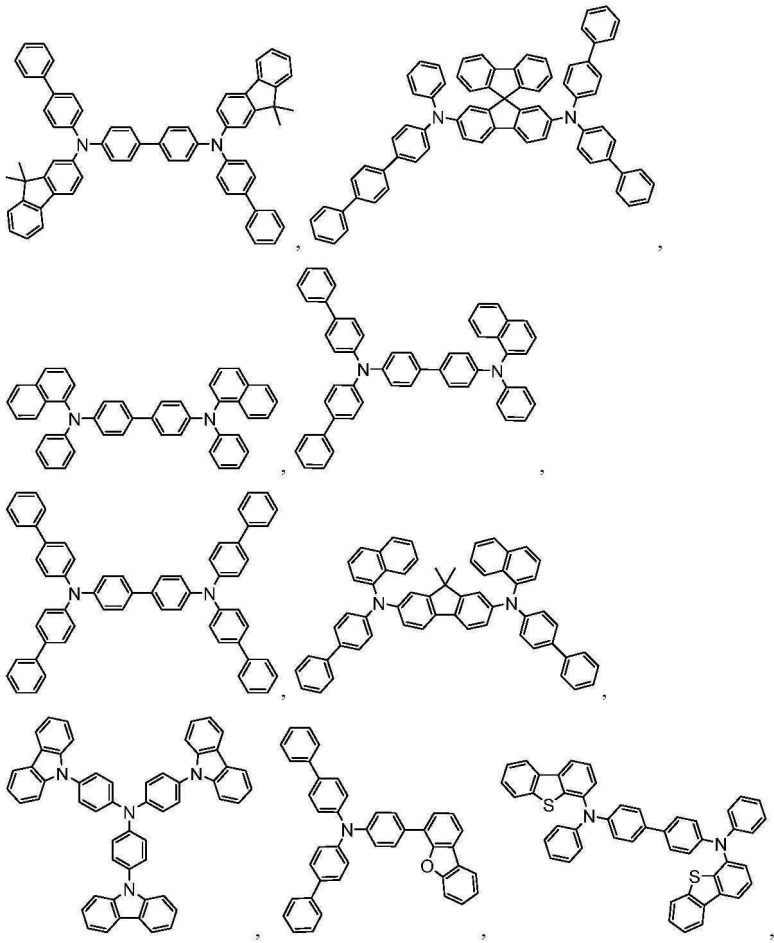
[0241]



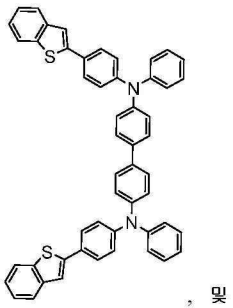
[0242]



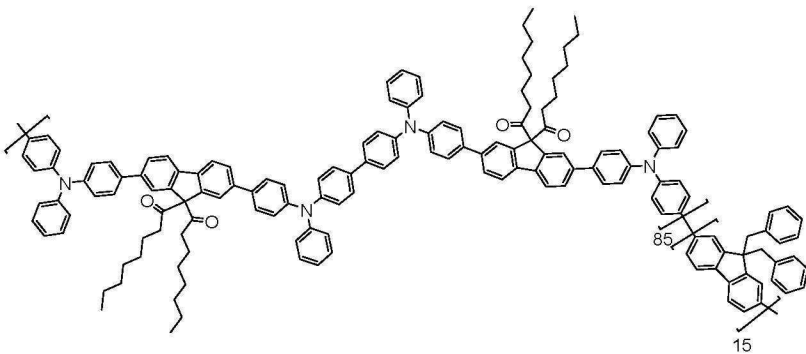
[0243]



[0244]



[0245]



[0246] EBL:

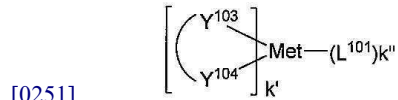
[0247] 전자 차단층(EBL)은 발광층을 떠나는 전자 및/또는 엑시톤의 수를 감소시키기 위해 사용될 수 있다. 소자 내의 이러한 차단층의 존재는 차단층이 없는 유사한 소자와 비교했을 때 실질적으로 더 높은 효율 및/또는 더 긴 수명을 유도할 수 있다. 또한, 차단층은 OLED의 원하는 영역에 발광을 국한시키기 위해 사용될 수 있다. 일부 구체예에서, EBL 물질은 EBL 계면에 가장 가까운 이미터보다 더 높은 LUMO(진공 수준에 보다 가까움) 및/또는 보다 높은 삼중항 에너지를 갖는다. 일부 구체예에서, EBL 물질은 EBL 계면에 가장 가까운 호스트들 중 하나 이상

보다 더 높은 LUMO(진공 수준에 보다 가까움) 및/또는 보다 높은 삼중항 에너지를 갖는다. 일 측면에서, EBL에 사용되는 화합물은 이하에 기재된 호스트들 중 하나로서 사용되는 동일한 분자 또는 동일한 작용기를 함유한다.

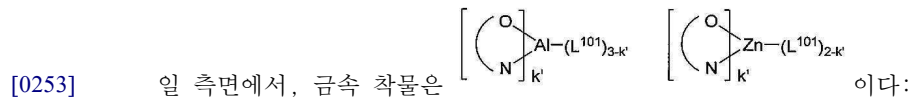
[0248] 호스트:

[0249] 본 발명의 유기 EL 소자의 발광층은 바람직하게는 발광 도펀트 물질로서 적어도 금속 착물을 포함하며, 도펀트 물질로서 금속 착물을 사용하는 하나 이상의 호스트 물질을 포함할 수 있다. 호스트 물질의 예로는 특별히 한정되지는 않으나, 임의의 금속 착물 또는 유기 화합물이 호스트의 삼중항 에너지가 도펀트의 것보다 더 크기만 하다면 사용될 수 있다. 삼중항 기준을 충족하는 한, 임의의 호스트 물질이 임의의 도펀트와 함께 사용될 수 있다.

[0250] 호스트로서 사용되는 금속 착물의 예는 하기 화학식을 갖는 것이 바람직하다:



[0252] 여기서 Met는 금속이고;  $(Y^{103}-Y^{104})$ 는 두자리 리간드이고,  $Y^{103}$  및  $Y^{104}$ 는 C, N, O, P 및 S로부터 독립적으로 선택되며;  $L^{101}$ 은 또 다른 리간드이며;  $k'$ 는 1 내지 금속에 부착될 수 있는 리간드 최대수의 정수값이고;  $k'+k''$ 는 금속에 부착될 수 있는 리간드 최대수이다.



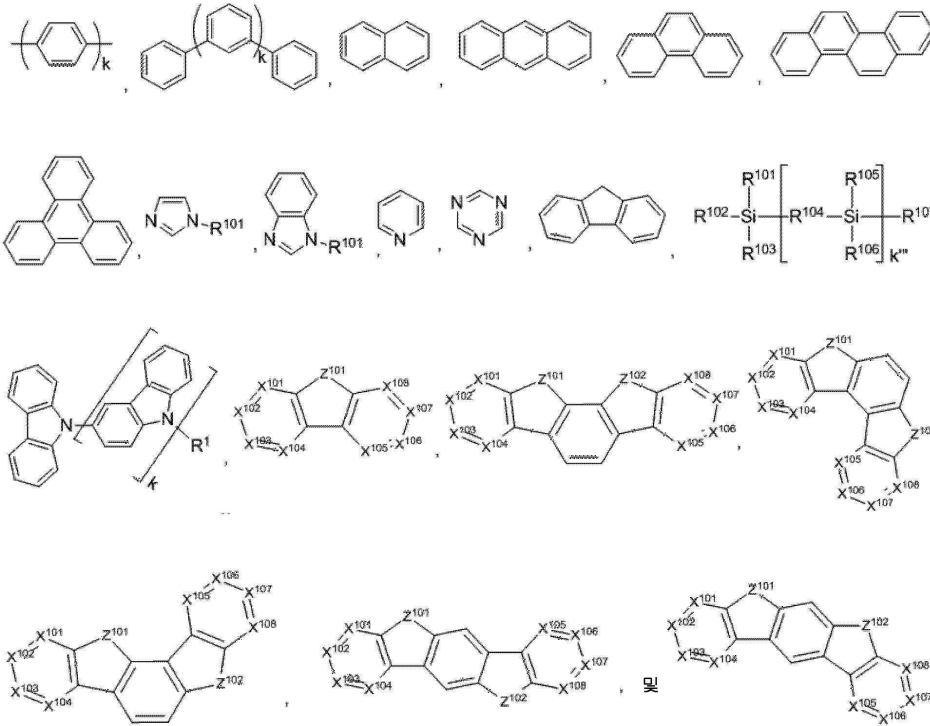
[0254] 여기서 (O-N)은 원자 O 및 N에 배위 결합된 금속을 갖는 두자리 리간드이다.

[0255] 또 다른 측면에서, Met는 Ir 및 Pt로부터 선택된다. 추가의 측면에서,  $(Y^{103}-Y^{104})$ 는 카르벤 리간드이다.

[0256] 호스트로서 사용되는 다른 유기 화합물의 예는 방향족 탄화수소 시클릭 화합물, 예컨대 벤젠, 비페닐, 트리페닐, 트리페닐렌, 나프탈렌, 안트라센, 페날렌, 페난트렌, 플루오렌, 피렌, 크리센, 페릴렌, 아줄렌으로 이루어진 군; 방향족 헤테로시클릭 화합물, 예컨대 디벤조티오펜, 디벤조퓨란, 디벤조셀레노펜, 퓨란, 티오펜, 벤조퓨란, 벤조티오펜, 벤조셀레노펜, 카바졸, 인돌로카바졸, 피리딜인돌, 피롤로디피리딘, 피라졸, 이미다졸, 트리아졸, 옥사졸, 티아졸, 옥사디아졸, 옥사트리아졸, 디옥사졸, 티아디아졸, 피리딘, 피리다진, 피리미딘, 피라진, 트리아진, 옥사진, 옥사티아진, 옥사디아진, 인돌, 벤즈이미다졸, 인다졸, 인독사진, 벤족사졸, 벤즈이속사졸, 벤조티아졸, 퀴놀린, 이소퀴놀린, 신놀린, 퀴나졸린, 퀴녹살린, 나프티리딘, 프탈라진, 프테리딘, 크산텐, 아크리딘, 페나진, 페노티아진, 펜옥사진, 벤조푸로피리딘, 푸로디피리딘, 벤조티에노피리딘, 티에노디피리딘, 벤조셀레노페노피리딘 및 셀레노페노디피리딘으로 이루어진 군; 및 방향족 탄화수소 시클릭 기 및 방향족 헤테로시클릭 기로부터 선택된 동일한 유형 또는 상이한 유형의 기이며 서로 직접 결합되거나 또는 산소 원자, 질소 원자, 황 원자, 규소 원자, 인 원자, 붕소 원자, 설페 구조 단위 및 지방족 시클릭 기 중 하나 이상에 의하여 결합되는 2 내지 10개의 시클릭 구조 단위로 이루어진 군으로부터 선택된다. 각각의 기는 수소, 중수소, 할라이드, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알키닐, 아릴, 헤테로아릴, 아실, 카르보닐, 카르복실산, 에스테르, 니트릴, 이소니트릴, 설페닐, 설페닐, 설페닐, 포스피노 및 이들의 조합으로 이루어진 군으로부터 선택된 치환기로 추가로 치환될 수 있다.



[0257] 일 측면에서, 호스트 화합물은 분자 중에 하기 기들 중 적어도 하나를 포함한다:



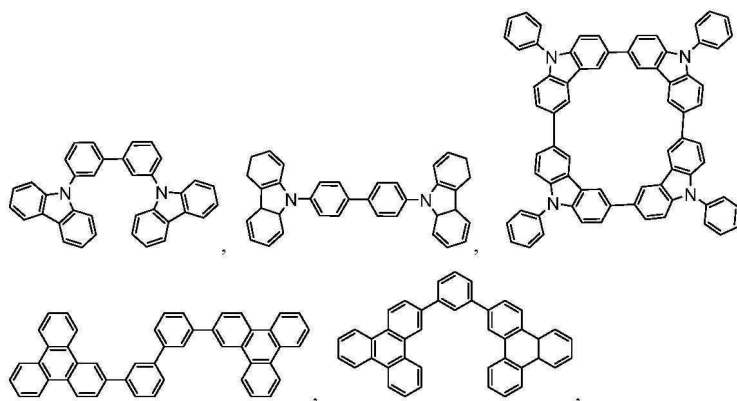
[0258]

[0259] 여기서  $R^{101}$  내지  $R^{107}$ 은 수소, 중수소, 할라이드, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알키닐, 아릴, 헤테로아릴, 아실, 카르보닐, 카르복실산, 에스테르, 니트릴, 이소니트릴, 설파닐, 설피닐, 설포닐, 포스피노 및 이들의 조합으로 이루어진 군으로부터 독립적으로 선택되며, 아릴 또는 헤테로아릴인 경우, 전술한 Ar과 유사한 정의를 갖는다.  $k$ 는 0 내지 20 또는 1 내지 20의 정수이며;  $k''$ 는 0 내지 20의 정수이다.  $X^{101}$  내지  $X^{108}$ 는 C(CH 포함) 또는 N으로부터 선택된다.

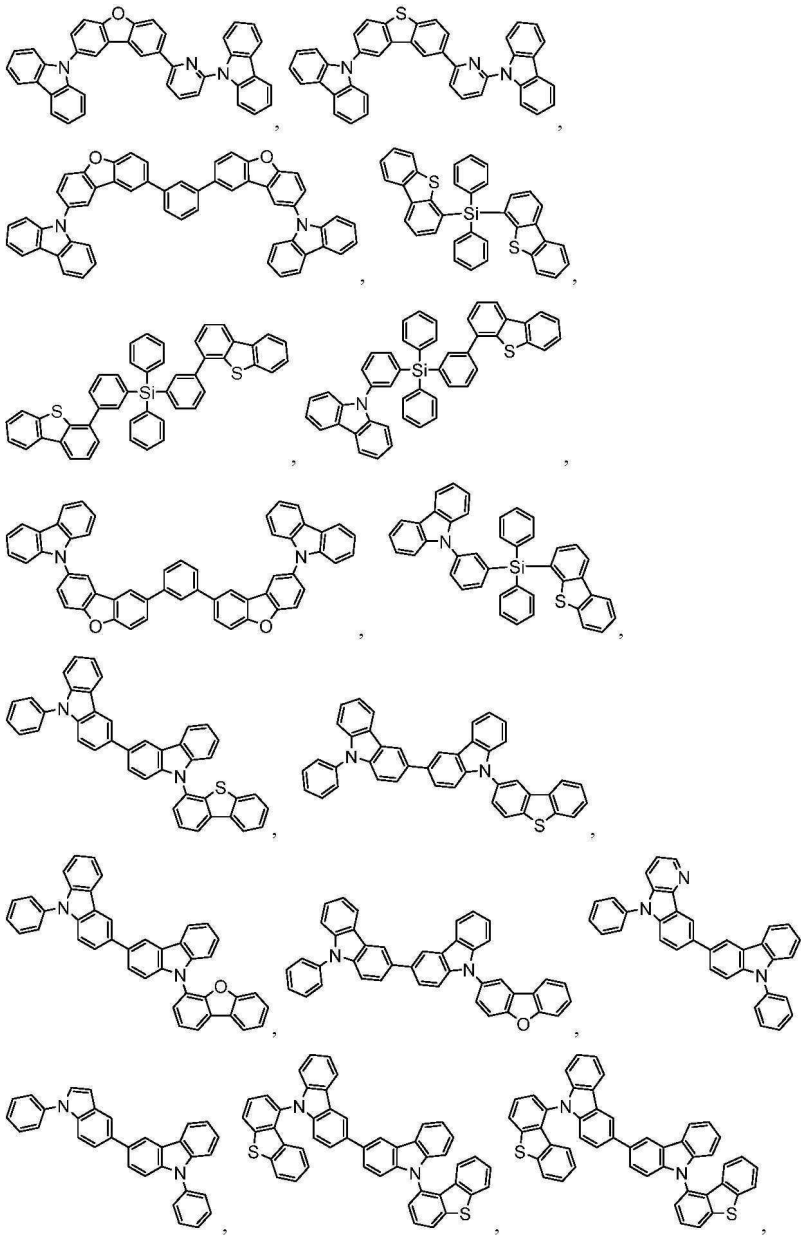
[0260]  $Z^{101}$  및  $Z^{102}$ 는  $\text{NR}^{101}$ , O 또는 S로부터 선택된다.

[0261] 본원에 개시된 호스트 화합물과 함께 OLED에 사용될 수 있는 호스트 물질의 비제한적인 예는 이들 물질을 개시하는 참고문헌과 함께 이하에 예시된다: EP2034538, EP2034538A, EP2757608, JP2007254297, KR20100079458, KR20120088644, KR20120129733, KR20130115564, TW201329200, US20030175553, US20050238919, US20060280965, US20090017330, US20090030202, US20090167162, US20090302743, US20090309488, US20100012931, US20100084966, US20100187984, US2010187984, US2012075273, US2012126221, US2013009543, US2013105787, US2013175519, US2014001446, US20140183503, US20140225088, US2014034914, US7154114, WO2001039234, WO2004093207, WO2005014551, WO2005089025, WO2006072002, WO2006114966, WO2007063754, WO2008056746, WO2009003898, WO2009021126, WO2009063833, WO2009066778, WO2009066779, WO2009086028, WO2010056066, WO2010107244, WO2011081423, WO2011081431, WO2011086863, WO2012128298, WO2012133644, WO2012133649, WO2013024872, WO2013035275, WO2013081315, WO2013191404, WO2014142472.

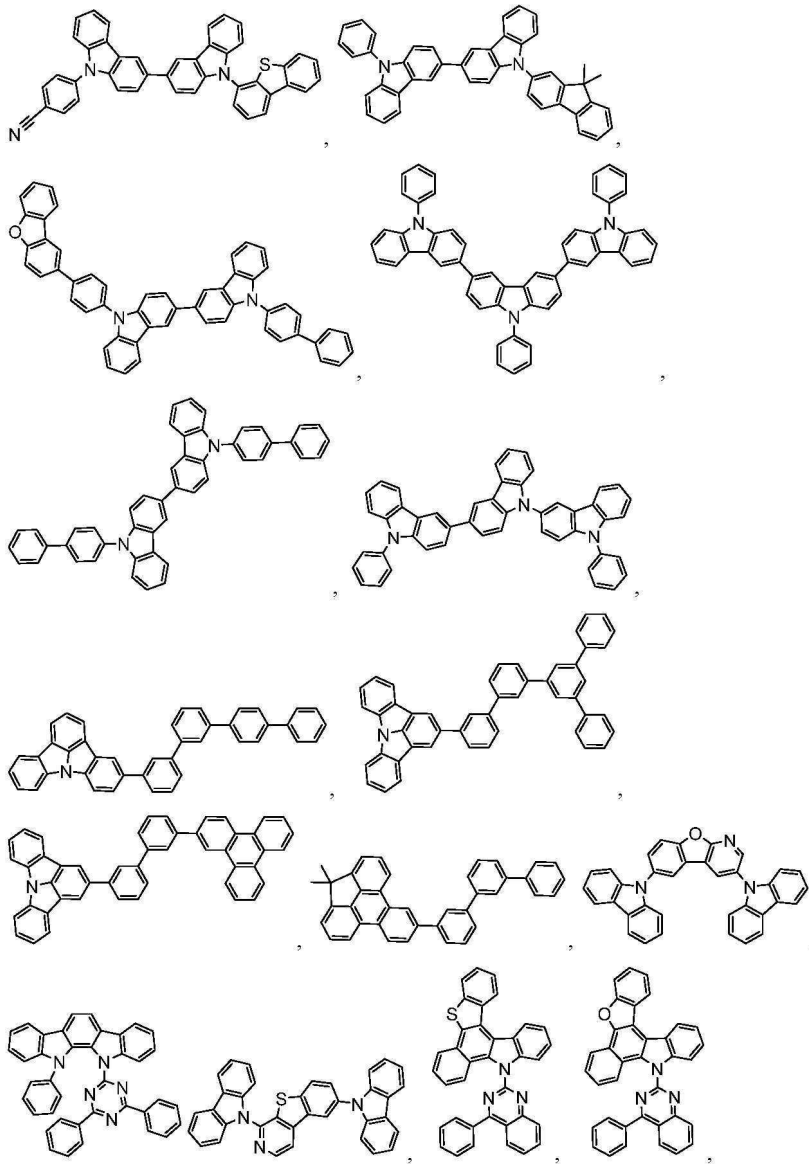
[0262]



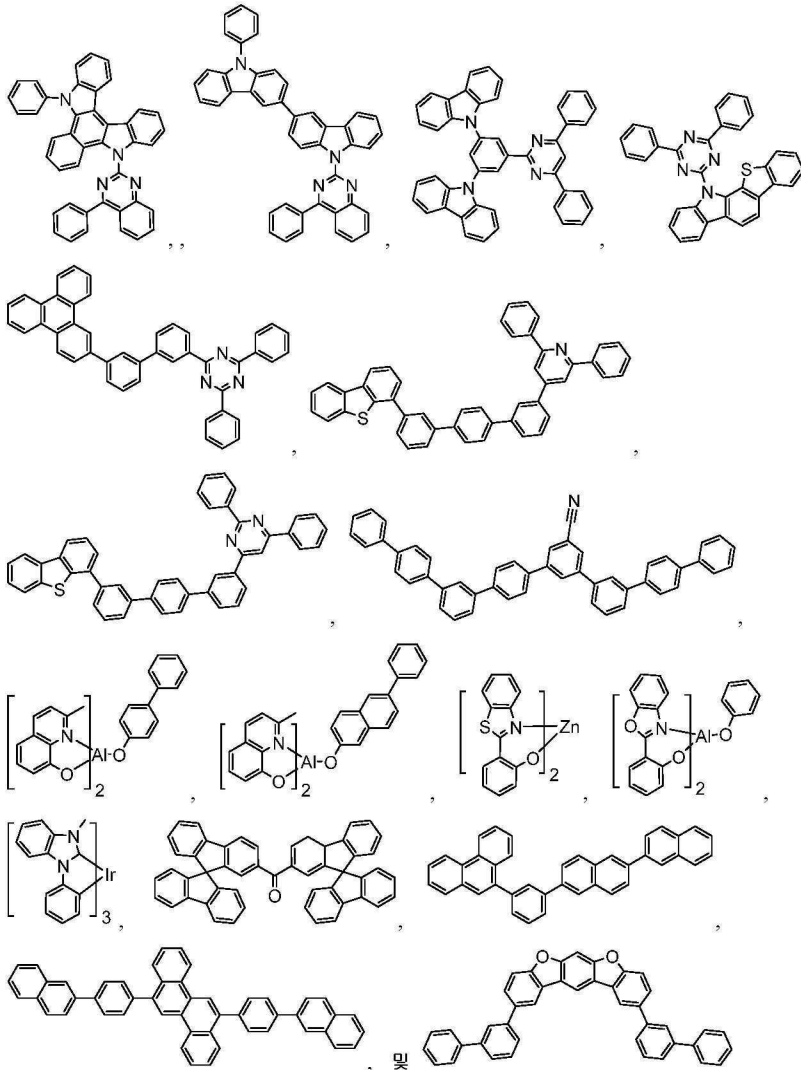




[0264]



[0265]



[0266]

[0267]

[0268]

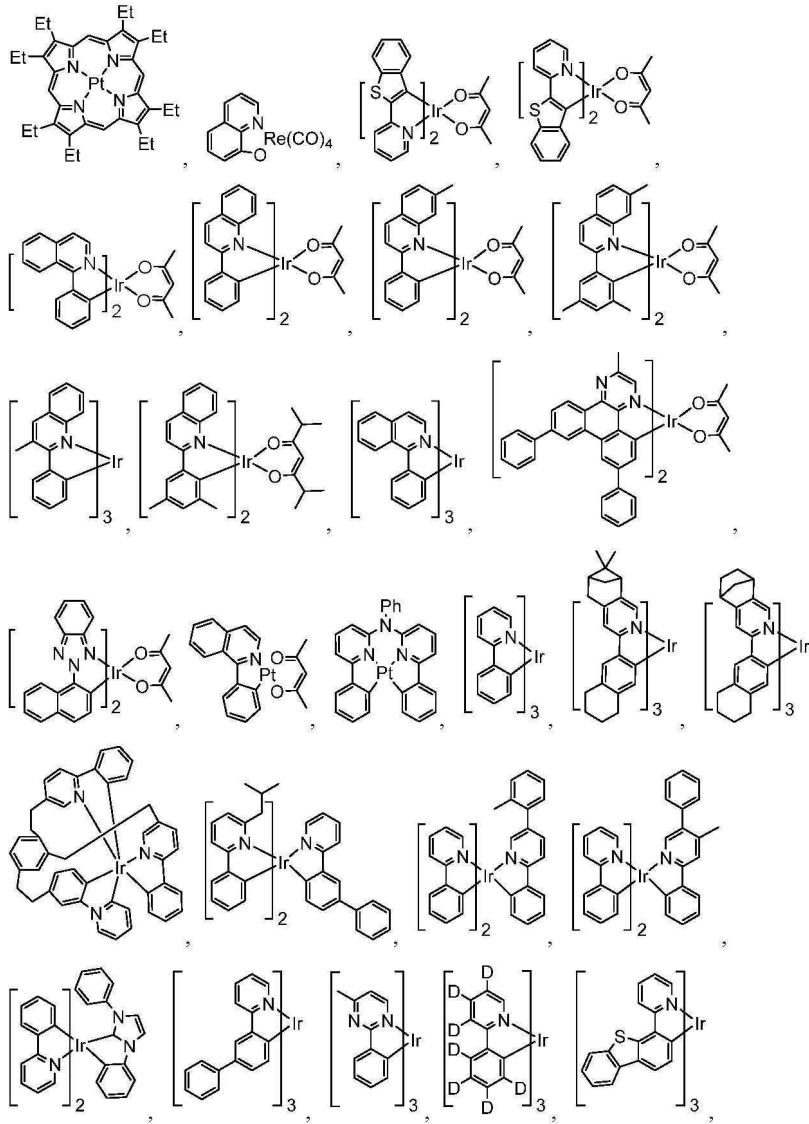
**부가적인 이미터:**

하나 이상의 부가적인 이미터 도펀트는 본 개시내용의 화합물과 함께 사용될 수 있다. 부가적인 이미터 도펀트의 예는 특별히 한정되지 않으며, 이미터 물질로서 전형적으로 사용되는 한 임의의 화합물이 사용될 수 있다. 적합한 이미터 물질의 예는 인광, 형광, 열 활성화 지연 형광, 즉, TADF(E-타입 지연 형광이라고도 함), 삼중항-삼중항 소멸, 또는 이들 프로세스의 조합에 의해 발광을 일으킬 수 있는 화합물을 포함하지만 이에 한정되지 않는다.

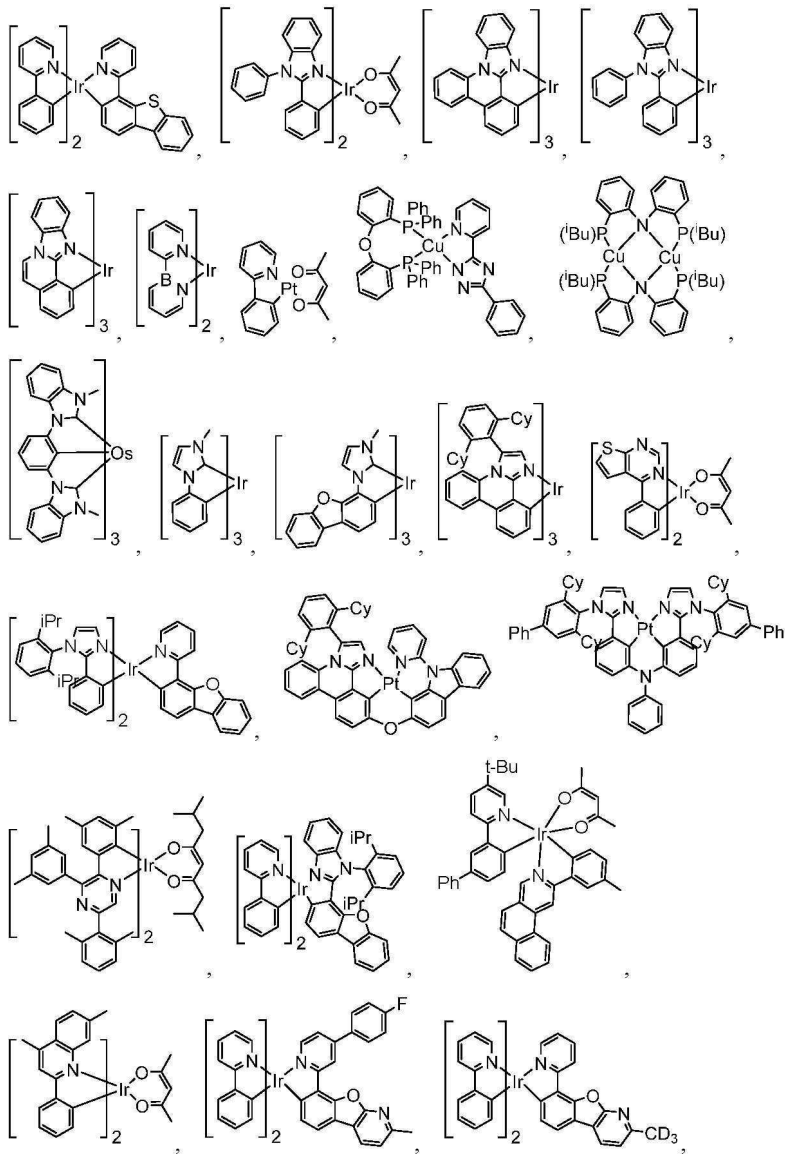
[0269]

본원에 개시된 물질과 함께 OLED에 사용될 수 있는 이미터 물질의 비제한적인 예는 이들 물질을 개시하는 참고 문헌과 함께 이하에 예시된다: CN103694277, CN1696137, EB01238981, EP01239526, EP01961743, EP1239526, EP1244155, EP1642951, EP1647554, EP1841834, EP1841834B, EP2062907, EP2730583, JP2012074444, JP2013110263, JP4478555, KR1020090133652, KR20120032054, KR20130043460, TW201332980, US06699599, US06916554, US20010019782, US20020034656, US20030068526, US20030072964, US20030138657, US20050123788, US20050244673, US2005123791, US2005260449, US20060008670, US20060065890, US20060127696, US20060134459, US20060134462, US20060202194, US20060251923, US20070034863, US20070087321, US20070103060, US20070111026, US20070190359, US20070231600, US2007034863, US2007104979, US2007104980, US2007138437, US2007224450, US2007278936, US20080020237, US20080233410, US20080261076, US20080297033, US200805851, US2008161567, US2008210930, US20090039776, US20090108737, US20090115322, US20090179555, US2009085476, US2009104472, US20100090591, US20100148663, US20100244004, US20100295032, US2010102716, US2010105902, US2010244004, US2010270916, US20110057559, US20110108822, US20110204333, US2011215710, US2011227049, US2011285275, US2012292601, US20130146848, US2013033172, US2013165653, US2013181190, US2013334521, US20140246656, US2014103305, US6303238, US6413656, US6653654, US6670645, US6687266, US6835469, US6921915, US7279704, US7332232, US7378162, US7534505, US7675228, US7728137, US7740957, US7759489,

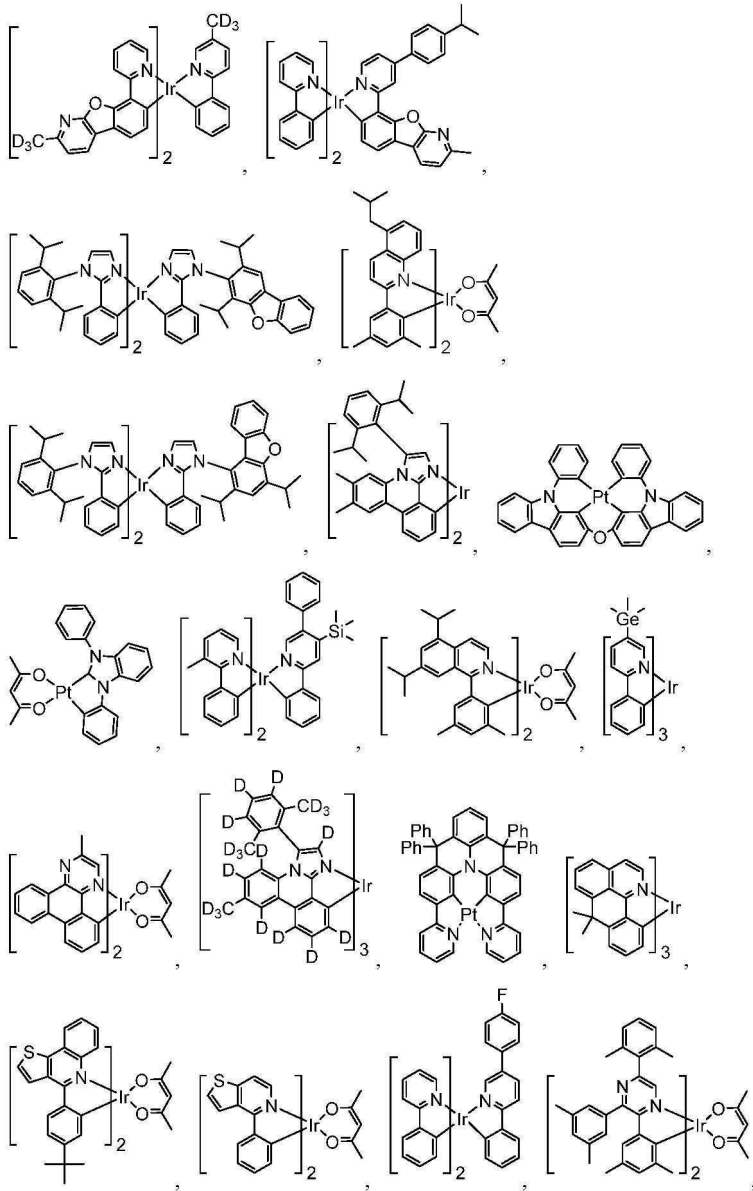
US7951947, US8067099, US8592586, US8871361, WO06081973, WO06121811, WO07018067, WO07108362, WO07115970, WO07115981, WO08035571, WO2002015645, WO2003040257, WO2005019373, WO2006056418, WO2008054584, WO2008078800, WO2008096609, WO2008101842, WO2009000673, WO2009050281, WO2009100991, WO2010028151, WO2010054731, WO2010086089, WO2010118029, WO2011044988, WO2011051404, WO2011107491, WO2012020327, WO2012163471, WO2013094620, WO2013107487, WO2013174471, WO2014007565, WO2014008982, WO2014023377, WO2014024131, WO2014031977, WO2014038456, WO2014112450.



[0270]

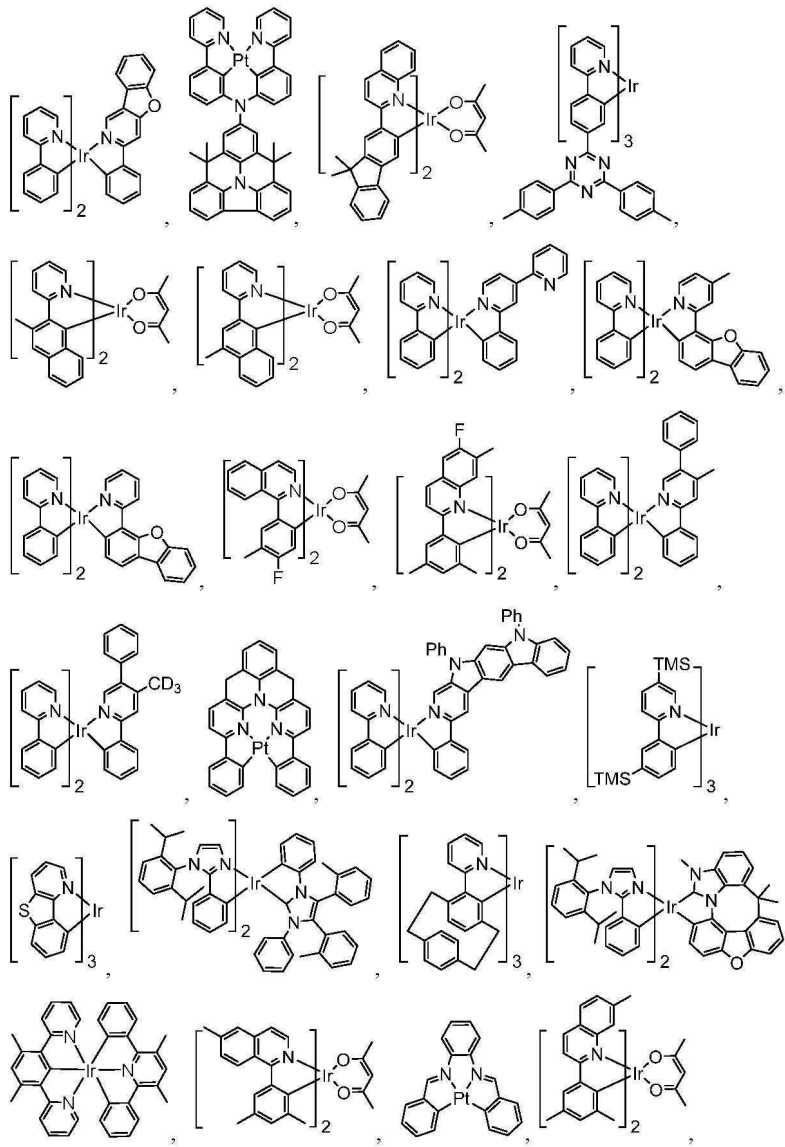


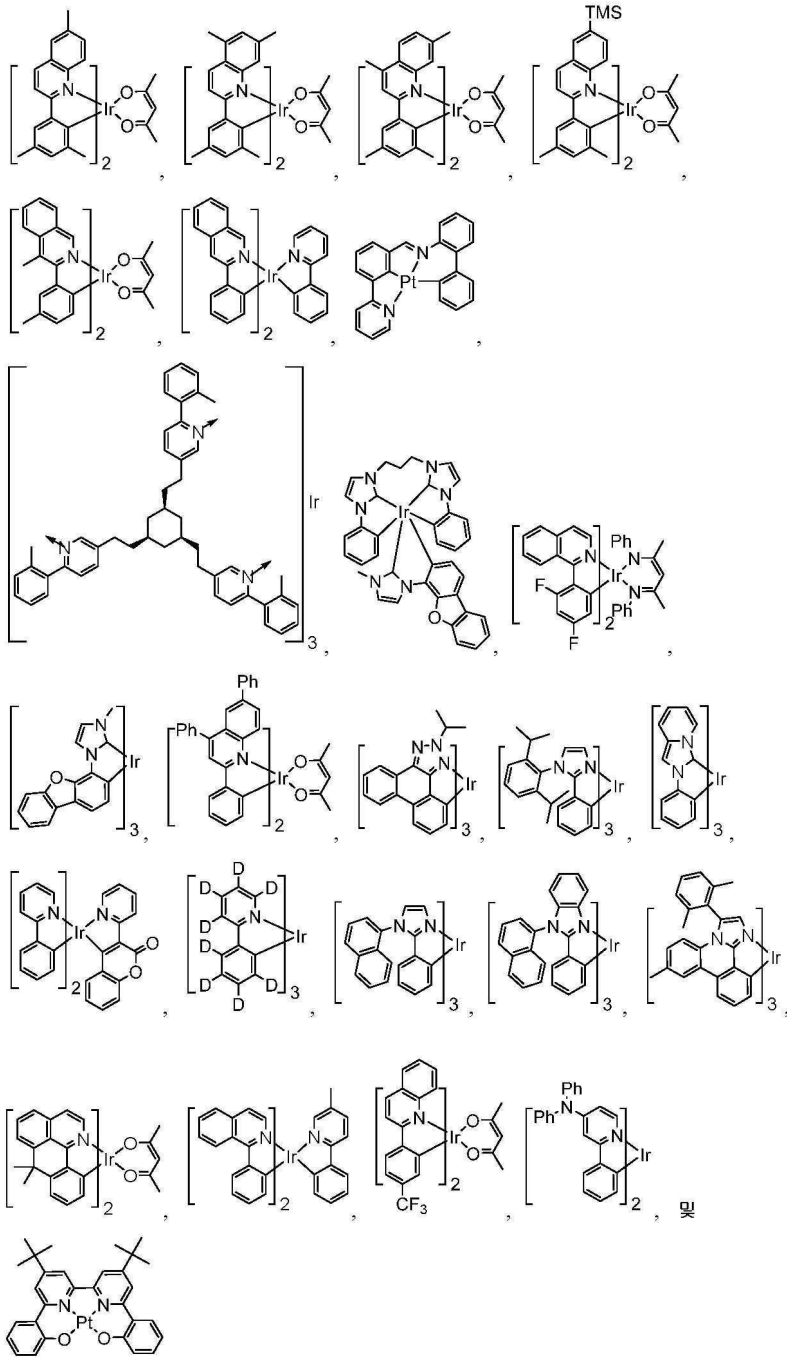
[0271]



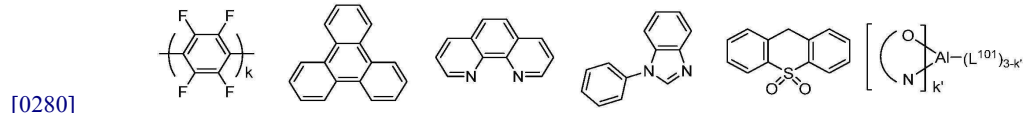
[0272]







[0279] 또 다른 측면에서, HBL에 사용되는 화합물은 분자 중에 하기의 기들 중 적어도 하나를 포함한다:

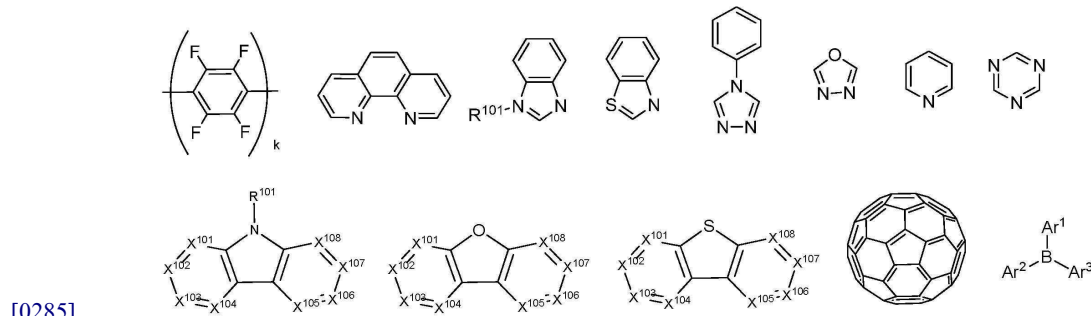


[0281] 여기서 k는 1 내지 20의 정수이고; L<sup>101</sup>은 또 다른 리간드이고, k'은 1 내지 3의 정수이다.

[0282] **ETL:**

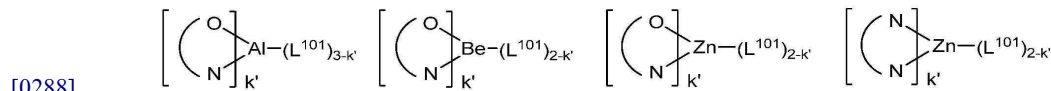
[0283] 전자 수송층(ETL)은 전자를 수송할 수 있는 물질을 포함할 수 있다. 전자 수송층은 고유하거나(도핑되지 않음) 또는 도핑될 수 있다. 도핑은 전도성을 향상시키는데 사용될 수 있다. ETL 물질의 예는 특별히 한정되지는 않으며, 전자를 수송하는데 전형적으로 사용되는 한 임의의 금속 착물 또는 유기 화합물이 사용될 수 있다.

[0284] 일 측면에서, ETL에 사용되는 화합물은 분자 중에 하기 기들 중 하나 이상을 함유한다:



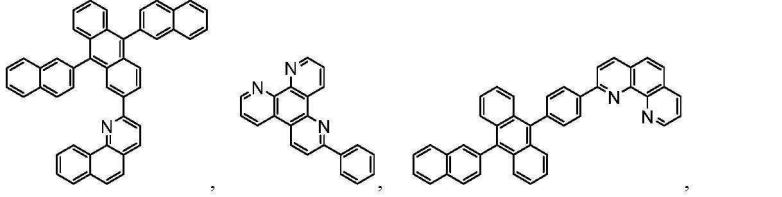
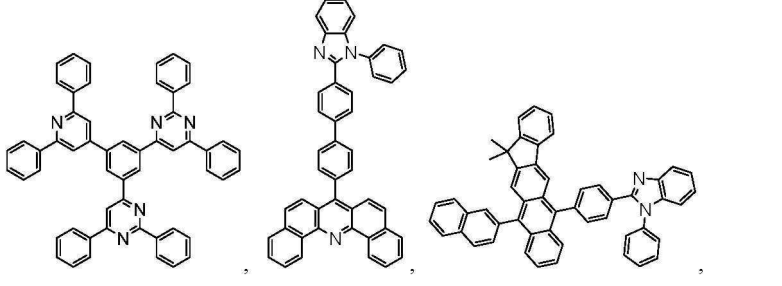
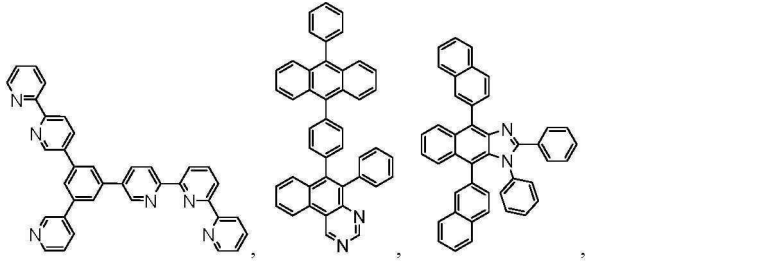
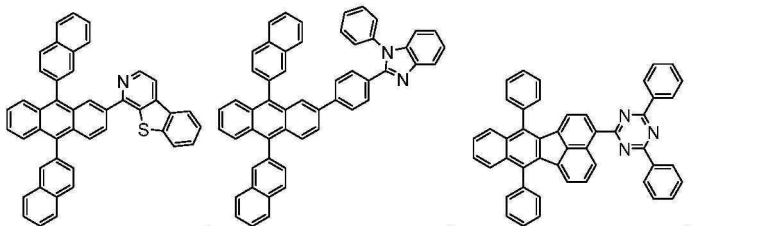
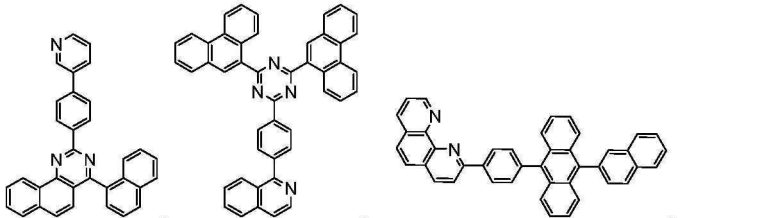
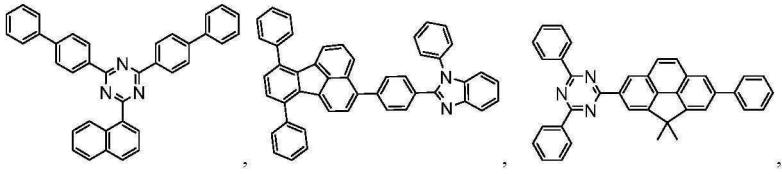
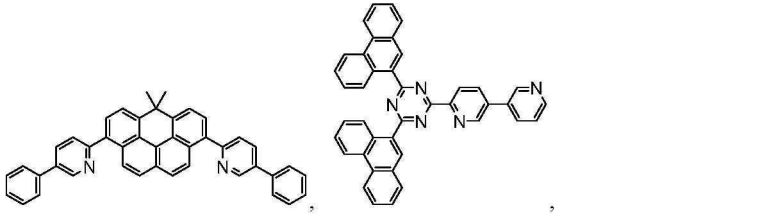
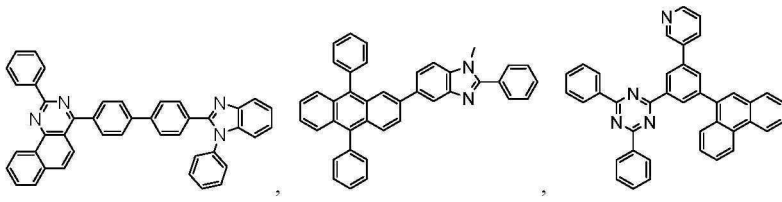
[0286] 여기서 R<sup>101</sup>은 수소, 중수소, 할라이드, 알킬, 시클로알킬, 헤테로알킬, 아릴알킬, 알콕시, 아릴옥시, 아미노, 실릴, 알케닐, 시클로알케닐, 헤테로알케닐, 알키닐, 아릴, 헤테로아릴, 아실, 카르보닐, 카르복실산, 에스테르, 니트릴, 이소니트릴, 설파닐, 설피닐, 설포닐, 포스피노 및 이들의 조합으로 이루어진 군으로부터 선택되며, 아릴 또는 헤테로아릴인 경우, 전술한 Ar과 유사한 정의를 갖는다. Ar<sup>1</sup> 내지 Ar<sup>3</sup>은 전술한 Ar과 유사한 정의를 갖는다. k는 1 내지 20의 정수이다. X<sup>101</sup> 내지 X<sup>108</sup>은 C(CH 포함) 또는 N으로부터 선택된다.

[0287] 또 다른 측면에서, ETL에 사용되는 금속 착물은 하기의 화학식을 포함하지만, 이에 한정되는 것은 아니다:



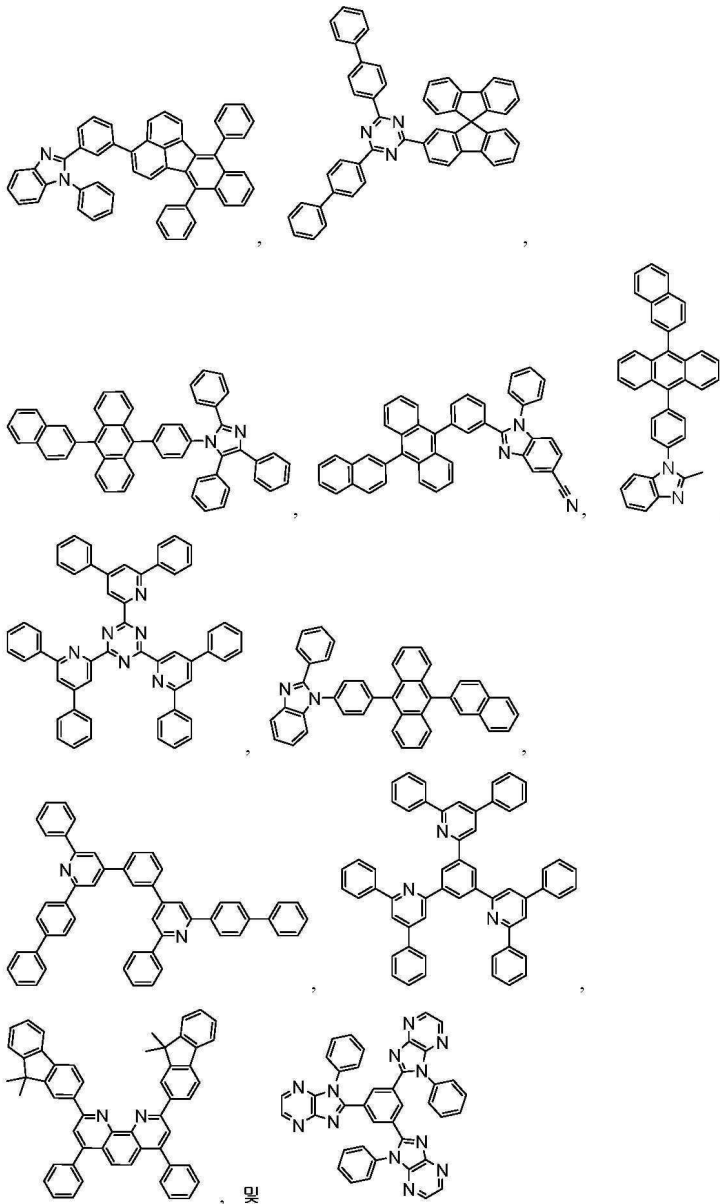
[0289] 여기서 (O-N) 또는 (N-N)은 원자 O, N 또는 N,N에 배위 결합된 금속을 갖는 두자리 리간드이며; L<sup>101</sup>은 또 다른 리간드이며; k'는 1 내지 금속에 부착될 수 있는 리간드 최대수의 정수값이다.

[0290] 본원에 개시된 물질과 함께 OLED에 사용될 수 있는 ETL 물질의 비제한적인 예는 이들 물질을 개시하는 참고문헌과 함께 이하에 예시된다: CN103508940, EP01602648, EP01734038, EP01956007, JP2004-022334, JP2005149918, JP2005-268199, KR0117693, KR20130108183, US20040036077, US20070104977, US2007018155, US20090101870, US20090115316, US20090140637, US20090179554, US2009218940, US2010108990, US2011156017, US2011210320, US2012193612, US2012214993, US2014014925, US2014014927, US20140284580, US6656612, US8415031, WO2003060956, WO2007111263, WO2009148269, WO2010067894, WO2010072300, WO2011074770, WO2011105373, WO2013079217, WO2013145667, WO2013180376, WO2014104499, WO2014104535.



[0291]

[0292]



[0293]

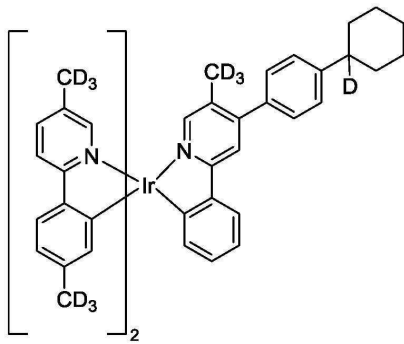
[0294] 전하 생성층(CGL)

[0295] 탠덤 또는 스택된 OLED에서, CGL은 성능에 있어 필수적인 역할을 수행하며, 이는 전자 및 정공 각각의 주입을 위한 n-도핑층 및 p-도핑층으로 구성된다. 전자 및 정공은 CGL 및 전극으로부터 공급된다. CGL에서 소비된 전자 및 정공은 캐소드 및 애노드 각각으로부터 주입되는 전자 및 정공에 의해 재충전되고; 이후에, 양극성 전류가 점진적으로 정류 상태에 도달한다. 전형적인 CGL 물질은 수송층들에 사용되는 n 및 p 전도성 도펀트를 포함한다.

[0296] OLED 소자의 각 층에 사용되는 임의의 상술된 화합물에서, 수소 원자가 부분적으로 또는 완전히 중수소화될 수 있다. 이에, 메틸, 페닐, 피리딜, 등(제한되지 않음)과 같은 임의의 구체적으로 나열된 치환기가 이의 중수소화되지 않은, 부분적으로 중수소화된, 및 완전히 중수소화된 버전일 수 있다. 마찬가지로, 알킬, 아릴, 시클로알킬, 헤테로아릴, 등(제한없이)과 같은 부류의 치환기가 또한 이의 중수소화되지 않은, 부분적으로 중수소화된, 및 완전히 중수소화된 버전일 수 있다.

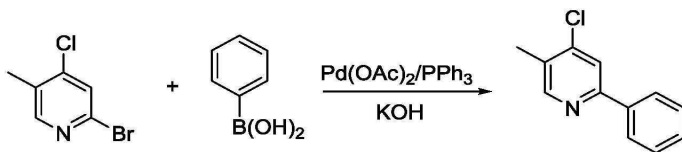
[0297] 실시예

[0298] 화합물 Ir L<sup>A1431</sup>(L<sub>B91</sub>)<sub>2</sub>의 합성



[0299] 화합물 Ir L<sup>A1431</sup>(L<sub>B91</sub>)<sub>2</sub>

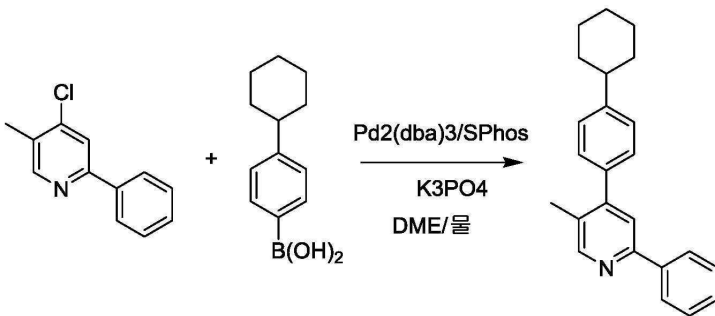
[0300] 단계 1



[0301]

[0302] 250 ml 2구 둥근 바닥 플라스크를 질소로 씻어내린 후, 2-브로모-4-클로로-5-메틸피리딘(9.88 g, 47.9 mmol), 페닐보론산(6.42 g, 52.6 mmol), 디아세톡시팔라듐(0.537 g, 2.393 mmol), 트리페닐포스판(2.51 g, 9.57 mmol), 수산화칼륨(5.37 g, 96 mmol) 및 아세트니트릴(150 ml)/에탄올(75 ml) 혼합물을 질소 하에 충전하여 적색 현탁액을 형성하였다. 반응 혼합물을 질소 하에서 16시간 동안 60°C로 가열하였다. 그리고나서 반응 혼합물을 실온으로 냉각시키고(약 22°C), 실리카겔 패드에 여과시키고, 증발 건조시켰다. 잔류물을 컬럼 크로마토그래피(실리카겔, 헵탄/EtOAc =2/1 (v:v))로 정제하고 헵탄으로부터 무색 결정으로 결정화되었다(6.5 g, 67% 수율).

[0303] 단계 2

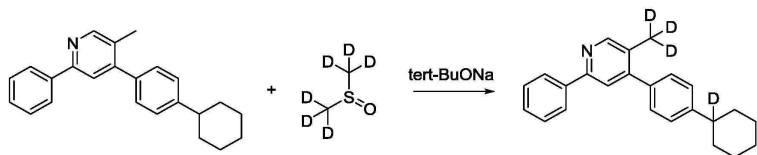


[0304]

[0305] 4-클로로-5-메틸-2-페닐피리딘(5 g, 24.55 mmol), (4-시클로헥실페닐)보론산(5.01 g, 24.55 mmol), 칼륨 포스페이트 3염기 1수화물(11.31 g, 49.1 mmol), 트리스(디벤질리텐아세톤)디팔라듐(0)(Pd<sub>2</sub>(dba)<sub>3</sub>)(2 mol%) 및 2-디시클로헥실포스포노-2',6'-디메톡시비페닐(SPhos)(4 mol%)을 질소 하에서 디메톡시에탄(DME)(70 ml)/물(5 ml) 혼합물 중에 용해시켜 적색 현탁액을 형성하였다. 반응 혼합물을 탈기화하고 16시간 동안 가열하여 환류시켰다.

[0306] 그리고나서 반응 혼합물을 실온(약 22°C)으로 냉각시켰다. 이후 유기상을 분리하고, 여과하고, 증발시키고, 실리카겔 상에서 컬럼 크로마토그래피로 정제하고, 헵탄/테트라히드로푸란(THF) 9/1 (v:v)으로 용출하여 투명한 고체화된 무색 오일을 형성하였다(6.8 g, 85% 수율).

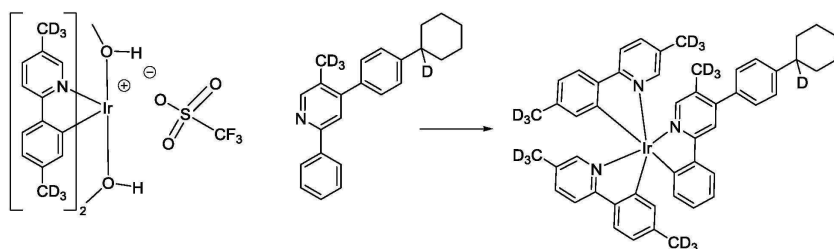
[0307] 단계 3



[0308]

[0309] 4-(4-시클로헥실페닐)-5-메틸-2-페닐피리딘(6.8 g, 20.77 mmol), ((메틸-d<sub>3</sub>)설피닐)메탄-d<sub>3</sub>(61.2 g, 727 mmol), 및 나트륨 2-메틸프로판-2-올레이트(0.998 g, 10.38 mmol)를 질소 하에 플라스크에서 함께 현탁시켰다. 플라스크를 18시간 동안 71°C의 유조에 침지시켰다. 그리고나서 반응 혼합물을 실온(약 22°C)으로 냉각시키고, 3 당량의 D<sub>2</sub>O로 켄칭하고, 염수로 희석하고, EtOAc로 추출하였다. 유기상을 분리하고, 여과하고, 증발시키고, 실리카 겔 컬럼을 사용하여 정제하고, 헵탄/THF 95/5 (v/v)로 용출하여 무색 정제를 형성하였다(6.0 g, 87% 수율).

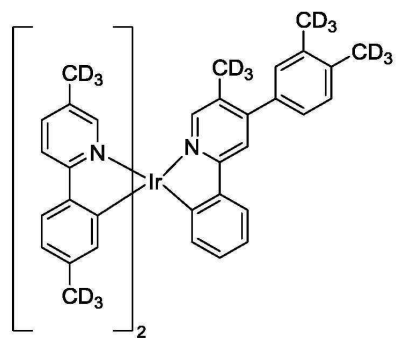
[0310] 단계 4



[0311]

[0312] 메탄올-용매화된 이리듐 트리플레이트 염(4 g, 5.12 mmol) 및 4-(4-(시클로헥실-1-d)페닐)-5-(메틸-d<sub>3</sub>)-2-페닐 피리딘(5.94 g, 17.90 mmol)을 질소 하에서 에탄올(30 ml)/메탄올(30.0 ml) 혼합물 중에 현탁시켰다. 반응 혼합물을 탈기화한 후, 3일 동안 70°C의 유조에서 플라스크를 침지하였다. 그리고나서 반응 혼합물을 실온(약 22°C)으로 냉각시키고 여과하고, 고체 물질을 건조시켰다. 구배 헵탄/톨루엔 4/1 내지 1/4 (v/v) 혼합물로 용출하는 실리카겔 컬럼 상의 컬럼 크로마토그래피로 혼합물을 정제하였다. 순수 분획을 증발시키고 DCM/에탄올로부터 결정화시켜, 1.8 g(39% 수율)의 연황색 고체를 생성하였다.

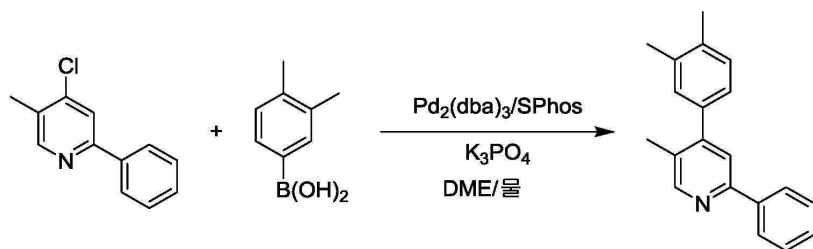
[0313] Ir L<sup>A1432</sup> (L<sub>B91</sub>)<sub>2</sub>의 합성



화합물 Ir L<sup>A1432</sup>(L<sub>B91</sub>)<sub>2</sub>

[0314]

[0315] 단계 1

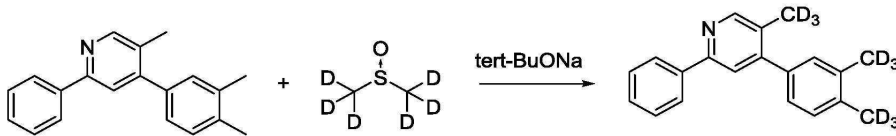


[0316]



[0317] 4-클로로-5-메틸-2-페닐피리딘(6 g, 29.5 mmol), (3,4-디메틸페닐)보론산(4.86 g, 32.4 mmol), 및 칼륨 포스페이트 3염기 수화물(13.57 g, 58.9 mmol)을 질소 하에서 DME(60 ml)/물(2 ml)의 혼합물 중에 용해시켜 무색 현탁액을 형성하였다. Pd<sub>2</sub>(dba)<sub>3</sub>(0.405 g, 0.442 mmol) 및 SPhos(0.410 g, 0.884 mmol)를 한번에 첨가한 후, 반응 혼합물을 탈기화하고 질소 하에서 16시간 동안 100℃로 가열하였다. 그리고나서 반응 혼합물을 실온(약 22℃)으로 냉각시켰다. 유기상을 분리하고, 증발시키고, 헵탄/THF 95/5 (v/v)로 용출되는 실리카겔 컬럼을 이용하여 컬럼 크로마토그래피로 정제한 후, 헵탄으로부터 결정화시켜 백색 결정을 생성하였다(7.0 g, 85% 수율).

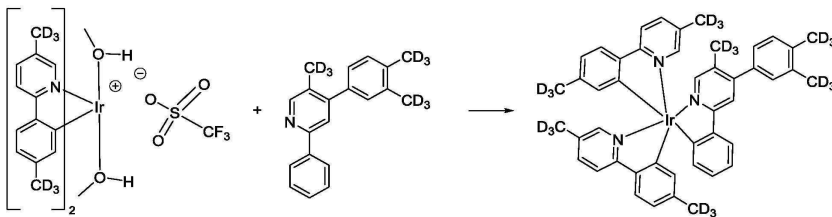
[0318] 단계 2



[0319]

[0320] 4-(3,4-디메틸페닐)-5-메틸-2-페닐피리딘(7 g, 25.6 mmol), ((메틸-d<sub>3</sub>)실피닐)메탄-d<sub>3</sub>(86 g, 1024 mmol), 및 나트륨 2-메틸프로판-2-올레이트(1.723 g, 17.92 mmol)를 질소 하에 플라스크에서 혼합시켜 갈색 용액을 형성하였다. 플라스크를 14시간 동안 71℃의 유조에 침지시키고, 실온(약 22℃)으로 냉각시키고, 3 당량의 D<sub>2</sub>O로 켄칭한 후, 염수로 희석시켰다. 생성된 용액을 EtOAc로 추출하고 유기 추출물을 배합하고, 여과하고 증발시켰다. 헵탄/THF 95/5 (v/v)로 용출된 실리카겔 컬럼을 사용하여 컬럼 크로마토그래피로 미정제 물질을 정제하여 4-(3,4-비스(메틸-d<sub>3</sub>)페닐)-5-(메틸-d<sub>3</sub>)-2-페닐피리딘을 백색 고체로서 생성하였다(6.0 g, 83% 수율).

[0321] 단계 3

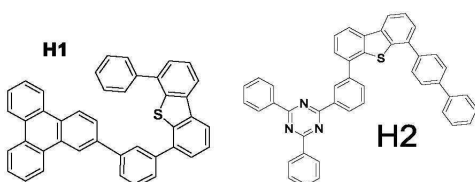


[0322]

[0323] 메탄올-용매화된 이리듐 트리플레이트 염(2.8 g, 3.58 mmol) 및 4-(3,4-비스(메틸-d<sub>3</sub>)페닐)-5-(메틸-d<sub>3</sub>)-2-페닐피리딘(3.03 g, 10.74 mmol)을 질소 하에서 플라스크 내 EtOH(30 ml)/MeOH(30.0 ml) 혼합물 중에 현탁시켜 황색 현탁액을 형성하였다. 플라스크를 71℃의 유조에 침지시키고 3일 동안 질소 하에 교반하였다. 생성된 혼합물을 실온(약 22℃)으로 냉각시키고 생성된 황색 고체를 여과 제거하고 톨루엔/헵탄 85/15 (v/v)로 용출된 실리카겔 컬럼을 사용하여 컬럼 크로마토그래피로 정제한 후, 톨루엔/에탄올 및 톨루엔/헵탄으로부터 결정화시켜 황색 고체를 생성하였다(1.8 g, 59% 수율).

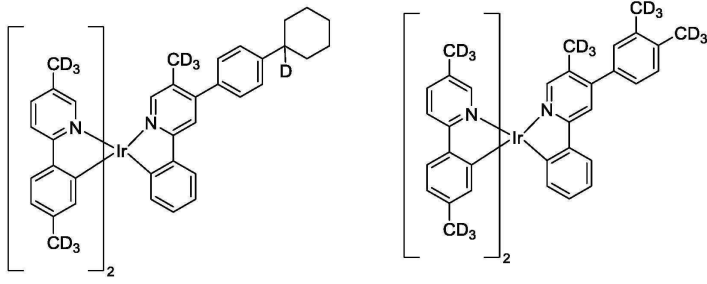
[0324] 소자예

[0325] 모든 예시 소자는 고 진공( $<10^{-7}$  Torr) 열 증발에 의해 제조되었다. 애노드 전극은 800 Å의 인듐 주석 산화물(ITO)이었다. 캐소드는 10 Å의 Liq(8-히드록시퀴놀린 리튬) 다음에 1,000 Å의 Al으로 이루어졌다. 모든 소자들을, 제조 직후 질소 글러브 박스(<1 ppm의 H<sub>2</sub>O 및 O<sub>2</sub>)에서 에폭시 수지로 밀봉된 유리 뚜껑으로 캡슐화하고, 수분 게터를 패키지 내부에 도입하였다. 소자예의 유기 스택은 순차적으로 다음과 같이 이루어졌다: ITO 표면으로부터, 정공 주입층(HIL)으로서 100 Å의 HAT-CN; 정공 수송층(HTL)으로서 450 Å의 HTM; 두께 400 Å의 발광층(EML). 발광층은 6:4 비율로 H-호스트(H1):E-호스트(H2) 및 12 중량%의 녹색 이미터 함유. 350 Å의 Liq(8-히드록시퀴놀린 리튬)는 ETM로서 40%의 ETM으로 도핑. 하기 표 1은 개략적인 소자 구조를 나타낸다. 소자 물질의 화학 구조는 하기 나타낸다.



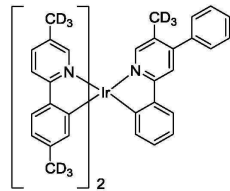
[0326]



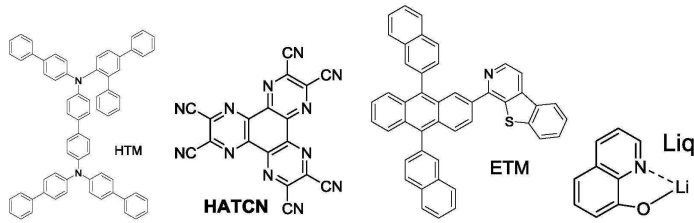


화합물 Ir L<sup>A1431</sup>(L-B91)<sub>2</sub>

화합물 Ir L<sup>A1432</sup>(L-B91)<sub>2</sub>



비교예



[0327]

[0328]

제작된 소자를 DC 80 mA/cm<sup>2</sup>에서 EL, JVL 및 수명에 대해 평가하였다. 9,000 nit의 LT97을 1.8의 가속 인자를 나타내는 80 mA/cm<sup>2</sup> LT 데이터로부터 계산하였다. 소자 성능은 하기 표 2에 나타낸다.

[0329]

표 1: 개략적인 소자 구조

층	물질	두께 [Å]
애노드	ITO	800
HIL	HAT-CN	100
HTL	HTM	450
녹색 EML	H1:H2: 예시 도펀트	400
ETL	Liq:ETM 40%	350
EIL	Liq	10
캐소드	Al	1,000

[0330]

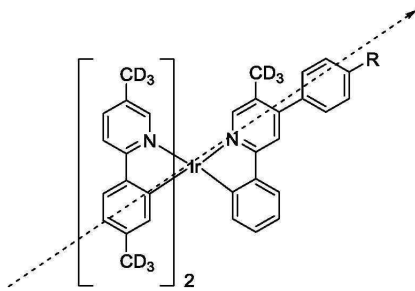
[0331] 표 2: 소자 성능

	1931 CIE				10mA/cm <sup>2</sup> 에서				9K nit에서
	x	y	$\lambda$ max [nm]	FWHM [nm]	전압 [V]	LE [cd/A]	EQE [%]	PE [lm/W]	계산값 97%[h]**
이미터 12%									
비교예	0.373	0.598	539	80	4.7	81.8	22.5	54.8	1,084
Ir L <sup>A1431</sup> (L <sub>B91</sub> ) <sub>2</sub>	0.365	0.603	537	78	4.6	92.2	25.2	62.3	1,194
Ir L <sup>A1432</sup> (L <sub>B91</sub> ) <sub>2</sub>	0.347	0.613	532	77	4.5	86.5	23.6	59.8	1,194

[0332]

[0333] 실시예 Ir L<sup>A1431</sup>(L<sub>B91</sub>)<sub>2</sub> 및 Ir L<sup>A1432</sup>(L<sub>B91</sub>)<sub>2</sub>의 효율은 비교예보다 더 높았다. 짐작컨대, 주변 고리에서의 알킬 치환은 분자의 전이 이극성 순간을 갖는 보다 나은 정렬을 갖는다. 개념은 하기 이미지에 예시된다. 더하여, 화합물 Ir L<sup>A1431</sup>(L<sub>B91</sub>)<sub>2</sub> 및 Ir L<sup>A1432</sup>(L<sub>B91</sub>)<sub>2</sub>는 더 낮은 소자 수명을 갖는 비교예로부터 둘다 청색 이동된다.

전이 이극성 모멘트

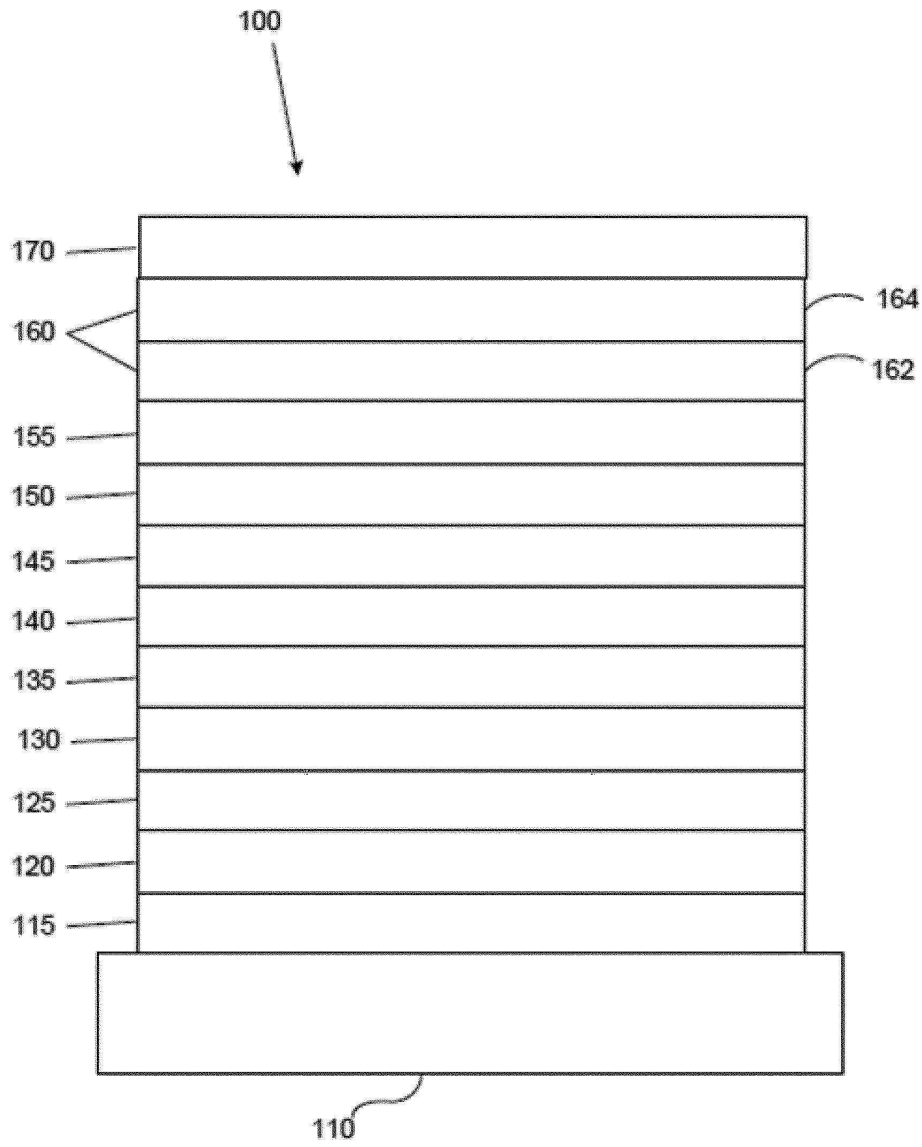


[0334] R기는 전이 이극성 모멘트에 의해 보다 나은 정렬을 가짐

[0335] 본원에 기술된 다양한 구체예는 단지 예시에 의한 것이며, 본 발명의 범위를 한정하려는 것이 아님을 이해하여야 한다. 예를 들면, 본원에 기술된 물질 및 구조의 대다수는 본 발명의 취지로부터 벗어나는 일 없이 다른 물질 및 구조로 대체될 수 있다. 따라서 청구된 본 발명은 본원에 기술된 특정 예시 및 바람직한 구체예로부터 변형예를 포함할 수 있으며 이는 당업자에게 자명할 것이다. 당업자라면 본 발명에 적용된 다양한 이론이 제한적인 의도가 아님을 이해할 것이다.

도면

도면1



도면2

