

(19) (KR)  
(12) (A)

(51) 。 Int. Cl.<sup>7</sup>  
C08J 3/12  
C08J 3/00  
C08F 293/00

(11)  
(43)

10-2004-0081106  
2004 09 20

(21) 10-2004-7010437

(22) 2004 06 30

2004 06 30

(86) PCT/US2003/003186

(87)

WO 2003/066712

(86) 2003 02 04

(87)

2003 08 14

(30) 02110775.0 2002 02 05 (CN)

(71) 19106-2399 , , 100

(72) , , 1, 102, , 85

, , 74, 501, , 789

, , , , , 32, 214

(74)

:

(54)

(flexible) (mutli-functional) (carrier capacity) (micelles)  
 materials) ('BCPNPs') (specialty)  
 BCPNPs  
 (compatibility)  
 BCPNPs (templates)  
 BCPNPs  
 P 1 가 BCPNPs 2가 가 BCPN  
 가 ,가  
 가 가  
 0.01-0.1%  
 U.S. B1 6,383,500 가  
 가  
 ( 10mg/Mℓ<sup>2</sup> , 1mg/Mℓ ).  
 BCPNP  
 NPs 가 , 가 , 가 BCP  
 1  
 (a) (crosslinkable) ;  
 (b) ;  
 (c) ;  
 (d) ;  
 ( ) (group) - (non-cro  
 ssklinkable) ;  
 ( ) 가 (modifiab  
 le)  
 2 가

가 ;

;

1

,

(flavor),

, UV-

3

가

가

;

;

;

1

'( )

'( )

(crosslinkable block copolymer)

가

가

가

(diffuse)

가

가

(

)

Van Krevelen

'(BCPNP)

0.005 0.100

, dz

0.010 0.050

가

0.005 0.200

0.020 0.40

weight distribution)'가

(distribution)

가

, 'MWD'

(molecular

가

2가 가

,'Mw'

,'Mn'

$$M_w = \frac{\sum W_i M_i}{\sum W_i} \quad W_i = \frac{\sum N_i M_i^2}{\sum N_i M_i}$$

$$M_n = \frac{\sum W_i}{\sum (W_i/M_i)} = \frac{\sum N_i M_i}{\sum N_i}$$

MWD = Mw/Mn

$M_i = \dots$

$W_i = \dots$

$N_i = i \dots$

MWD가 (degree of polymerization)가

radius distributions) (PSD) (Dynamic Light Scattering, DLS) (polydispersity index) (hydrodynamic radius)  $dz = (NiMi^3) / NiMi^2$   $\mu_2 / \langle l \rangle^2$  0.8, 0.01-0.8 0.03-0.40, 0.03-0.20

1990) 가 D.W. Van Krevelen, Properties of Polymers, 3, Elsevier, pp. 189-225,

, Van Krevelen

( t )

$$t^2 = d^2 + p^2 + h^2$$

ution method) d, p, h, Van Krevelen (group contrib

2 가 25 ( t > 5), t^2 가 25 ( t^2 가 25 )

가 t 가 t 가 t^3 가

2 가 (attraction) 3 t

BCPNP

t BCPNP ( ) ; ( ) ; ( )

oblate) (prolate)) BCPNP가 (aspect ratio), 1 10, P 가 1 5, 1 3, 가 1 2 BCPNP

BCPNPs, BCPNP /

BCPNP, BCPNP

(DMF), BCPNP BCPNPs

가 (Krevelen)

BCPNP, dz 0.005-0.200, 0.005 0.100 BCPNPs PS

0.010 0.050 가 0.020 0.40 BCPNPs PS

DLS 0.01-0.80, 0.03-0.40, 가

$0.03 \mu^2 / \langle l \rangle^2 - 0.20 \mu^2 / \langle l \rangle^2$

(DMSO), (THF), (DMF),

가 가 BCPNPs

BCPNPs가

BCPNP (kinetics)

0 150, 20 125

가 -25 250, 25 100

10 2, 1 2, BCPNPs BCPNPs

15 1, 가 30 1

BCPNPs BCPNPs

가

0.01 % 가

%, 1 30 %, 2 20 % 가 5 10 0.1 30 %

1 30 %, BCPNPs 2 20 % 가 5 10 %

U.S. B1 6,383,500

DP ('DP') 4 3,000 12 1,200

2 1,000, 2 200, 가 4 100

2 2,000, 5 1000, 가 1

0 200

0.1 5, 가 0.2 2, 0.01 50, 0.05 10,

가 ; ('DP')가 1,000, DP

0.05 DP 20:1, DP가 1000, 10 DP

) ( )

U.S.B1-6,383,500

4-, 2- ( ) 4-, 2- ( ) (polylysine),

가, 가, 가, 가, 가 UV-  
 가, 가 Friedel-Crafts ( )  
 가 UV-  
 가 UV-  
 가

U.S.B1-6,383,500

U.S.B1-6,383,500  
 ( ), ( ), [ ( )  
 ], [ ( ) ], ( / ( )  
 )  
 ( , ) 1:50 50:1,  
 1:50 10:1, 1:10 5:1, 가 1:4 2:1

(dendrimers)  
 , U.S. B1-6,383,500  
 가

-( )  
 1,4- 1,3-  
 .S. B1-6,383,500  
 -b- ( )-b- ( ), ( )-b- (4-  
 )-b- ( ), ( )-b- (2- )-b- ( ),  
 ( )-b- ( ), -b- ( )-b- ( )  
 (triblock) . dz가 0.005-0.020 BCPNPs  
 가 0.010 BCPNPs  
 2-20 , DPs 2-8

BCPNPs U.S.B1-6,383,500

BCPNPs

(templates)



**5. pSty-b-P4VP 1,4- / BCPNPs**

(Mw) 20,500, pSty (polydispersity index) 1.09, pSty-b-P4VP( P4VP (4- 11,800 8,700 )) , DMF  
 pSty-b-P4VP DMF 가 10 mg/ml 가 2:1 , 1,4-  
 1,4- 30 4- 가  
 0.65 PSD , dz (DLS) TEM , 130nm  
 pSty , P4VP H<sup>1</sup> -NMR

**6. pSty-b-P4VP 1,4- /**

pSty-b-P4VP 가 50mg/Ml 5  
 PSD , dz (DLS) TEM , 96nm  
 0.53 pSty , P4VP H<sup>1</sup> -NMR

**7. pSty-b-P4VP 1,4- /**

pSty-b-P4VP 가 100mg/Ml 5  
 PSD , dz (DLS) TEM , 65nm  
 0.45 pSty , P4VP H<sup>1</sup> -NMR

**8. pSty-b-P4VP 1,4- /**

pSty-b-P4VP 가 300mg/Ml 5  
 PSD , dz (DLS) TEM , 93nm  
 0.42 pSty , P4VP H<sup>1</sup> -NMR

**9. pSty-b-P2VP 1,4- /**

(Mw) 26,800, pSty (polydispersity index) 1.32, pSty-b-P2VP( P4VP (2- 14,300 12,500 )) , DMF  
 pSty-b-P4VP DMF 가 10 mg/ml 가 2:1 , 1,4-  
 1,4- 24 100 2- 가  
 0.25 PSD , dz (DLS) TEM , 90nm  
 pSty , P2VP H<sup>1</sup> -NMR

**10. pSty-b-P2VP 1,4- /**



0.42	pSty	pSty-b-P2VP PSD	가 50mg/Ml , dz	P2VP	(DLS)	9	TEM	H <sup>1</sup> -NMR	65nm
<b>11. pSty-b-P2VP 1,4- /</b>									
0.32	pSty	pSty-b-P2VP PSD	가 80mg/Ml , dz	P2VP	(DLS)	9	TEM	H <sup>1</sup> -NMR	45nm
<b>12. pSty-b-P2VP 1,4- /</b>									
0.22	pSty	pSty-b-P2VP PSD	가 100mg/Ml , dz	P2VP	(DLS)	9	TEM	H <sup>1</sup> -NMR	30nm
<b>13. PEO-b-P2VP 1,4- /</b>									
		PEO-b-P2VP( ( )- (2- ) ) (Mw) 11,000 , PEO P2VP 5,000 6,000 (polydispersity index) 1.32 . 1,4- , DMF							
0.20	pSty	pSty-b-P4VP PSD	가 50 mg/ml , dz	P2VP	(DLS)		TEM	H <sup>1</sup> -NMR	40nm
<b>14. PEO-b- 1,3- (1,3-propanet</b>									
		PEO-b- ( , ( )- - ( ) ) (Mw) 9,600 , PEO ( , 30%가 ) (polydispersity index) 1.32 . 1,3- 5,000 4,600 DMF							
2	25	PEO-b- (DLS)	가 100mg/ml 가 0.8-1.0						1,3- , dz 32nm
<b>15. BCPNPs</b>									
		( ) 5wt% ) <sub>8</sub> -b- ( ) <sub>5</sub> -b- ( ) <sub>8</sub> ( , 1,4- ) 가 (1,4- 5 ) 1-(3-( ) )-3-							24

BCPNPs PSD , dz TEM DLS 8nm 0.19

**16. pSty-b-P4VP 1,4-** /

ted) DMF가 pSty-b-P4VP 가 5 % 3H(deutera  
 00 (Mw) 20,500 , pSty P4VP (Mw) 11,800 8,7  
 Mw/Mn 1.09 , pSty P4VP  
 TEM H<sup>1</sup>-NMR . 1,4- , 0, 10 28 1H-NMR  
 가 3H(deuterated) DMF , 1H-NMR

( a) ( b) ( c) ( d) ( combination)  
 -H -H 3:2 . 4  
 . 28 가 b c 가 가 가  
 , P4VP , pSty , P4VP P4VP  
 , pSty 가 P4VP

(57)

1. (a) (crosslinkable) ;
- (b) ;
- (c) ;
- (d) ;
- ( ) (non-crosslinka  
 ble) ;
- ( ) 가 (modifiab  
 le)
2. 1 , 0.05-10 ,
3. 1 , 0.1-30 %
4. 1 , 0.005-0.200
5. 1 , 2-1,000

1 6. , - 2-2,000 .

1 7. , 2 3 .

1 8. , - 1:10-5:1 , .

1 9. , 가 가 ;  
;  
,  
, , , UV- (flavor), , , , , , .

1 10. , 가 가  
;  
;  
;

.