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(71) Applicant (for all designated States except US): GENERAL ELECTRIC COMPANY [US/US]; 1 River Road, Schenectady, NY 12345 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): BRUNELLE, Daniel, Joseph [US/US]; 4 Woods Edge, Burnt Hills, NY 12027 (US). ACAR, Havva, Yagci [TR/US]; 2009 London Square Drive, Clifton Park, NY 12065 (US). KHOURI, Farid, Fouad [US/US]; 6 Tamarack Lane, Clifton Park, NY 12065 (US). GUGGENHEIM, Thomas, Link [US/US]; 7160 Upton Road, Mount Vernon, IN 47620 (US). WOODRUFF, David, Winfield [US/US]; 20 Valencia Lane, Clifton Park, NY 12065 (US). JOHNSON, Norman, Enoch [US/US]; 1251 Tanglewood Drive, Mount Vernon, IN 47620 (US).

(74) Agents: WINTER, Catherine, J. et al.; Patent Counsel, General Electric Company, 3135 Easton Turpike (W3C), Fairfield, CT 06828 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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**Declarations under Rule 4.17:**

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

**Published:**

— with international search report  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: PHASE TRANSFER CATALYZED METHOD FOR PREPARATION OF POLYETERIMIDES

(57) Abstract: Polyether polymers, such as polyetherimides, are prepared by the reaction of a dihydroxy-substituted aromatic hydrocarbon alkali metal salt, such as bisphenol A disodium salt, with a bis(N-(chlorophthalimido))aromatic compound, such as 1,3-and/or 1,4-bis[N-(4-chlorophthalimido)]benzene, in a solvent such as o-dichlorobenzene and in the presence of a phase transfer catalyst such as a hexaalkylguanidinium chloride. Several embodiments may be employed to improve the method. They comprise employing substantially dry reagents, employing a high solids level in solvent, beginning with an excess of bis(N-(chlorophthalimido))-aromatic compound and incrementally adding alkali metal salt, employing alkali metal salt of small particle size, and using reagents of high purity.

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21 April 2005

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

Internal Application No  
PCT/US2004/025799

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 C08G73/10 C08G65/40				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
Minimum documentation searched (classification system followed by classification symbols) IPC 7 C08G				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 5 229 482 A (BRUNELLE DANIEL J) 20 July 1993 (1993-07-20) cited in the application examples 16,17	1-40		
X	----- US 5 830 974 A (SCHMIDHAUSER JOHN CHRISTOPHER ET AL) 3 November 1998 (1998-11-03) cited in the application column 4, line 38 examples 1-4 example 6 claim 1 -----	1-40		
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.				
<input checked="" type="checkbox"/> Patent family members are listed in annex.				
° Special categories of cited documents :				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;">                     *A* document defining the general state of the art which is not considered to be of particular relevance                      *E* earlier document but published on or after the international filing date                      *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)                      *O* document referring to an oral disclosure, use, exhibition or other means                      *P* document published prior to the international filing date but later than the priority date claimed                 </td> <td style="width: 50%; border: none; vertical-align: top;">                     *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention                      *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone                      *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.                      *&amp;* document member of the same patent family                 </td> </tr> </table>			*A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family
*A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family			
Date of the actual completion of the international search  <div style="text-align: center; font-size: 1.2em;">1 February 2005</div>	Date of mailing of the international search report  <div style="text-align: center; font-size: 1.2em;">15. 02. 2005</div>			
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  <div style="text-align: center; font-size: 1.2em;">Müller, M</div>			

## INTERNATIONAL SEARCH REPORT

 International Application No  
 PCT/US2004/025799

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 235 934 B1 (CARINGI JOSEPH JOHN ET AL) 22 May 2001 (2001-05-22) example 6 column 8, line 53 - line 62 column 9, line 24 - line 28 -----	1-40
X	US 6 265 521 B1 (FYVIE THOMAS JOSEPH ET AL) 24 July 2001 (2001-07-24) column 6, line 42 - line 49 example 4 -----	1-40
X	US 6 020 456 A (BRUNELLE ET AL) 1 February 2000 (2000-02-01) example 1 -----	1-40
A	US 6 008 374 A (DELLACOLETTA ET AL) 28 December 1999 (1999-12-28) claim 1 -----	1-40
A	GB 1 392 649 A (GENERAL ELECTRIC CO) 30 April 1975 (1975-04-30) example XX -----	1-40

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2004/025799

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-14(embodiment (A)), 15-18, 38-40(embodiment (A))

Embodiment (A) as defined in claim 1.  
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2. claims: 1-14(embodiment (B)), 19, 20, 38-40(embodiment (B))

Embodiment (B) as defined in claim 1.  
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3. claims: 1-14(embodiment (C)), 21-24, 38-40(embodiment (C))

Embodiment (C) as defined in claim 1.  
---

4. claims: 1-14(embodiment (D)), 25, 26, 38-40(embodiment (D))

Embodiment (D) as defined in claim 1.  
---

5. claims: 1-14(embodiment (E)), 27-34, 38-40(embodiment (E))

Embodiment (E) as defined in claim 1.  
---

6. claims: 1-14(embodiment (F1)), 35, 36, 38-40(embodiment (F1))

Embodiment (F1) as defined in claim 1.  
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7. claims: 1-14(embodiment (F2)), 37, 38(embodiment (F2))

Embodiment (F2) as defined in claim 1.  
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## INTERNATIONAL SEARCH REPORT

 International Application No  
 PCT/US2004/025799

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