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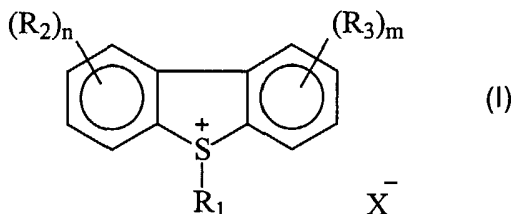
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: COMPOSITIONS COMPRISING PHOTOACID GENERATORS



(57) Abstract: A composition useful for forming a photoresist layer at i-line (365 nm) comprising (a) a film forming resin; (b) a compound represented by the following formula (I) wherein R<sub>1</sub> is a C<sub>1-20</sub> alkyl group, C<sub>6-20</sub> aryl group, or C<sub>6-20</sub> aralkyl group, the C<sub>1-20</sub> alkyl group, C<sub>6-20</sub> aryl group, or C<sub>6-20</sub> aralkyl group being unsubstituted or substituted by one or more groups selected from halogen, C<sub>1-20</sub> alkyl, C<sub>1-8</sub> perfluoroalkyl, C<sub>1-20</sub> alkoxy, cyano, hydroxyl, or nitro; R<sub>2</sub> and R<sub>3</sub> are each independently selected from hydrogen, C<sub>1-8</sub> alkyl, C<sub>1-8</sub> perfluoroalkyl, C<sub>1-8</sub> alkoxy, nitro, halogen, carboxyl, hydroxyl, and sulfate; each of m and n are indepen-

dently 0 or a positive integer; and X<sup>-</sup> is a non-nucleophilic anion of an acid; (c) optionally, additives to adjust the optical, mechanical and film forming properties; (d) optionally, a base or radiation sensitive base; and (e) a solvent.

## INTERNATIONAL SEARCH REPORT

In national Application No  
PCT/EP2004/006073

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G03F7/004

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G03F

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, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 280 897 B1 (K. ASAKAWA ET AL.) 28 August 2001 (2001-08-28)	1-8
Y	column 17, line 49 - line 57 column 21, line 26 - line 47 column 39, line 33 - line 42 column 65, line 66 - line 67 column 66; example I1	1-8
X	US 5 863 699 A (K. ASAKAWA ET AL.) 26 January 1999 (1999-01-26) cited in the application column 19, line 9 - line 15 column 22 - column 23; example 11	1-8
X	WO 02/39186 A (E.I. DU PONT DE NEMOURS AND COMPANY) 16 May 2002 (2002-05-16) page 13, line 22 - line 37 page 14, line 1 - line 24	1-8
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents:

- \*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
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- \*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.

\*G\* document member of the same patent family

Date of the actual completion of the international search

8 December 2004

Date of mailing of the international search report

21. 01. 2005

Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

Int'l Application No  
PCT/EP2004/006073

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	M. PADMANABAN ET AL.: "Performance of imide and methide onium PAGs in 193nm resist formulations" PROCEEDINGS OF THE SPIE - THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING, vol. 5039, no. 2, February 2003 (2003-02), pages 743-751, XP002309546 USA page 746; figure 3 -----	1-8
A	W.M. LAMANNA ET AL.: "New ionic photo-acid generators (PAGs) incorporating novel perfluorinated anions" PROCEEDINGS OF THE SPIE - THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING, vol. 4690, no. 2, March 2002 (2002-03), pages 817-828, XP002309547 USA page 824; table 4 -----	1-8
A	D. LEE ET AL.: "Perfluorosulfonyl imides and methides - Investigating the lithographic potential of novel superacid PAGs" PROCEEDINGS OF THE SPIE - THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING, vol. 4690, no. 1, March 2002 (2002-03), pages 169-177, XP002309548 USA page 171; table 1 -----	1-8
A	WO 03/003120 A (INTERNATIONAL BUSINESS MACHINES CORPORATION) 9 January 2003 (2003-01-09) claims 1,2,5 -----	1-8

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2004/006073

## 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(part)-8(part)

composition comprising (a) a film forming resin; (b) a compound represented by formula (I) wherein X- is BF<sub>4</sub>- or R-SO<sub>3</sub>- ; and (c) a solvent / method of forming a pattern which makes use of said composition

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## 2. claims: 1(part)-8(part)

composition comprising (a) a film forming resin; (b) a compound represented by formula (I) wherein X- is (R-SO<sub>2</sub>)<sub>2</sub>N-; and (c) a solvent / method of forming a pattern which makes use of said composition

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## 3. claims: 1(part)-8(part)

composition comprising (a) a film forming resin; (b) a compound represented by formula (I) wherein X- is (R-SO<sub>2</sub>)<sub>3</sub>C-; and (c) a solvent / method of forming a pattern which makes use of said composition

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2004/006073

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