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(54) Title: A CONDUCTIVE LITHOGRAPHIC POLYMER MIXTURE AND METHOD OF MAKING DEVICES USING SAME

(57) Abstract: A conductive photolithographic film and method of forming a device using the conductive photolithographic film. The method includes depositing a conductive photolithographic film on a top surface of a substrate; and patterning the conductive photolithographic film to create a desired circuit pattern using a lithographic process. The conductive photolithographic film comprising about 50% to about 60% of a mixture of epoxy acrylate, a thermal curing agent, and a conductive polymer; about 20% to about 30% of a lithographic reactive component; about 10% to about 15% of a photo-active material; and about 3% to about 5% of additives that enhance conductivity of the conductive photolithographic polymer.



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# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2005/030407

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. G03F7/09      G03F7/038      H01L21/768		
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) G03F H01L		
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, PAJ, WPI Data		
<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	EP 0 591 951 A (SEKISUI CHEMICAL CO., LTD.) 13 April 1994 (1994-04-13) page 8 - page 9; example 1 -----	1-13
A	EP 0 753 550 A (SEKISUI CHEMICAL CO., LTD.) 15 January 1997 (1997-01-15) examples -----	1-13
A	PATENT ABSTRACTS OF JAPAN vol. 015, no. 345 (C-0864), 3 September 1991 (1991-09-03) & JP 03 137121 A (SHOWA DENKO KK; others: 01), 11 June 1991 (1991-06-11) abstract -----	1-13
X	US 6 248 658 B1 (M.S. BUYNOSKI) 19 June 2001 (2001-06-19) column 4, line 10 - line 51 -----	14-26, 28,29
-/--		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family 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 *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  <p style="text-align: center;">17 October 2007</p>	Date of mailing of the international search report  <p style="text-align: center;">07/11/2007</p>	
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  <p style="text-align: center;">Dupart, Jean-Marc</p>	

## INTERNATIONAL SEARCH REPORT

International application No  
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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 2002/063222 A1 (I.-H. HUANG ET AL.) 30 May 2002 (2002-05-30) page 1, paragraph 8 claim 1 -----	14, 26, 29, 30
X	US 6 319 643 B1 (B. SINGH ET AL.) 20 November 2001 (2001-11-20) column 4, line 38 - column 6, line 40 -----	14
X	US 2002/022191 A1 (J. LAMOTTE ET AL.) 21 February 2002 (2002-02-21) claim 13 -----	14, 31-34

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2005/030407

## 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: 1-13

conductive photolithographic polymer mixture  
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2. claims: 14-25

a method of fabricating a device comprising: depositing a  
conductive photolithographic film on top surface of a  
substrate; and patterning it to create a pattern.  
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3. claims: 26-34

an electronic device comprising a substrate, a dielectric  
layer and a patterned conductive photolithographic film / a  
method of fabricating a device comprising: depositing a  
conductive photolithographic film on a top surface of an  
insulation layer on a substrate; masking said film according  
to a pattern; exposing said film to light; and developing by  
removal of unmasked portions of said film.  
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2005/030407

Patent document cited in search report	Publication date	Publication date	Patent family member(s)	Publication date
EP 0591951	A	13-04-1994	CA 2107808 A1	08-04-1994
			DE 69327564 D1	17-02-2000
			DE 69327564 T2	24-08-2000
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