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(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, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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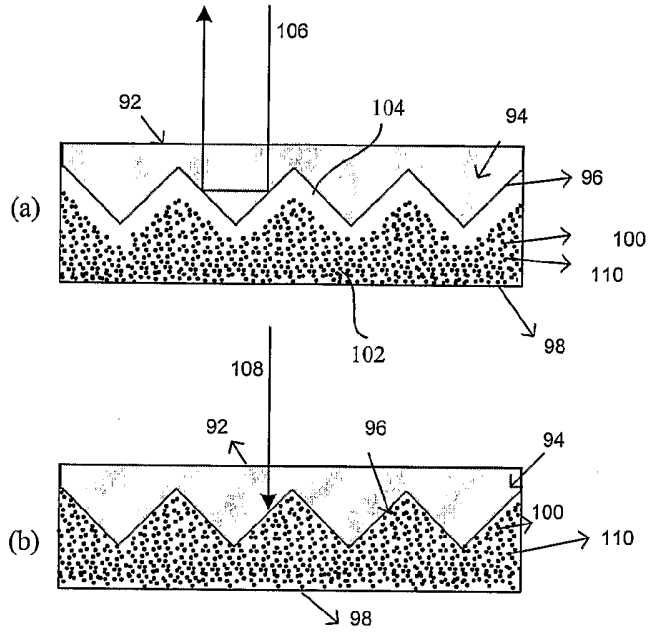
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: STRUCTURED FLUID COMPOSITIONS FOR ELECTROPHORETICALLY FRUSTRATED TOTAL INTERNAL REFLECTION DISPLAYS



(57) Abstract: A structured fluid composition comprising: (a) a low refractive index liquid (104); (b) particles (100) including light absorbing charged particles such as pigments, non-light absorbing uncharged particles such as teflon, silica, alumina and combinations thereof; and (c) at least one additive selected from the group consisting of a dispersant, a charging agent, a surfactant, a flocculating agent, a polymer, and combination thereof; for use in a TIR electronic display. The inventive composition improves the long-term stability, response time and visible appearance of image displays which electrophoretically frustrate total internal reflection (TIR).

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INTERNATIONAL SEARCH REPORT

International Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G02F1/167 B01F17/00 B01J13/00

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 G02F B01F B01J

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	MOSSMAN, M.A. ET AL.: "New Method for Maintaining Long-Term Image Quality in a TIR-based Electrophoretic Display" PROCEEDINGS OF THE SID EURODISPLAY 2002, 1 October 2002 (2002-10-01), pages 851-854, XP009048336	1,4,9,10
Y	the whole document	2,3,5
A		7,8

Y	MICHELE A MOSSMAN ET AL: "39.1: New Reflective Color Display Technique Based on Total Internal Reflection and Subtractive Color Filtering" SID DIGEST 2001, vol. XXXII, 2001, page 1054, XP007007734	3,5
A	the whole document	2,4,7-10

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[X] Further documents are listed in the continuation of box C.

[X] 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

"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	Date of mailing of the international search report
27 September 2005	3 1. 10. 05

Name and mailing address of the ISA	Authorized officer
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	Lüssem, G

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Form PCT/ISA/210 (second sheet) (January 2004)

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PCT/US2005/001914

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2003/038755 A1 (AMUNDSON KARL R ET AL) 27 February 2003 (2003-02-27) paragraph [0057] -----	2
A	MOSSMAN M A ET AL: "NEW REFLECTIVE DISPLAY BASED ON TOTAL INTERNAL REFLECTION IN PRISMATIC MICROSTRUCTURES" CONFERENCE RECORD OF THE 20TH INTERNATIONAL DISPLAY RESEARCH CONFERENCE. PALM BEACH, FL, SEPT. 25 - 28, 2000, INTERNATIONAL DISPLAY RESEARCH CONFERENCE (IDRC), SAN JOSE, CA : SID, US, vol. CONF. 20, 2000, pages 311-314, XP001032176 the whole document -----	1-5,7-10
A	SALLY A SWANSON ET AL: "5.2: High Performance Electrophoretic Displays" SID DIGEST 2000; vol. XXXI, May 2000 (2000-05), page 29, XP007007322 the whole document -----	1-5,7-10
A	US 5 914 806 A (GORDON II ET AL) 22 June 1999 (1999-06-22) column 2, lines 5-12 column 5, lines 1-37 -----	1-5,7-10
A	US 2002/180687 A1 (WEBBER RICHARD M) 5 December 2002 (2002-12-05) paragraph [0034]; figure 13 -----	6

INTERNATIONAL SEARCH REPORT

International application No.
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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: 1,3-5

The subject-matter of the set of claims is directed to an electrophoretic mixture composition (fluid) designed for the purpose of providing a broader absorption spectrum (better contrast for a wide range of wavelength, in particular for white light) of the whole fluid in the case the total internal reflection is frustrated.

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2. claims: 1,6-10

The subject-matter of the set of claims is directed to an electrophoretic mixture composition (fluid) designed to improve the rheological behaviour of the fluid (resulting in reduced switching times of the corresponding electrophoretic device) and to reduce agglomeration of the particles contained in it.

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3. claim: 2

The subject-matter of the claim is directed to an electrophoretic display device based on the frustrated TIR operation principle and a corresponding electrophoretic suspension (fluid), the composition of the latter designed to provide/improve the colloidal structure of the whole fluid.

INTERNATIONAL SEARCH REPORT

[redacted]formation on patent family members

Inter[redacted]nal Application No
PCT/US2005/001914

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2003038755 A1	27-02-2003	NONE	
US 5914806 A	22-06-1999	NONE	
US 2002180687 A1	05-12-2002	NONE	