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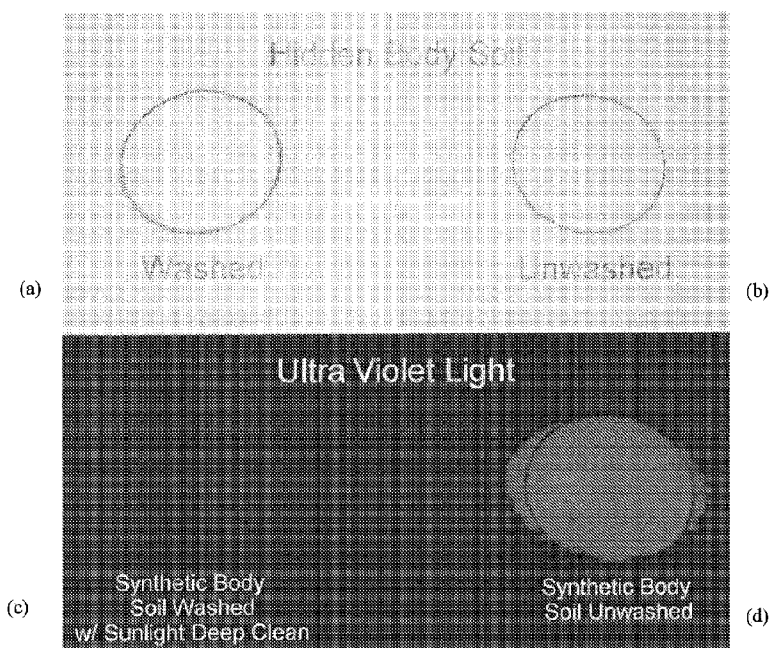
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[Continued on next page]

(54) Title: COMPOSITIONS AND METHODS FOR DETECTION OF SOILS ON FABRICS

Figure 1



(57) Abstract: The present invention is in the field of household cleaning, for example laundry products and methods. The invention is directed to the use of indicator materials, such as fluorescent indicator materials, for detecting or visualizing organic laundry soils, particularly those that tend to be invisible to the naked eye, such as sebum, perspiration, biological soils, odor-causing soils/stains and tannins. In addition, the present invention is directed to methods of using indicator materials, such as fluorescent indicator materials, to detect such soils on fabrics, and to determine and demonstrate the cleaning efficacy of a laundry product.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US 11/46631

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(8) - B32B 33/00 (2012.01)

USPC - 442/189; 442/308; 428/97

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(8)- B32B 33/00 (2012.01);  
USPC- 442/189; 442/308; 428/97

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
Patents and NPL (classification, keyword; search terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
PubWest (US Pat, PgPub, EPO, JPO), GoogleScholar (PL, NPL), FreePatentsOnline (US Pat, PgPub, EPO, JPO, WIPO, NPL);  
search terms: soil, sebum, perspiration, stain, tannin, indicate, detect, visual, change, color, colour, light, reflect, fluoresce, fabric, woven, nonwoven, knit, filament, yarn, fiber, fibre, wavelength, pyrenyldiazomethane...

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2,156,880 A (SLOMON) 02 May 1939 (02.05.1939), Figs. 1, 7; pg 1, ln 1, ln 2-8; pg 1, col 1, ln 13-17; pg 1, col 1, ln 26-33; pg 2, col 2, ln 21-29; pg 2, col 2, ln 72-73; pg 3, col 1, ln 2-8; pg 3, col 1, ln 17-22; pg 3, col 1, ln 46-61; pg 4, col 1, ln 31-42	1-4, 6, 14, 19 ----- 5, 7-13, 15-18, 20-26
Y	US 2002/0128170 A1 (DECLERCQ et al.) 12 September 2002 (12.09.2002), para [0008], [0010], [0013], [0015], [0019], [0022]-[0024], [0029], [0115], [0132], [0154], [0166], [0167], [0180], [0188], [0339], [0405]-[0407], [0412]	5, 7-13, 15, 16, 22-26
Y	US 2007/0218562 A1 (LI et al.) 20 September 2007 (20.09.2007), para [0005], [0009]	17, 18, 20, 21
Y	US 6,814,816 B2 (ACHAR et al.) 09 November 2004 (09.11.2004), col 2, ln 53 to col 3, ln 30; col 3, ln 64 to col 4, ln 8; col 6, ln 12-13; col 5, ln 51-61	22-26
Y	US 2007/0249012 A1 (LYE et al.) 25 October 2007 (25.10.2007), para [0011]-[0015], [0030]-[0086]	1-26
Y	US 2005/0003138 A1 (HUTCHISON) 06 January 2005 (06.01.2005), para [0014]-[0020]	1-26

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	"I" 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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"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
"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)	"&" document member of the same patent family
"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	

Date of the actual completion of the international search 31 January 2012 (31.01.2012)	Date of mailing of the international search report <b>14 FEB 2012</b>
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young  PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 11/46631

**Box No. 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 No. 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:

-- Please see Extra 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 additional fees, this Authority did not invite payment of additional fees.
- 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.:  
  
1-26
- 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 and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**Box No. III, Observations where unity of invention is lacking:**

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: claims 1-26 directed to a method of determining the presence of a soiling substance on a fabric comprising:

(a) applying an indicator material to a fabric; and

(b) observing the fabric;

wherein a change in the color, fluorescence and/or percent reflectance at a specific wavelength of the indicator material indicates the presence of a soiling substance.

Group II: claims 27-68 directed to a method of determining the cleaning efficacy of a laundry product comprising:

(a) applying a soiling substance to a first fabric and a second fabric, wherein the second fabric is used as a control;

(b) cleaning the first fabric with a laundry product;

(c) applying an indicator material to the cleaned first fabric and the second fabric; and

(d) observing said first and second fabrics, and comparing the color and/or

wavelength of the first fabric from (c) to the color and/or wavelength of the

second fabric from (c) to determine the efficacy of the laundry product.

Group III: claims 69-74 directed to a kit for determining the presence of a soiling substance on a fabric comprising:

(a) an indicator material;

(b) a solvent for dissolving the indicator material; and

(c) an apparatus for applying the indicator material to a fabric.

The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because under PCT Rule 13.2 they lack the same or corresponding technical features for the following reasons:

Groups I and II do not include the kit nor the solvent of group III.

Groups I and III do not include the determining the cleaning efficacy of a laundry product; the second fabric; nor the cleaning of group II.

US 2005/0003138 A1 to Hutchison teaches the common features of the groups as follows:

(a) applying an indicator material to a fabric of groups I, II and III; and

(b) observing the fabric;

wherein a change in the color, fluorescence and/or percent reflectance at a specific wavelength of the indicator material indicates the presence of a soiling substance of groups I and II (para [0004]); therefore the common feature is not an improvement over the prior art.

None of these technical features are common to the other groups, nor do they correspond to a special technical feature in the other groups. Therefore, unity of invention is lacking.