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C12M 1/14 (2006.01) *C12M 3/04* (2006.01)

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[Continued on next page]

(54) Title: DEVICE FOR RAPIDLY DETECTING MICROORGANISMS

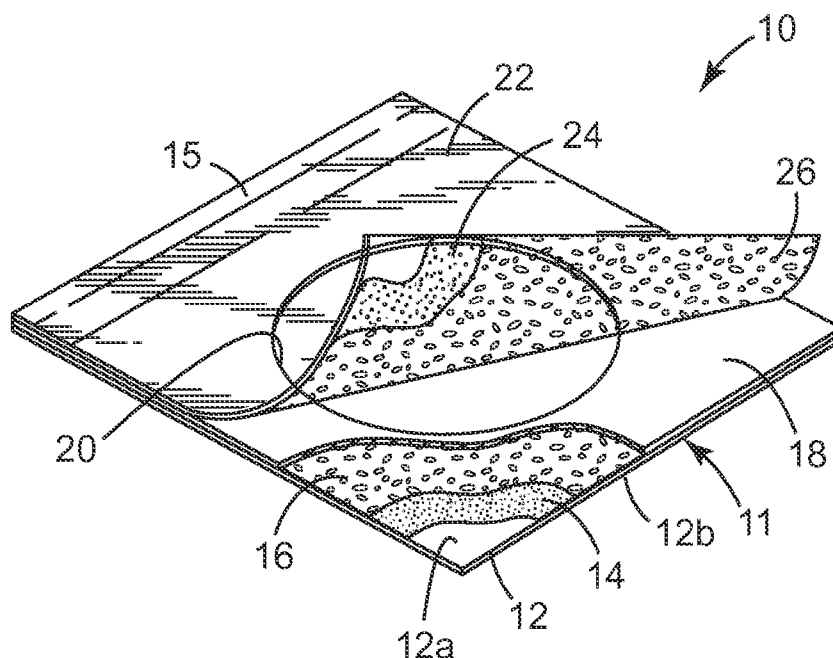


FIG. 1

(57) Abstract: The disclosure includes: a coating composition, comprising a powdered cold-water-soluble gelling agent and surface-modified nanoparticles disposed in the powdered cold-water-soluble gelling agent; a coated film that includes a transparent film coated with the coating composition; and a device for growing microorganisms, including the coated film releasably attached to at least a portion of a body member that includes a self-supporting and water-proof substrate.



ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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- *with international search report (Art. 21(3))*
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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))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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19 April 2012

A. CLASSIFICATION OF SUBJECT MATTER*C12Q 1/04(2006.01)i, C12M 1/14(2006.01)i, C12M 1/34(2006.01)i, C12M 3/04(2006.01)i*

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)

C12Q; C12M; C12N; C08J; C08K; C09K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: nanoparticle, hydrogel, hydrated gel, particulate, nanoparticle, coat, Aerosil.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006-0204755 A1 (TORII, KAZUSHI et al.) 14 September 2006 See abstract; paragraphs [0128] - [0196]; examples 1, 22, 26.	1,3-5,7-10
A	See the whole document.	2,6,11-29
A	US 2005-0065237 A1 (SCHMIDT, MATTIAS et al.) 24 March 2005 See the whole document.	1-29
A	US 5994440 A (STAPLES, THOMAS L. et al.) 30 November 1999 See the whole document.	1-29
A	US 2008-0226898 A1 (SCHMIDT, MATTIAS et al.) 18 September 2008 See the whole document.	1-29
A	US 7037708 B1 (RUNGE, FRANK et al.) 02 May 2006 See the whole document.	1-29
A	US 2010-0159499 A1 (BAKER, WENDY A. et al.) 24 June 2010 See the whole document.	1-29
A	WO 2010-022111 A1 (3M INNOVATIVE PROPERTIES COMPANY) 25 February 2010 See the whole document.	1-29



Further documents are listed in the continuation of Box C.



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 application or patent 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 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

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2011/041943**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:

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 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 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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/041943

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/041943

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Continuation of Box No. III

Group I (Claims 1 - 12): Claim 1 is directed to a coating composition comprising (a) a powdered cold-water-soluble gelling agent and (b) surface modified nanoparticles whose weight percent range in the coating composition and particle size are specified.

Group I (Claims 13 - 18): Claim 13 is directed to a coated film wherein the coating composition of claim 1 is adhered to the adhesive layer non-inhibitory to the growth of microorganisms.

Group III (Claims 19 - 29): Claim 19 is directed to a device for growing microorganisms comprising a body member, a layer of adhesive, a cold-water-soluble powder and a cover sheet comprising the coated film of claim 13.

The only common technical feature between Groups I to III is: a coating composition of claim 1.

However, this feature lacks novelty and/or inventive step with respect to the following document cited in this ISR:

(a) US 2006/0204755 A1.

Thus there is no technical relationship left over the prior art among the claimed inventions, leaving the groups without a single general inventive concept.

Hence there is lack of unity "a posteriori" (PCT Rules 13.1 and 13.2).