



(51) International Patent Classification:

B01D 65/08 (2006.01) **B08B 17/06** (2006.01)
B01D 69/12 (2006.01) **B29C 55/02** (2006.01)
B01D 71/70 (2006.01) **B01D 67/00** (2006.01)

(21) International Application Number:

PCT/US2011/050325

(22) International Filing Date:

2 September 2011 (02.09.2011)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/379,901 3 September 2010 (03.09.2010) US

(71) Applicant (for all designated States except US): **MAS-SACHUSETTS INSTITUTE OF TECHNOLOGY** [US/US]; 77 Massachusetts Avenue, Cambridge, MA 02139--4307 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **EGGENSPIELER, Damien** [FR/US]; 15 Day Street, Unit 2, Somerville, MA 02144 (US). **INCE, Gozde** [TR/TR]; Havacilar Caddesi Gumus Sokak, Parkverde Sitesi B3-2 D.23, Tasdelen Cekmekoy, Istanbul (TR). **BOYCE, Mary, C.** [US/US]; 41 Calumet Road, Winchester, MA 01890 (US). **GLEASON, Karen, K.** [US/US]; 4 Kenway Street, Cambridge, MA 02138-4724 (US).

(74) Agents: **GORDON, Dana, M.** et al.; Foley Hoag LLP, 155 Seaport Boulevard, Boston, MA 02210-2600 (US).

(81) Designated States (unless otherwise indicated, for every

kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every

kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, 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).

Published:

- with international search report (Art. 21(3))
- 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))

(88) Date of publication of the international search report:

23 August 2012

(54) Title: FABRICATION OF ANTI-FOULING SURFACES COMPRISING A MICRO- OR NANO-PATTERNED COATING

(57) Abstract: The invention relates to a method of forming a micro- or nano-topography on the surface of a composite material. The topography or the chemical nature of the surface may be modified or tuned. The methods of the invention may be run in a continuous fashion. The composite materials produced by the inventive methods may be micro- or nano- patterned membranes, for instance, for anti-fouling purposes.



WO 2012/031201 A3

INTERNATIONAL SEARCH REPORT

International application No PCT/US2011/050325

A. CLASSIFICATION OF SUBJECT MATTER INV. B01D65/08 B01D69/12 B01D71/70 B08B17/06 B29C55/02 B01D67/00 ADD. 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) B01D B08B B29C 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 practicable, search terms used) EPO-Internal, WPI Data				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	WO 2006/118903 A2 (3M INNOVATIVE PROPERTIES CO [US]) 9 November 2006 (2006-11-09) the whole document	1-6, 8-10, 14-16, 19,20, 23-27, 29-46, 48-53, 56,57, 60-62		
X	US 2007/227428 A1 (BRENNAN ANTHONY B [US] ET AL) 4 October 2007 (2007-10-04) the whole document	1-24		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.</td> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> See patent family annex.</td> </tr> </table>			<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.
<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 : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> "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 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 </td> <td style="width: 50%; border: none;"> "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 </td> </tr> </table>			"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 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
"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 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		
14 November 2011		12/07/2012		
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Marti, Pedro		

INTERNATIONAL SEARCH REPORT

International application No PCT/US2011/050325

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 2002/142306 A1 (COLEMAN PATRICK L [US] ET AL) 3 October 2002 (2002-10-03)</p> <p>paragraph [0031] - paragraph [0032] paragraph [0039] - paragraph [0042] paragraph [0050] - paragraph [0053]; figure 1b</p>	<p>1-6, 8-12, 14-17, 23-27, 29,30, 35-40, 42-46, 48, 52-54, 60-62</p>
X,P	<p align="center">-----</p> <p>WO 2011/094344 A1 (HARVARD COLLEGE [US]; HATTON BENJAMIN [US]; AIZENBERG JOANNA [US]) 4 August 2011 (2011-08-04) the whole document</p>	<p>1-6,8-24</p>
X	<p align="center">-----</p> <p>WO 2010/096073 A1 (UNIV ILLINOIS [US]; KING WILLIAM P [US]; CANNON ANDREW H [US]) 26 August 2010 (2010-08-26) the whole document</p>	<p>1-6, 8-24,27</p>
X	<p align="center">-----</p> <p>WO 2009/158631 A1 (HARVARD COLLEGE [US]; AIZENBERG JOANNA [US]; POKROY BOAZ [US]) 30 December 2009 (2009-12-30) the whole document</p> <p align="center">-----</p>	<p>1-6,8-24</p>

INTERNATIONAL SEARCH REPORT

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PCT/US2011/050325

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 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 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.:
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.:

1-27, 34-36(completely); 29-33, 37-62(partially)

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-27, 34-36(completely); 29-33, 37-62(partially)

Composite material and method of making a composite material.

1.1. claims: 1-26

Composite material, wherein the composite material comprises a substrate with a coated surface; and the coated surface comprises a coating material.

1.2. claims: 27, 34-36(completely); 29-33, 37-62(partially)

Method of making a composite material, comprising the steps of stretching a substrate, coating a surface of the stretched substrate with a material, thereby forming a stretched substrate with a coated surface; releasing the stretch from the stretched substrate with a coated surface, wherein releasing the stretch causes the coated surface to buckle, thereby forming a composite material with a coated surface.

2. claims: 28(completely); 29-33, 37-62(partially)

Method of making a composite material comprising the steps of heating a substrate, coating a surface of the heated substrate with a material, thereby forming a heated substrate with a coated surface; and allowing the heated substrate with a coated surface to cool, wherein cooling causes the coated surface to buckle, thereby forming a composite material with a coated surface.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2011/050325

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