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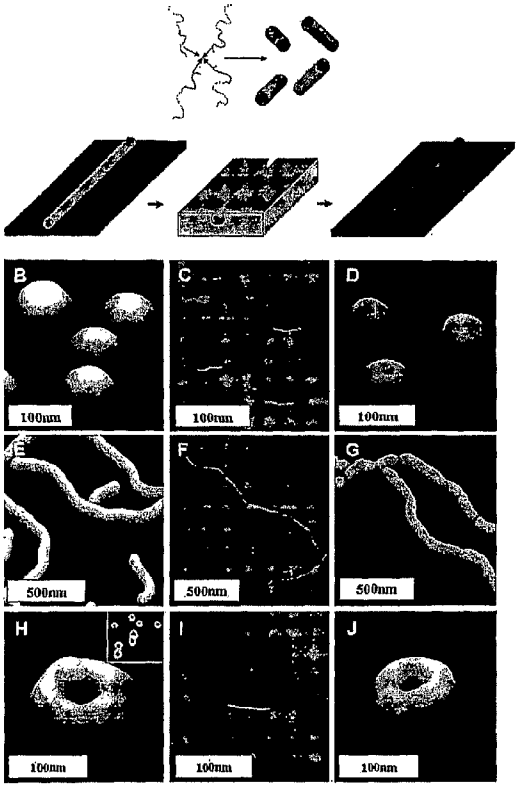
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[Continued on next page]

(54) Title: NANOSTRUCTURED SURFACES FOR BIOMEDICAL/BIOMATERIAL APPLICATIONS AND PROCESSES THEREOF



(57) Abstract: A medical device includes a textured surface having a predetermined nanostructure, wherein the nanostructure is less than about 500 nanometers in a broadest dimension. The textures nanostructure surface reduces friction between the medical device and biological tissue.

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FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. *A61F 2/06* (2006.01) *B29C 41/02* (2006.01) *B29C 41/12* (2006.01)

US Cl. 623/1.46 522/52 249/114.1

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)

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)
Databases: CAPLUS WPIDS Keywords: coat?, surface, layer, film, nanostruct?, nano?(w)dimension?(w)array, textur?, ?polmer?(s)methacryl?, ?acryl?(2w)styrene, polyester, nylon, silicone, siloxane, vinyl, epox?, fluorinat?(w)polymer, PFTE, perfluoropolyether, medical, prosthet?, tissue, implant?fluorinat?(w)polymer, PFTE, perfluoropolyether, medical, prosthet?, tissue, implant??

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 1999/047570 A1 (UNIVERSITY OF ROCHESTER) 23 September 1999; Pages 1-8, 'Background of the Invention', page 23, line 33 – page 26, line 21, page 29, line 24, page 35, table 1, page 42, line 15 – page 44, line 26, figures 28, 29.	1-3, 6-11, 13-20, 23-26
E,X	WO 2007/012114 A1 (NANOTECHNOLOGY VICTORIA PTY LTD) 1 February 2007; Page 4, line 2 – page 5, line 12, page 6, lines 30-31, page 11, lines 30-32, page 24, line 5 – page 26, line 15 (examples), figures 6, 7, and 10, and the claims.	1-11, 13-17, 36
A	WO 2006/116404 A2 (HYBRID PLASTICS, INC.) 2 November 2006 Page 6, table 1.	1

[X] Further documents are listed in the continuation of Box C [X] 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
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Date of the actual completion of the international search	Date of mailing of the international search report
21 August 2007	26 MAR 2008
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: Blaine R. Copenheaver Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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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	WO 2005/084582 A1 (NANOSYS, INC.) 15 September 2005; Page 2, paragraph [0006], pages 15-17, 32, paragraphs [0055]-[0059], [0107], pages 48-51, paragraphs [0150]-[0157], page 54 paragraph [0168], figures 3B, 4A-4C, 6A.	1-10, 13-16, 18-20, 23-36
P,X	WO 2006/096793 A2 (THE REGENTS OF THE UNIVERSITY OF CALIFORNIA) 14 September 2006; Page 3, lines 10-16, page 13, lines 6-11, page 17, lines 9-18, page 45, line 15 – page 47, line 12, figures 11-13, and the claims.	1-3, 6-11, 13-20, 23-28, 32, 36
P,X	FISSELL, W.H. et al.; Differentiated Growth of Human Renal Tubule Cells on Thin-Film and Nanostructured Materials; ASAIO JOURNAL 2006, vol. 52 no. 3, pp21-227 Abstract, figures.	18-19, 23-28, 35
X	Mills, C.A. et al.; Transparent micro- and nanopatterned ploy(lactic acid) for biomedical applications; JOURNAL OF BIOMEDICAL MATERIALS RESEARCH, Part A 2006, vol. 76A no. 4, pp781-787; published at www.interscience.wiley.com on 12 December 2005Page 787, first paragraph, pages 786-787, figures 3, 8.	1-3, 6, 10-11, 13, 18-20, 23, 27-28, 32-33, 36
X	JOURNAL OF MATERIALS SCIENCE: MATERIALS IN MEDICINE 2003, vol. 14, pp 721-725; Barbucci, R. et al.; Micro and nano-structured surfaces; Abstract, page 721, figure 3.	1-3, 6-11, 13-20, 23-30, 35-36
X	MATERIAL SCIENCE FORUM 2003, vols. 426-432, pp3115-3120; Haberstroh, K.M. et al.; Polymers with Nanostructured Surface Features for Soft Tissue Replacement Applications; Abstract, page 3115, last paragraph – page 3116, first paragraph.	1-3, 6-11, 13-20, 23-31, 35-36
X	POLYMERIC MATERIALS:SCIENCE & ENGINEERING 2005, vol. 93, pp254; Maynor, B.W. et al.; Molding of Biologically-Derived Soft Nanostructures Using Pattern Replication In Non-wetting Templates (PRINT); Whole document.	1-3, 6-8, 10-15, 17, 21-22
X	POLYMER PREPRINTS 2005, vol. 46 no. 2, pp1277; Lim, J.Y. et al.; Polymer demixed nanotopographic surfaces provide nonbiological cell-stimulating cues; Whole document.	1-3, 6-11, 13-20, 23-28, 32, 36

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
T	TISSUE ENGINEERING, 2007, vol. 13 no. 8, pp1879-1891; Lim J.Y. et al.; Cell Sensing and Response to Micro- and Nanostructured Surfaces Produced by Chemical and Topographic Patterning; Abstract, figures.	1-36
T	JOURNAL OF BIOMEDICAL MATERIALS RESEARCH Part A 2007, vol. 81A, pp678-684; published at www.interscience.wiley.com on 22 December 2006; Miller, D.C. et al.; PLGA nanometer surface features manipulate fibronectin interactions for improved vascular cell adhesion; Abstract, figures.	1-36

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/US2007/000402

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. These particulars are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
WO	9947570	AU	31913/99	CA	2324140	EP	1064310
WO	2007012114						
WO	2006116404						
WO	2005084582	AU	2004233002	AU	2004236260	AU	2004256392
		AU	2005218592	CA	2522678	CA	2522866
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		EP	1618223	EP	1620256	EP	1725189
		US	7056409	US	7074294	US	2004206448
		US	2004250950	US	2005038498	US	2005181195
		US	2005221072	US	2006122596	US	2006159916
		US	2006165952	US	2006204738	WO	2004094303
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WO	2006096793						

END OF ANNEX