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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, BH, BR, BW, BY, BZ, CA, CH, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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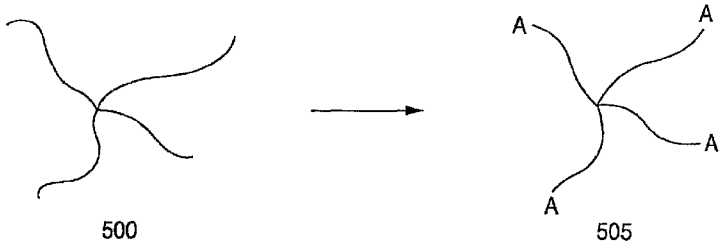
(54) Title: CONTROLLED DEGRADATION OF STENTS



(57) Abstract: Stents fabricated from hydrolytically degradable polymers with accelerated degradation rates and methods of fabricating stents with accelerated degradation rates are disclosed.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/016243

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61L31/06 A61L31/14 A61L31/16

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)
A61L C08L

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 696 178 A (COOPER KEVIN [US] ET AL) 9 December 1997 (1997-12-09) column 2, line 25 - line 39 column 3, line 42 - column 4, line 21 column 4, line 53 - column 5, line 5 column 6, line 57 - column 7, line 30 claims 1-3,6-9,11	1-18,23, 42-44, 49-51
A	WO 91/17789 A (STACK RICHARD S [US]; CLARK HOWARD G III [US]; WALKER WILLIAM F [US]) 28 November 1991 (1991-11-28) page 18, line 35 - page 20, line 21	1-18,23, 42-44, 49-51

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[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

"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
17 October 2008	16/02/2009

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/016243

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005/112170 A1 (HOSSAINY SYED F [US] ET AL) 26 May 2005 (2005-05-26) page 1, paragraph 9 page 3, paragraphs 39,42 page 4, paragraphs 43,44,48	1-18,23, 42-44, 49-51
A	WO 03/080147 A (ADVANCED CARDIOVASCULAR SYSTEM [US]) 2 October 2003 (2003-10-02) page 3, line 15 - line 29 page 5, line 22 - line 29 page 8, line 13 - line 22 page 9, line 16 - line 27	1-18,23, 42-44, 49-51
A	WO 2005/115493 A (ADVANCED CARDIOVASCULAR SYSTEM [US]; HOSSAINY SYED F A [US]; TANG YIWE) 8 December 2005 (2005-12-08) page 35, line 11 - page 40, line 21	1-18,23, 42-44, 49-51
A	HE B ET AL: "Synthesis and cell affinity of functionalized poly(l-lactide-co-beta-malic acid) with high molecular weight" BIOMATERIALS, ELSEVIER SCIENCE PUBLISHERS BV., BARKING, GB, vol. 25, no. 22, 1 October 2004 (2004-10-01), pages 5239-5247, XP004504215 ISSN: 0142-9612 cited in the application page 5239, paragraphs 2,3	1-18,23, 42-44, 49-51

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/016243

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 allsearchable 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 reportcovers 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.:

49 (partially), 1-23, 42-44, 50, 51

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: 1-23,42-44,49(in part),50,51

   A method of fabricating a stent with a polymerization that is initiated with an acid containing group and the fabricated stent.

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2. claims: 24-41

   A stent comprising a block copolymer including a hydrolytically degradable polymer block and an acidic polymer block including a plurality of pendant acid groups.

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3. claims: 45-48

   A stent comprising a structural element comprising a polymer blend including a hydrolytically degradable polymer that inhibits or prevents formation of crystalline domains in the structural element.

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4. claims: 49(in part),52

   Stents comprising a polymer blend having the molecular weight as a property that obtain a desired rate of degradation.

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5. claims: 49(in part),53

   Stents comprising a polymer blend having the number of arms and branches as a property that obtain a desired rate of degradation.

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6. claims: 54-69

   Stents comprising a hydrolytically degradable polymer block and a hydrophilic polymer block.

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7. claims: 70-75

   Stents comprising polymers with different degradation rates.

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8. claims: 76-82

   Method of treatment of a bodily lumen by releasing an acidic agent.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

9. claims: 83-91

Method of treatment of a bodily lumen by positioning a delivery device comprising an acidic agent at or adjacent to a hydrolytically degradable polymer stent.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2007/016243

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5696178 A	09-12-1997	NONE	
WO 9117789 A	28-11-1991	AU 653159 B2	22-09-1994
		AU 8001891 A	10-12-1991
		CA 2083157 A1	19-11-1991
		EP 0528993 A1	03-03-1993
		JP 5509008 T	16-12-1993
US 2005112170 A1	26-05-2005	AT 389423 T	15-04-2008
		EP 1689462 A1	16-08-2006
		JP 2007512094 T	17-05-2007
		WO 2005051449 A1	09-06-2005
WO 03080147 A	02-10-2003	AU 2003225882 A1	08-10-2003
		EP 1487513 A1	22-12-2004
		JP 2005520640 T	14-07-2005
WO 2005115493 A	08-12-2005	EP 1753480 A2	21-02-2007
		JP 2008500116 T	10-01-2008