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Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

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:

6 October 2011

(54) Title: DRUG-ELUTING INSERT ABLE MEDICAL DEVICE FOR TREATING ACUTE MYOCARDIAL INFARCTION, THROMBUS CONTAINING LESIONS AND SAPHENOUS- VEIN GRAFT LESIONS

(57) Abstract: A method for delivering at least one drug at a target site in a blood vessel for treating at least one of an acute myocardial infarction, a thrombus containing lesion and a saphenous-vein graft lesion is disclosed. The method includes delivering nano-carriers at the target site. The nano-carriers include one or more drugs encapsulated with a first biological agent. The nano-carriers further include a second biological agent in contact with one or more of the first biological agent and the one or more drugs. The first biological agent and the second biological agent have a first dissolution rate and a second dissolution rate respectively. The first dissolution rate is different from the second dissolution rate. The one or more drugs are released at the target site from the nano-carriers at a first release rate and a second release rate in response to dissolution of the first biological agent and the second biological agent, respectively.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/IN2011/000007

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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:A61F2,A61L31

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)

CNPAT,CNKI, WPI,EPODOC:implant+,insert+, nano,drug w eluting,stent,vessel

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 1883720 A(SHANGHAI JIAOTONG UNIVERSITY)27 Dec. 2006(27.12.2006)page 1 line 24-page 2 line 1, page 3 line 3, example 7	1-19
A	CN 1647776 A(SHANGHAI FIRST PEOPLE'S HOSPITAL)03 Aug. 2005(03.08.2005)the whole document	1-19
A	WO 2007140320 A2(NANYANG TECHNOLOGICAL UNIVERSITY) 06 Dec. 2007 (06.12.2007)the whole document	1-19
A	US 20050055078 A1(MEDTRONIC VASCULAR, INC.)10 Mar. 2005(10.03.2005)the whole document	1-19
A	EP 1977772 A2(CORDIS CORPORATION)08 Oct. 2008(08.10.2008)the whole document	1-19

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:	"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
"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 01 Jul. 2011(01.07.2011)	Date of mailing of the international search report 11 Aug. 2011 (11.08.2011)
Name and mailing address of the ISA/CN The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451	Authorized officer LV, Maoping Telephone No. (86-10)82245480

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IN2011/000007

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.: 1-12

because they relate to subject matter not required to be searched by this Authority, namely:

Claims 1-12 are attributed to the methods for treatment of the human or animal body by therapy. They do not meet the criteria set out in Rules 39.1(iv) PCT.

The search report is made on the basis of the following subject-matter for claims 1-12: the use of a drug-eluting insertable medical device coated with nano-carriers in the manufacture of a medicament for delivering at least one drug at a target site in a blood vessel for the treatment of at least one of an acute myocardial infarction, a thrombus containing lesion and a saphenous-vein graft lesion.

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:

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 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/IN2011/000007

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 1883720 A	27.12.2006	CN 100381179 C	16.04.2008
CN 1647776 A	03.08.2005	CN 100441155 C	10.12.2008
WO2007140320A2	06.12.2007	US 2007299510 A1	27.12.2007
		US 2008097620 A1	24.04.2008
		EP 2020956 A2	11.02.2009
US 20050055078 A1	10.03.2005	NONE	
EP 1977772 A2	08.10.2008	US 2008243241 A1	02.10.2008
		CN 101273926 A	01.10.2008
		JP 2008264527 A	06.11.2008
		KR 20080088524 A	02.10.2008
		BRPI 0803010 A	07.04.2009
		AU 2008201395 A1	16.10.2008
		INKOL 200800614 A	08.05.2009
		MXPA 08004316 A	28.02.2009

INTERNATIONAL SEARCH REPORT

International application No.

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A61F 2/06(2006.01)i

A61L 31/16(2006.01)i

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