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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: AMPHIPHILIC STAR BLOCK COPOLYMERS

(57) Abstract: The present invention relates to a basically spherical hyperbranched block copolymer having an internal hydrophobic block and an external hydrophilic block. Within the spherical copolymer, the hydrophobic block constitutes a hydrophobic layer, suitable to associate or encapsulate hydrophobic bioactive agents, while the hydrophilic block provides an outer layer, which is suitable to render the copolymer soluble or dispersible in aqueous solutions. Also claimed is a method for preparing the copolymer, which is suitable to encapsulate fragrances, flavours, drugs, agrochemicals, for example.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
 INV. C08F293/00 C08L53/00 C08G81/00 C08G83/00 A61K7/00
 A61K47/48

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)
 C08F C08L C09D C09J C08G A61K B01J

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 5 371 147 A (SPINELLI ET AL) 6 December 1994 (1994-12-06) claims 25,26,29 column 7, lines 37-47 column 7, line 25 - column 9, line 28 claims 18-29 column 13, line 60 - column 14, line 47 column 9, line 45 - column 22, line 46 column 9, lines 31-35	1,3-6, 9-14
X	----- US 2003/236354 A1 (KENNEDY ET AL) 25 December 2003 (2003-12-25) claims 12,25,27,19,20 paragraph [0034] paragraphs [0036], [0037] * paragraph (0005), line 11-12 * paragraphs [0040] - [0042] ----- -/--	1,3-6,9, 11-14

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 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

5 January 2006

Date of mailing of the international search report

19 APR 2006

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No

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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 03/000777 A (SHEARWATER CORPORATION; ZHAO, XUAN) 3 January 2003 (2003-01-03) abstract; claims 1-66 page 1, line 1 - page 23, line 32; examples 1-19	1,3-6, 9-14
X	----- US 5 763 548 A (MATYJASZEWSKI ET AL) 9 June 1998 (1998-06-09) column 6, line 31 column 16, lines 41,42 column 16, lines 18-61 column 6, line 37 - column 14, line 67 * examples *	1,3-6, 9-14
X	----- US 6 552 146 B1 (MOUGIN NATHALIE) 22 April 2003 (2003-04-22) cited in the application column 2, line 65 column 2, line 57 - column 3, line 10 claims 1,21-31,40,41 column 4, line 5 - column 9, line 19 claims 48,49,56 column 1, lines 12-16,29-39 column 2, lines 43-55 column 10, lines 40-42 column 11, lines 1-64 column 12, lines 27-37,49-58 column 12, line 64 - column 13, line 18	1,3-6, 9-14
X	----- US 2004/170595 A1 (ZHAO) 2 September 2004 (2004-09-02) abstract; claims 1-38 paragraphs [0002] - [0163]	1,3-6, 9-14
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X	----- US 2003/045644 A1 (MOUGIN) 6 March 2003 (2003-03-06) paragraphs [0020] - [0026]; claims 22,37,1-41 paragraphs [0001], [0002] paragraph [0149] paragraphs [0144] - [0180]	1,3-6, 9-14
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INTERNATIONAL SEARCH REPORT

International application No

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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	<p>WO 02/26867 A (THE REGENTS OF THE UNIVERSITY OF CALIFORNIA; FRECHET, JEAN, J; IHRE, R) 4 April 2002 (2002-04-04) cited in the application abstract page 17, line 19 - page 19, line 10 page 38, line 18 - page 48, line 13; claims 1-48; figures 1-3 page 19, lines 18-25 page 21, line 15 - page 26, line 20 page 30, line 23 - page 38, line 11; examples 1-8</p>	1,3-6, 9-14
X	<p>----- US 5 807 937 A (MATYJASZEWSKI ET AL) 15 September 1998 (1998-09-15) column 6, lines 34,35 column 31, line 62 column 31, line 40 - column 37, line 2 column 14, line 42 - column 38, line 40 * examples *</p>	1,3-6, 9-14
X	<p>----- US 6 538 091 B1 (MATYJASZEWSKI KRZYSZTOF ET AL) 25 March 2003 (2003-03-25) column 6, lines 38,39 column 31, line 27 column 31, line 7 - column 32, line 11 column 14, line 47 - column 37, line 58 * examples *</p>	1,3-6, 9-14
A	<p>----- US 5 399 620 A (NIESSNER ET AL) 21 March 1995 (1995-03-21) column 2, lines 45-48 column 1, lines 57-68 column 2, lines 55-60</p>	1,3-6, 9-14
A	<p>----- US 2002/115798 A1 (NARAYAN-SARATHY ET AL) 22 August 2002 (2002-08-22) claims 1-25 paragraph [0022]</p>	1,3-6, 9-14
A	<p>----- EP 1 433 799 A (UCB, S.A) 30 June 2004 (2004-06-30) claims 1-15 page 3, paragraph 19</p>	1,3-6, 9-14
A	<p>----- US 6 379 683 B1 (SIMONNET JEAN-THIERRY ET AL) 30 April 2002 (2002-04-30) abstract; claims 1-26 -----</p>	1,3-6, 9-14

INTERNATIONAL SEARCH REPORT

International application No.
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Box 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 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 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.:

1, partial 3-6, 9-14

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

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, partial 3-6,9-14

A star block copolymer comprising a core and block copolymer arms of the structural formula (I) as described in the application claim 1.

2. claims: 2, partial 3-6,9-14

An independent block copolymer which is not related to any previous claim, and which has the structure as described in application claim 2.

3. claims: 7,8,17

A copolymer encapsulate, which comprises at least one lipophilic functional agent, e.g. a drug, flavour, fragrance, which is encapsulated in , or associated to the copolymer.

It is noted that an encapsulate which further comprises an agent such as a drug, flavour, fragrance, encapsulated therein can not be seen to be within the subject-matter of any previous claim which clearly is a copolymer of a defined structure.

4. claim: 15

A nanoscale capsule as described in application claim 15.

5. claim: 16

An independent general process for manufacturing a block copolymer comprising the process steps as described in application claim 16.

6. claim: 18

A method for encapsulation as described in application claim 18.

7. claim: 19

A perfumed product as described in application claim 19.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2005/003023

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Information on patent family members

International application No PCT/IB2005/003023
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