

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
17 October 2002 (17.10.2002)

PCT

(10) International Publication Number
WO 02/081078 A3

(51) International Patent Classification⁷: **C07B 61/00**,
C07C 231/00, 237/22, 215/34, C08F 8/32

(21) International Application Number: PCT/US02/06367

(22) International Filing Date: 28 February 2002 (28.02.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/827,107 5 April 2001 (05.04.2001) US

(71) Applicant: **3M INNOVATIVE PROPERTIES COMPANY** [US/US]; 3M Center, Post Office Box 33427, Saint Paul, MN 55133-3427 (US).

(72) Inventors: **RASMUSSEN, Jerald K.**; Post Office Box 33427, Saint Paul, MN 55133-3427 (US). **KREPSKI, Larry R.**; Post Office Box 33427, Saint Paul, MN 55133-3427 (US).

(74) Agents: **GRAM, Christopher D.** et al.; Office of Intellectual Property Counsel, Post Office Box 33427, Saint Paul, MN 55133-3427 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,

CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

Published:

- *with international search report*

(88) Date of publication of the international search report:
27 March 2003

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.



WO 02/081078 A3

(54) Title: SOLID PHASE SYNTHESIS SUPPORTS AND METHODS

(57) Abstract: Functionalized supports and methods for solid phase synthesis. Preferably, the functionalized support is azlactone-functionalized.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 02/06367

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07B61/00 C07C231/00 C07C237/22 C07C215/34 C08F8/32

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 7 C07B C08F C07C

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, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 336 742 A (HEILMANN STEVEN M ET AL) 9 August 1994 (1994-08-09) column 5, line 50 -column 6, line 49 column 18 column 19, line 1 - line 21 example 15	1-6, 11-17, 26, 28, 53, 56, 57
X	US 5 510 421 A (DENNISON KATHLEEN A ET AL) 23 April 1996 (1996-04-23) cited in the application column 13 -column 14, line 24	1-6, 11-17, 26, 28, 53, 60, 61

Further documents are listed in the continuation of box C.

Patent family members are listed in 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 13 December 2002	Date of mailing of the international search report 23/12/2002
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Held, P

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/06367

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>HERMANSON G T ET AL: "Preparation and use of immunoglobulin-binding affinity supports on Emphaze beads" JOURNAL OF CHROMATOGRAPHY A, ELSEVIER SCIENCE, NL, vol. 691, no. 1, 3 February 1995 (1995-02-03), pages 113-122, XP004023217 ISSN: 0021-9673 page 113 -page 114 page 121, left-hand column, paragraph 4 -page 122</p>	1-5, 11-17, 26,28, 53,56,59
X	<p>GRABSKI A. C. ET AL: "Immobilization of manganese peroxidase from <i>lentinula edodes</i> on alkylaminated Emphaze™ AB 1 polymer for generation of Mn³⁺ as an oxidizing agent" APPLIED BIOCHEMISTRY AND BIOTECHNOLOGY, vol. 60, no. 1, 1996, pages 1-17, XP008011365 page 8; figure 1</p>	1-5, 11-17, 26,28, 30,53, 55-57, 59,66
X	<p>DRTINA G. J.: "Highly cross-linked azlactone functional supports of tailorable polarity" MACROMOLECULES, 1996, pages 4486-4489, XP001109337 page 4486</p>	1-6, 11-17, 26,28, 53,56
X	<p>COLEMAN P. L. ET AL: "Immobilization of protein A at high density on azlactone-functional polymeric beads and their use in affinity chromatography" JOURNAL OF CHROMATOGRAPHY, vol. 512, 1990, pages 345-363, XP001109326 page 346 figure 2</p>	1-4,6, 11-17, 26,28, 53,56,57

INTERNATIONAL SEARCH REPORT

national application No.
PCT/US 02/06367

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: 1-66 (all partially)
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:
see FURTHER INFORMATION sheet PCT/ISA/210

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 II Observations where unity of invention is lacking (Continuation of item 2 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 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.:

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

Continuation of Box I.2

Claims Nos.: 1-66 (all partially)

Present claims 1-66 relate to an extremely large number of possible methods/products. Support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT is to be found, however, for only a very small proportion of the methods/products claimed. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely those parts relating to the methods/products mentioned in examples 1-6.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/06367

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5336742	A	09-08-1994	US 4737560 A	12-04-1988
			US 4871824 A	03-10-1989
			US 5292840 A	08-03-1994
			US 5403902 A	04-04-1995
			DE 3867471 D1	13-02-1992
			DK 632488 A	11-11-1988
			EP 0354909 A1	21-02-1990
			JP 2502465 T	09-08-1990
			JP 2827182 B2	18-11-1998
			WO 8807062 A1	22-09-1988
			DE 69027803 D1	22-08-1996
			DE 69027803 T2	30-01-1997
			EP 0392735 A2	17-10-1990
			ES 2088966 T3	01-10-1996
			HK 1008029 A1	30-04-1999
			JP 2294308 A	05-12-1990
<hr/>				
US 5510421	A	23-04-1996	AU 2471795 A	21-12-1995
			EP 0762928 A1	19-03-1997
			JP 10501565 T	10-02-1998
			WO 9532792 A1	07-12-1995
<hr/>				