Title: ENZYME CATALYZED ORGANOSILICON ESTERS AND AMIDES

Abstract: Methods for forming organosilicon esters and amides are provided. Additionally, organosilicon esters and amides are formed by contacting a hydrolysis enzyme with an organosilicon reactant and an organic reactant. The enzyme may catalyze the formation of an ester bond between carboxylic acid, ester, or amide functional groups of the organosilicon or organic reactant and alcohol functional groups of the organic or organosilicon reactant. The enzyme may catalyze the formation of an amide bond between carboxylic acid, ester, or amide functional groups of the organosilicon or organic reactant and amine functional groups of the organic or organosilicon reactant.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
   IPC(7) : C12F 9/00, 13/02; C12N 9/16, 9/20; B01F 17/00
   US CL : 435/ 129, 131, 196, 198; 528/26, 26.5, 28, 29, 38
   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)
   U.S.: 435/ 129, 131, 196, 198; 528/26, 26.5, 28, 29, 38
   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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US6,288,129 A (GRUNING et al) 11 September 2001, see entire disclosure in particular the examples of esterification and column 3 for the products per se plus column 8, line 55 and column 10 line 56-57 for process conditions and enzymes.</td>
<td>1-8, 12-19, 21-28, 33-40, 42-44, 47-48</td>
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<td></td>
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<td>9-11, 20, 29-32, 41, 45-46, 49-54</td>
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</tbody>
</table>

Further documents are listed in the continuation of Box C.

Date of the actual completion of the international search
15 February 2005 (15.02.2005)

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. (703) 305-3230

Form PCT/ISA/210 (second sheet) (July 1998)

Authorized officer
HERBERT J LILLING
Telephone No. 703-308-0196

Date of mailing of the international search report
08 MAR 2005
**INTERNATIONAL SEARCH REPORT**

**Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)**

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claim 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. ☐ Claim 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.

Form PCT/ISA/210 (continuation of first sheet(1)) (July 1998)