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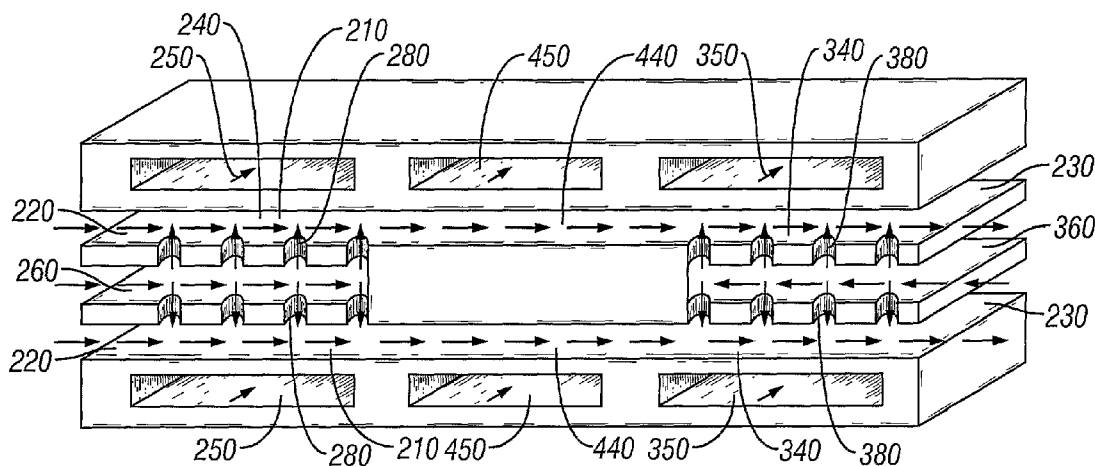
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(54) Title: A METHOD OF INSTALLING AN EPOXIDATION CATALYST IN A REACTOR, A PROCESS FOR THE PREPARATION OF AN OLEFIN OXIDE OR A CHEMICAL DERIVABLE FROM AN OLEFIN OXIDE, AND A REACTOR SUITABLE FOR SUCH A PROCESS



(57) Abstract: The present invention relates to an improved epoxidation process and an improved epoxidation reactor. The present invention makes use of a reactor which comprises a plurality of microchannels. Such process microchannels may be adapted such that the epoxidation and optionally other processes can take place in the microchannels and that they are in a heat exchange relation with channels adapted to contain a heat exchange fluid. A reactor comprising such process microchannels is referred to as a "microchannel reactor". The invention provides a method of installing an epoxidation catalyst in a microchannel reactor. The invention also provides a process for the epoxidation of an olefin and a process for the preparation of a chemical derivable from an olefin oxide. The invention also provides a microchannel reactor.

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**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US 06/62419

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC (8): C07 D 301/10 (2007.01)  
 USPC: 549/536  
 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)  
 USPC: 549/536

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)  
 Electronic Databases Searched: USPTO WEST (PGPUB, EPAB, JPAB, USPT), Google, Thomson dialog.  
 Search Terms Used: microchannel, ruthenium or tungsten or molybdenum or chromium, silver or catalyst, intermediate, epoxide, diol, downstream or upstream, heat exchange, ethylene oxide, catalyst.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2004/0049061 A1 (Lockemeyer et al.) 11 March 2004 (11.03.2004) para [0008]-[0011]; [0025]; [0027]-[0029]; [0035]-[0037]; [0077]-[0078]	1-10 and 24-27
Y	US 6,488,838 B1 (Tonkovich et al.) 03 December 2002 (03.12.2002) col 2, ln 33-46; col 3, ln 24-41;	1-10 and 24-27

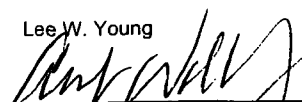
Further documents are listed in the continuation of Box C.

- |   |  |
|---|--|
| * 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   |
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| "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  |  |

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# INTERNATIONAL SEARCH REPORT

International application No.

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## 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.: 11-23  
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 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 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.