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patent (Rule 4.17(ii)) for all designations*

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ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: IMPROVED PRECIOUS METAL CATALYST FOR DEBENZYLATION

(57) Abstract: One aspect of the invention relates to catalyst composite containing a metal catalyst and a specifically defined carbon support containing a carbonaceous material. For example, the carbon support may have a total pore surface area of about 800 m²/g or more and about 2,000 m²/g or less where about 20% or less of the total pore surface area is micro pore surface area. Alternatively the carbon support may have a total pore volume of at least about 0.75 cc/g where about 15% or less of the total pore volume is micro pore volume. In yet another aspect of the invention, the carbon support may have a phosphorus content of about 0.75% by weight or less. In still yet another aspect of the invention, methods of making and using the catalyst composite are disclosed.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/26880

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B01J23/38 B01J21/18 B01J35/10

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 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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>AUER E ET AL: "Carbons as supports for industrial precious metal catalysts" APPLIED CATALYSIS A: GENERAL, ELSEVIER SCIENCE, AMSTERDAM, NL, vol. 173, no. 2, 25 October 1998 (1998-10-25), pages 259-271, XP004271525 ISSN: 0926-860X page 263, paragraph 3.1; figure 3 page 267; table 2 SAMPLE G paragraph [04.2] page 268, paragraph 5.2.2 ---</p> <p style="text-align: center;">-/--</p>	1-11,13, 19-21,23

☒ 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.

"Z" document member of the same patent family

Date of the actual completion of the international search

21 November 2002

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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 01 21306 A (KONISHI MITSUO ;UENO EIZABUROU (JP); ASAHI CHEMICAL IND (JP)) 29 March 2001 (2001-03-29) For translation see EP1232789; references refer to EP1232789 paragraph [0141] - paragraph [0143] paragraph [0145] ---	1-13, 19-21,23
A	US 4 052 336 A (SCHOLTEN JOSEPH J F ET AL) 4 October 1977 (1977-10-04) ---	
A	STUDER M. ET AL.: "Influence of catalyst type, solvent, acid and base on the selectivity and rate in the catalytic debenzylation of 4-chloro-N,N-debenzyl aniline with Pd/C and H ₂ " JOURNAL OF MOLECULAR CATALYSIS A: CHEMICAL, vol. 112, 1996, pages 437-445, XP002221512 cited in the application ---	
E	EP 1 232 789 A (ASAHI CHEMICAL IND) 21 August 2002 (2002-08-21) paragraph [0141] - paragraph [0143] paragraph [0145] -----	1-13, 19-21,23

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 02/26880

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.:
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 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:

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.:
1-13, 19-21, 23-31

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: 1-13,19-21,23-31

Catalyst composites comprising a carbonaceous material with a low content of micropores (20% or less micro pore surface area or 15% and/or less micro pore volume) and precious metal catalyst.

2. Claims: 14-18, 22

Catalyst composites comprising a carbon support comprising 60 wt% - 99.9 wt% carbonaceous material, a precious metal catalyst and 0.75 wt% or less phosphorus.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/26880

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0121306	A	29-03-2001	AU 7318900 A	24-04-2001
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