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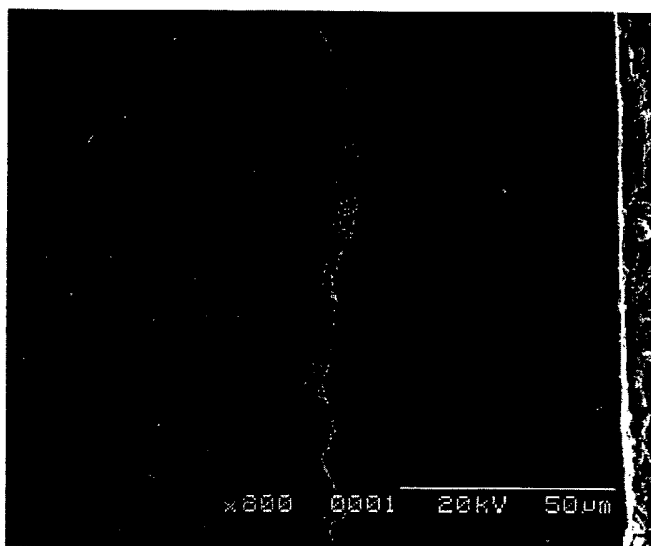
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- (30) Priority Data: 09/574,237 19 May 2000 (19.05.2000) US
- (71) Applicant (for all designated States except US): THE UNIVERSITY OF BRITISH COLUMBIA [CA/CA]; Industry Liaison Office, Room 331, IRC Building, 2194 Health Sciences Mall, Vancouver, British Columbia V6T 1Z3 (CA).
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- Published: — with international search report

[Continued on next page]

(54) Title: PROCESS FOR MAKING CHEMICALLY BONDED COMPOSITE HYDROXIDE CERAMICS



CB-CHC coating on stainless steel substrate

(57) Abstract: This invention relates to novel process of preparing chemically bonded composite hydroxide ceramics by exposing a thermally treated hydroxide ceramic to phosphate reagent and subsequent heat treating the resulting system to initiate a rapid chemical bonding reaction. Such combined hydroxide/chemical bonding process can be used to fabricate ceramics or ceramic coatings for a variety of high and low temperature applications, including corrosion protection, wear resistance, dielectric properties, metal reinforced ceramics, ceramic membranes, non-sticky surfaces, bio-active ceramics, thermal barrier ceramics, non-wetted surfaces, and others.



WO 01/087798 A3



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31 October 2002

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.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA 01/00730

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C04B28/34 C23C22/07 C04B41/85

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 C04B C23C

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)

WPI Data, PAJ, EPO-Internal, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 009 790 A (MATSUSHITA ELECTRIC WORKS LTD) 6 February 1970 (1970-02-06)	1,5-8
Y	page 2, line 24-38	2,3
A	page 2, line 5-7	9,11, 14-17
	page 3, line 7-11	
	page 4, line 35-37; claims 1,8	
Y	FR 2 683 813 A (COMMISSARIAT ENERGIE ATOMIQUE) 21 May 1993 (1993-05-21)	2,3
	page 2, line 13-18; claim 1	
X	WO 90 03957 A (COMALCO ALU) 19 April 1990 (1990-04-19)	1,5-8
	page 3, line 13-16; claims 1,2,5	
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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

28 February 2002

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29. 07. 2002

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 01/00730

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 998 648 A (THROWER STEPHEN WHITNEY ET AL) 21 December 1976 (1976-12-21) claim 1 ---	1,5,6
X	GB 2 004 266 A (BABCOCK & WILCOX CO) 28 March 1979 (1979-03-28) claims 1,2,4 ---	1,5-8
X	GB 1 068 462 A (LEEDS FIRECLAY COMPANY LTD) 10 May 1967 (1967-05-10) claim 1 ---	1,5,6
X	DATABASE WPI Week 198847 Derwent Publications Ltd., London, GB; AN 1988-335745 XP002191782 & JP 63 250470 A (MITSUBISHI ALUMINIUM) abstract ---	9,10, 13-15
A	US 2 743 203 A (STEINHERZ HANS A) 24 April 1956 (1956-04-24) claim 1 ---	
A	US 4 650 699 A (MOSSER MARK F ET AL) 17 March 1987 (1987-03-17) ---	
A	US 3 649 313 A (FISHER ROBERT E) 14 March 1972 (1972-03-14) -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA 01/00730

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.:

1-20, 27-30

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: 1-20 27-30

Process for preparing chemically bonded hydroxide ceramics, e.g. coatings, by dehydrating hydroxide ceramics and phosphating.

2. Claims: 21-23

Process for preparing alumina/alumina hydroxide ceramic coatings by preparing a suspension of aluminium hydroxide and calcined alumina, immersing the substrate in this suspension, heat treating and densifying the coating.

3. Claim : 24

Process for sealing ceramic coatings by impregnation with mono-aluminium-phosphate and heat-treatment.

4. Claims: 25-26

Process for sealing composite hydroxide ceramic coatings by reaction with phosphoric acid.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 01/00730

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International Application No
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