

REVISED VERSION

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
21 August 2008 (21.08.2008)

PCT

(10) International Publication Number  
**WO 2008/099014 A1**

- (51) International Patent Classification:  
C22C 1/08 (2006.01) B22C 9/10 (2006.01)
- (21) International Application Number:  
PCT/EP2008/051883
- (22) International Filing Date:  
15 February 2008 (15.02.2008)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
PCT/IB2007/050519  
16 February 2007 (16.02.2007) IB  
PCT/IB2007/054453  
2 November 2007 (02.11.2007) IB

Greenmeadow Drive Parc Seymour, Caldicot NP26 3AW (GB).

(74) Agents: Cabinet Plasseraud et al.; 52 rue de la Victoire, F-75440 Paris Cedex 09 (FR).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (71) Applicant (for all designated States except US): ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE (EPFL) [CH/CH]; CH-1015 Lausanne (CH).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): MORTENSEN, Andreas [US/CH]; Chemin des Jordils, CH-1113 St-saphorin Sur Morges (CH). GOODALL, Russell [GB/GB]; 11

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: POROUS METAL ARTICLE AND METHOD OF PRODUCING A POROUS METALLIC ARTICLE

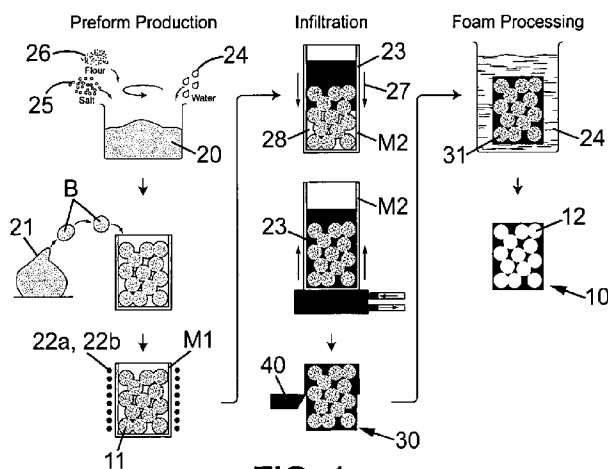


FIG. 1

(57) Abstract: A process for producing a metal article (10) containing at least 10% interconnected porosity (12), using a preform (11), comprising: - mixing an organic binder (26), a wetting agent and a granular material (25), to obtain a mouldable paste (20) that combines 10 vol. per. or more of said granular material (25), said material dissolving easily in a liquid solvent (24); - shaping the paste into an aerated preform and providing an open pore space (28) to be infiltrated by the metal or alloy; - evaporating said wetting agent and baking said preform to a temperature sufficient to degrade the binder and create a network of interconnected open porosity in the preform (11); filling said open pore space with the liquid metal or alloy (23). All or part of the baked preform can be easily leached by a liquid solvent through the network of fine pores.

WO 2008/099014 A1



**Declaration under Rule 4.17:**

— *of inventorship (Rule 4.17(iv))*

**Published:**

— *with international search report*  
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

**(88) Date of publication of the revised international search report:**

30 October 2008

**(15) Information about Correction:**

see Notice of 30 October 2008

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2008/051883

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. C22C1/08                      B22C9/10				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
Minimum documentation searched (classification system followed by classification symbols) C22C B22C				
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, CHEM ABS Data, WPI Data				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X,P	EP 1 808 241 A (KURTZ GMBH [DE]; LAEMPE & MOESSNER GMBH [DE]; KUHS BERND [DE]) 18 July 2007 (2007-07-18) claims 1,11	1-16		
A	----- CONDE, YVES ET AL: "Replication processing of highly porous materials" ADVANCED ENGINEERING MATERIALS , 8(9), 795-803 CODEN: AENMFY; ISSN: 1438-1656, 2006, XP009100381 Items 1, 2.1 and 3.1 ----- -/--	1-16		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.				
* Special categories of cited documents :				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> <ul style="list-style-type: none"> <li>*A* document defining the general state of the art which is not considered to be of particular relevance</li> <li>*E* earlier document but published on or after the international filing date</li> <li>*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)</li> <li>*O* document referring to an oral disclosure, use, exhibition or other means</li> <li>*P* document published prior to the international filing date but later than the priority date claimed</li> </ul> </td> <td style="width: 50%; border: none; vertical-align: top;"> <ul style="list-style-type: none"> <li>*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</li> <li>*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</li> <li>*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.</li> <li>*Z* document member of the same patent family</li> </ul> </td> </tr> </table>			<ul style="list-style-type: none"> <li>*A* document defining the general state of the art which is not considered to be of particular relevance</li> <li>*E* earlier document but published on or after the international filing date</li> <li>*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)</li> <li>*O* document referring to an oral disclosure, use, exhibition or other means</li> <li>*P* document published prior to the international filing date but later than the priority date claimed</li> </ul>	<ul style="list-style-type: none"> <li>*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</li> <li>*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</li> <li>*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.</li> <li>*Z* document member of the same patent family</li> </ul>
<ul style="list-style-type: none"> <li>*A* document defining the general state of the art which is not considered to be of particular relevance</li> <li>*E* earlier document but published on or after the international filing date</li> <li>*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)</li> <li>*O* document referring to an oral disclosure, use, exhibition or other means</li> <li>*P* document published prior to the international filing date but later than the priority date claimed</li> </ul>	<ul style="list-style-type: none"> <li>*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</li> <li>*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</li> <li>*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.</li> <li>*Z* document member of the same patent family</li> </ul>			
Date of the actual completion of the international search	Date of mailing of the international search report			
2 September 2008	10/09/2008			
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  Badcock, Gordon			

## INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2008/051883

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DESPOIS ET AL: "Uniaxial deformation of microcellular metals" ACTA MATERIALIA, ELSEVIER, OXFORD, GB, vol. 54, no. 16, 1 September 2006 (2006-09-01), pages 4129-4142, XP005612596 ISSN: 1359-6454 Experimental Procedure and Results -----	1-16
A	GAILLARD, C. ET AL: "Processing of NaCl powders of controlled size and shape for the microstructural tailoring of aluminum foams" MATERIALS SCIENCE & ENGINEERING, A: STRUCTURAL MATERIALS: PROPERTIES, MICROSTRUCTURE AND PROCESSING, A374(1-2), 250-262 CODEN: MSAPE3; ISSN: 0921-5093, 2004, XP009100378 Experimental -----	1-16
A	US 3 210 166 A (CARLSON NORMAN G) 5 October 1965 (1965-10-05) column 1, line 35 - column 2, line 44 -----	1-16

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2008/051883

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
EP 1808241	A	18-07-2007	DE 102006002227 A1	19-07-2007
			JP 2007268611 A	18-10-2007
			US 2007187858 A1	16-08-2007
<hr/>				
US 3210166	A	05-10-1965	NONE	
<hr/>				