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(54) Title: METHOD OF FORMING FREESTANDING THIN CHROMIUM COMPONENTS FOR AN ELECTROCHEMICAL CONVERTER

(57) Abstract: A method of fabricating a high density thin component which can be used in an electrochemical converter comprises tape casting a material to form a tape followed by hot pressing of the tape to provide additional densification of the material. A plurality of tapes may be laminated together prior to hot pressing to provide a thicker structure or a composite structure. The materials used to produce the component may include silicon carbide, SiC, high chromium alloys, chromium iron alloys, (Cr-5wt%Fe-1wt%Y₂O₃) and chromium magnesium alloys (Cr-5wt%Ni-1wt%MgO). The fabrication method produces a high density component, including the application in an electrochemical converter, having a thickness of less than about 0.03 inches.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/25517

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B32B 15/04, 31/18, 31/20; C04B 35/645; H01M 2/14, 2/16
US CL : 156/89.12, 89.16, 250, 256, 278; 264/650, 663; 429/129, 142, 144, 247

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. : 156/89.11, 89.12, 89.16, 250, 256, 278; 264/603, 604, 614, 650, 663; 429/30, 32, 129, 142, 144, 158, 160, 247

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)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5,290,642 A (MINH et al.) 01 March 1994 (01.03.1994), entire document.	1, 4, 6, 13, 15-17, 21-23, 25, 27 ----- 2, 3, 8, 9-12, 14, 24, 26
X --- Y	US 5,256,499 A (MINH et al.) 26 October 1993 (26.10.1993), entire document.	1, 4, 5, 13, 15-17, 21-23, 25, 27 ----- 2, 3, 9-12, 14, 24, 26
Y	US 4,913,982 A (KOTCHICK et al.) 03 April 1990 (03.04.1990), column 10, lines 4-7).	13-17, 21-27
Y	US 2002/0081475 A1 (SIMPKINS et al.) 27 June 2002 (27.06.2002), paragraph [0034].	2-4, 9-12, 18, 24
X	US 5,171,645 A (KHANDKAR) 15 December 1992, (15.12.1992), entire document.	1, 13, 16, 21, 22, 27
X	US 5,898,008 A (KOLKER et al.) 27 April 1999 (27.04.1999), entire document.	13-15, 18-20, 27



Further documents are listed in the continuation of Box C.



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"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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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 5,298,469 A (HAIG et al.) 29 March 1994 (29.03.1994), entire document.	21, 23, 25

INTERNATIONAL SEARCH REPORT

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Continuation of B. FIELDS SEARCHED Item 3:

EAST

search terms: interconnect, interconnector, separator, tape, casting, electrochemical, fuel cell, chromium, lanthanum chromite, hot pressing, density