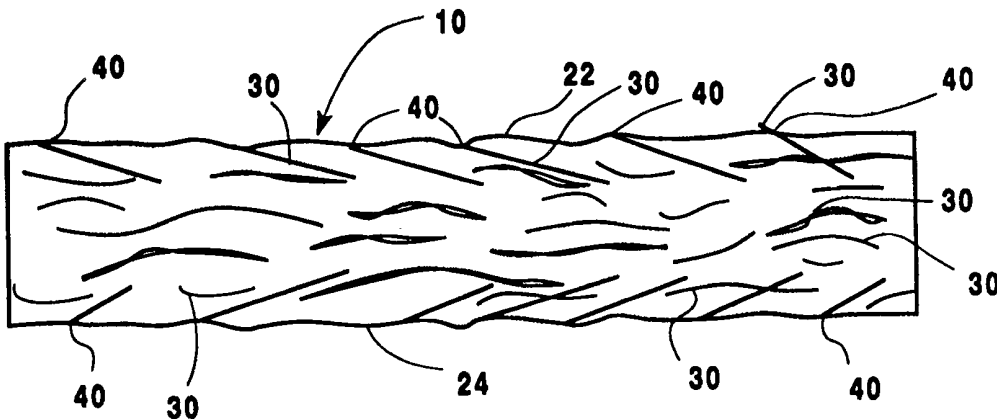




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>7</sup> : <b>H01M 4/96, 8/02, 8/10</b></p>	<p><b>A3</b></p>	<p>(11) International Publication Number: <b>WO 00/03445</b> (43) International Publication Date: 20 January 2000 (20.01.00)</p>
<p>(21) International Application Number: PCT/US99/12833 (22) International Filing Date: 6 July 1999 (06.07.99) (30) Priority Data: 09/112,717 9 July 1998 (09.07.98) US (71) Applicant: UCAR CARBON TECHNOLOGY CORPORATION [US/US]; 39 Old Ridgebury Road, Danbury, CT 06817 (US). (72) Inventor: MERCURI, Robert, Angelo; 1007 East Decker Drive, Seven Hills, OH 44131 (US). (74) Agent: HALE, John, S.; 6665-A Old Dominion Drive, McLean, VA 22101 (US).</p>	<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 23 March 2000 (23.03.00)</p>	

(54) Title: ELECTRODE MADE OF FLEXIBLE GRAPHITE COMPOSITE



(57) Abstract

Flexible graphite sheet (10) having embedded ceramic fibers (3a) extending from its opposite planar surfaces (22, 24) into the sheet to provide permeability of the sheet to gases so that it is useful as an electrode in electrochemical fuel cells.

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 99/12833

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 H01M4/96 H01M8/02 H01M8/10		
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) IPC 7 H01M H01B		
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)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CHEMICAL ABSTRACTS, vol. 110, no. 16, 17 April 1989 (1989-04-17) Columbus, Ohio, US; abstract no. 140431, NISHIDA ET AL: "Fiber-reinforced graphite composite" XP002129320 abstract -& DATABASE WPI Derwent Publications Ltd., London, GB; AN 1988-327516 XP002129322 abstract -& PATENT ABSTRACTS OF JAPAN vol. 13, no. 49 (C '565) & JP 63 242395 A (HITACHI CHEM CO LTD), 7 October 1988 (1988-10-07) abstract	1
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		
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Date of the actual completion of the international search  31 January 2000		Date of mailing of the international search report  10/02/2000
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  D'hondt, J

INTERNATIONAL SEARCH REPORT

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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.
A	<p>DATABASE WPI                      Section Ch, Week 198850                      Derwent Publications Ltd., London, GB;                      Class L02, AN 1988-358285                      XP002129323                      &amp; JP 63 270138 A (KOBE STEEL LTD),                      8 November 1988 (1988-11-08)                      abstract                      -&amp; PATENT ABSTRACTS OF JAPAN                      vol. 13, no. 67 (M-798),                      15 February 1989 (1989-02-15)                      &amp; JP 63 270138 A (KOBE STEEL LTD),                      8 November 1988 (1988-11-08)                      abstract                      -&amp; CHEMICAL ABSTRACTS, vol. 110, no. 20,                      15 May 1989 (1989-05-15)                      Columbus, Ohio, US;                      abstract no. 176683,                      MATSUBARA ET AL: "Carbon-composite parts                      and their manufacture"                      XP002129321                      abstract</p> <p style="text-align: center;">---</p>	1
A	<p>US 5 300 370 A (WASHINGTON KIRK B ET AL)                      5 April 1994 (1994-04-05)                      column 10, line 28 - line 40                      column 9, line 40 - line 62</p> <p style="text-align: center;">---</p>	1
P,A	<p>US 5 846 459 A (MERCURI ROBERT ANGELO)                      8 December 1998 (1998-12-08)                      column 4, line 15 - line 28; claim 1</p> <p style="text-align: center;">---</p>	1
P,A	<p>WO 99 05738 A (UCAR CARBON TECH)                      4 February 1999 (1999-02-04)                      claim 1; figures 7,7A; examples I,III</p> <p style="text-align: center;">---</p>	1
P,A	<p>WO 99 16141 A (UCAR CARBON TECH)                      1 April 1999 (1999-04-01)                      claim 3                      page 5, last paragraph -page 7, paragraph                      1; examples I,III</p> <p style="text-align: center;">---</p>	1
A	<p>PATENT ABSTRACTS OF JAPAN                      vol. 010, no. 184 (E-415),                      27 June 1986 (1986-06-27)                      &amp; JP 61 032358 A (PENDEL KK),                      15 February 1986 (1986-02-15)                      abstract</p> <p style="text-align: center;">---</p>	1
A	<p>DE 40 07 060 A (BAYER AG)                      12 September 1991 (1991-09-12)                      column 1, line 3 - line 39                      column 1, line 57 - line 63                      column 4, line 12</p> <p style="text-align: center;">---</p>	
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International Application No  
PCT/US 99/12833

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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