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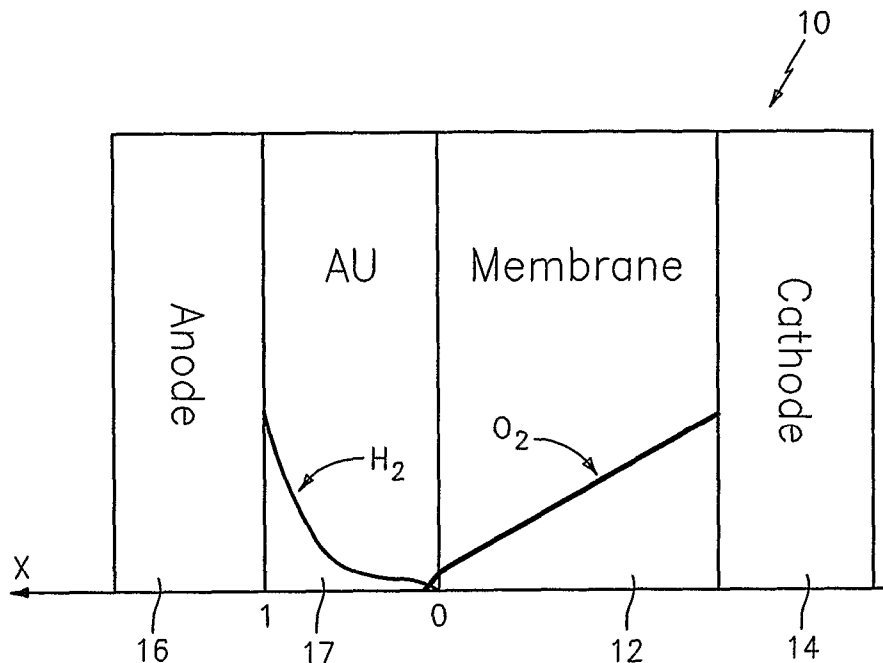
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[Continued on next page]

(54) Title: EXTENDED ELECTRODES FOR PEM FUEL CELL APPLICATIONS



(57) Abstract: A membrane electrode assembly includes an anode; a cathode; a membrane disposed between the anode and the cathode; and an extended catalyzed layer between the membrane and at least one electrode of the anode and the cathode. The extended catalyzed layer includes catalyst particles embedded in membrane material and preferably includes a first plurality of particles which are electrically connected to the at least one electrode. The extended catalyzed layer may further preferably have a second plurality of particles which are electrically disconnected from the at least one electrode.

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# INTERNATIONAL SEARCH REPORT

International application No.

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**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC: **H01M 4/86( 2006.01),4/92( 2006.01),4/96( 2006.01),8/10( 2006.01)**

USPC: 429/30,40-44;502/101  
 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)  
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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)  
 EAST

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/0043283 A1 (CIPOLLINI et al) 04 March 2004 (04.03.2004), see whole document.	1-16
X	EP 1298751 A2 (SUGAWARA et al) 02 April 2003 (02.04.2003), abstract; paragraphs 0013-0014,0023-0027, Examples 1 and 2.	1-7,10,11
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Y		8,9,12-16
Y	US 5,981,097 A (RAJENDRAN) 09 November 1999 (09.11.1999), column 8, lines 35-40.	13-16
Y	US 2003/0008196 A1 (WESSEL et al) 09 January 2003 (09.01.2009).	1-26

Further documents are listed in the continuation of Box C.       See patent family annex.

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