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[Continued on next page]

(54) Title: POLYANILINE BASED MEMBRANES FOR SEPARATION OF CARBON DIOXIDE AND METHANE

(57) Abstract: Various embodiments demonstrate that an in-situ polymerization enables deposition of a homogeneous polyaniline layer with a controlled thickness on top of a porous polypropylene support. Photografting and subsequent modification with diamines affords composite membranes featuring both high permeability and selectivity that are well suited for applications such as separation of carbon dioxide from a natural gas.

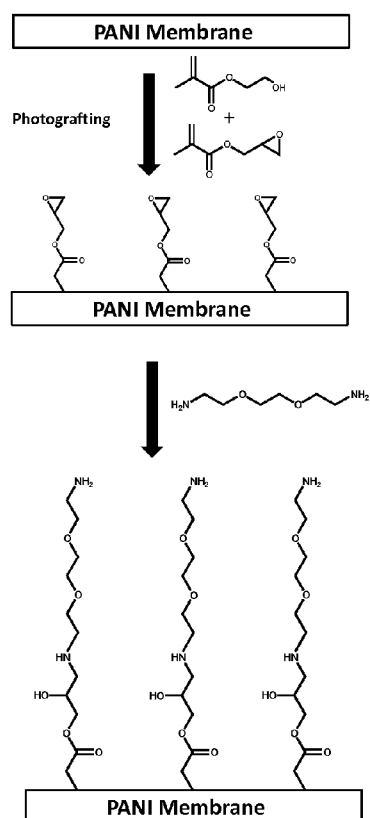


FIG. 3



NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US12/67416

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B01D 63/00, 71/06 (2013.01)

USPC - 210/650

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(8): B01D 63/00, 71/06 (2013.01)

USPC: 210/650

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

IPC(8): B01D 63/00, 71/06, 71/62 (2013.01)

USPC: 210/650, 500.21; 252/500

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

MicroPatent (US-Granted, US-Applications, EP-A, EP-B, WO, JP, DE-G, DE-A, DE-T, DE-U, GB-A, FR-A); DialogPRO (Derwent, INSPEC, NTIS, PASCAL, Current Contents Search, Dissertation Abstracts Online, Inside Conferences); Google Scholar; IP.com; polyaniline, aniline, 'polyethylene glycol,' 'PEG,' 'thinfilm,' 'thin-film,' film, coat', layer', skin

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	JP 8120033 A (YAMADA, K et al.) May 14, 1996, abstract	1 ----- 2-21
Y	US 2011/0240556 A1 (HOEK, EMV et al.) October 6, 2011, paragraphs [0044], [0043], [0074], [0075]	6, 7, 18, 19
Y	US 5358556 A (KANER, RB et al.) October 25, 1994, column 6, lines 50-55; column 9, lines 9-21	7-21
Y	EP 0346773 B1 (TOYOMOTO, K et al.) August 25, 1993, page 2, lines 7-12; page 12, lines 1-16	2, 3, 10-21
Y	US 2011/0229706 A1 (EPSTEIN, AJ et al.) September 22, 2011, paragraphs [0010], [0044]	4-7, 17
A	US 5290483 A (KULKARNI, VG et al.) March 1, 1994; column 1, lines 11-16; column 4, lines 12-21; column 4, lines 56-62	1-21
A	US 2010/0071557 A1 (SEILER, M et al.) March 25, 2010, Claims 1, 10, 14	1-21
A	US 7938891 B2 (LITTAU, KA) May 10, 2011, abstract	1-21
E, Y	WO 2013/046056 A2 (ZHANG, L et al.) April 4, 2013, abstract; Claims 1, 17	1-21

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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

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document member of the same patent family

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