



US009409116B2

(12) **United States Patent**
Zhou et al.

(10) **Patent No.:** **US 9,409,116 B2**
(45) **Date of Patent:** **Aug. 9, 2016**

(54) **POROUS POLYMER NETWORK MATERIALS**

(71) Applicant: **THE TEXAS A&M UNIVERSITY SYSTEM**, College Station, TX (US)
(72) Inventors: **Hong-Cai Zhou**, College Station, TX (US); **Julian Sculley**, College Station, TX (US); **Weigang Lu**, College Station, TX (US)
(73) Assignee: **The Texas A&M University System**, College Station, TX (US)

(58) **Field of Classification Search**

CPC .. B01D 53/02; B01D 53/04; B01D 2253/202; B01D 2253/20; B01D 2256/10; B01D 2257/504; B01D 2257/7025; B01D 2259/4525; B01J 20/265; B01J 20/267; B01J 20/28066; C08J 2365/00; C08J 2382/00; C08J 2385/00; C08J 9/00; F17C 11/00; Y02C 10/08; Y02C 20/20; Y02P 20/152; Y02P 20/156
USPC 96/108; 95/90, 139; 206/0.7; 423/230; 502/526
See application file for complete search history.

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 60 days.

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Primary Examiner — Frank Lawrence

(74) Attorney, Agent, or Firm — Reising Ethington P.C.

(57) **ABSTRACT**

Functionalized Porous Polymer Networks (PPNs) exhibiting favourable characteristics such as high surface area and gas uptake properties are disclosed, including methods of making such networks. A method of preparing a porous polymer network, comprising: (a) a step of homo-coupling a monomer in the presence of 2,2'-bipyridyl, 1,5-cycloocta-1,5-diene, a mixed solvent of DMF/THF and a compound or mixture selected from the group consisting of bis(1,5-cycloocta-1,5-diene)nickel(0), Ni(PPH3) 4, and Zn/NiCl2/NaBr/PPH3 at a temperature in the range of 20 to 40° C. These stable PPNs may be useful in the context of carbon capture, gas storage and separation, and as supports for catalysts.

(21) Appl. No.: **14/405,653**

(22) PCT Filed: **Dec. 13, 2012**

(86) PCT No.: **PCT/US2012/069472**

§ 371 (c)(1),

(2) Date: **Dec. 4, 2014**

(87) PCT Pub. No.: **WO2013/184162**

PCT Pub. Date: **Dec. 12, 2013**

(65) **Prior Publication Data**

US 2015/0182903 A1 Jul. 2, 2015

Related U.S. Application Data

(60) Provisional application No. 61/655,056, filed on Jun. 4, 2012.

(51) **Int. Cl.**

B01D 53/02 (2006.01)

F17C 11/00 (2006.01)

(Continued)

(52) **U.S. Cl.**

CPC **B01D 53/04** (2013.01); **B01D 53/02** (2013.01); **B01J 20/265** (2013.01); **B01J 20/267** (2013.01);

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20 Claims, 7 Drawing Sheets

