

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
28 June 2018 (28.06.2018)



(10) International Publication Number
WO 2018/118360 A1

(51) International Patent Classification:

B01D 46/24 (2006.01) **B29C 67/00** (2017.01)
B01D 53/04 (2006.01) **B01J 20/28** (2006.01)
B01D 53/047 (2006.01) **B33Y 80/00** (2015.01)
B22F 3/00 (2006.01) **B29C 64/00** (2017.01)
B28B 1/00 (2006.01)

GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

(21) International Application Number:

PCT/US2017/063735

(22) International Filing Date:

29 November 2017 (29.11.2017)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/437,327 21 December 2016 (21.12.2016) US
62/585,574 14 November 2017 (14.11.2017) US

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(71) Applicant (for all designated States except US):
**EXXONMOBIL UPSTREAM RESEARCH COMPAN-
NY** [US/US]; (EMHC-E2-4A-296), 22777 Springwoods
Village Parkway, Spring, TX 77389 (US).

(72) Inventors; and

(71) Applicants (for US only): **BRODY, John, F.** [US/US];
762 Mountain Avenue, Bound Brook, NJ 08805 (US). **TIN-
DALL, Paul, J.** [US/US]; 203 Main Street, Flemington,
NJ 08822 (US). **WOOLER, Bradley** [US/US]; 2030 Esten
Road, Quakertown, PA 18951 (US). **ALTERA, Francesco,
J.** [US/US]; 909 Ravine Road, Califon, NJ 07830 (US). **DU,
Yi** [CN/US]; 6057 Valley Forge Drive, Coopersburg, PA
18036 (US).

(74) Agent: **KNIGHT, Brent R.** et al.; ExxonMobil Upstream
Research Company, (EMHC-E2-4A-296), 22777 Spring-
wood Village Parkway, Spring, TX 77389 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
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.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,

(54) Title: SELF-SUPPORTING STRUCTURES HAVING ACTIVE MATERIALS

(57) Abstract: A method and system for manufacturing and using a self-supporting structure in processing unit for adsorption or catalytic processes. The self-supporting structure has greater than 50% by weight of the active material in the self-supporting structure to provide an open-celled structure providing access to the active material. The self-supporting structures, which may be disposed in a processing unit, may be used in swing adsorption processes and other processes to enhance the recovery of hydrocarbons.

WO 2018/118360 A1