



(51) International Patent Classification:

C07C 2/86 (2006.01) C07F 1/00 (2006.01)

C07C 13/15 (2006.01) C07F 5/00 (2006.01)

(21) International Application Number:

PCT/US2021/045306

(22) International Filing Date:

10 August 2021 (10.08.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

16/992,721 13 August 2020 (13.08.2020) US

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(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, IT, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

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

ARIPO (BW, GH, 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).

Published:

— with international search report (Art. 21(3))

(54) Title: MONO-SUBSTITUTED CYCLOPENTADIENES AND METAL CYCLOPENTADIENYL COMPLEXES AND SYNTHESIS METHODS THEREOF

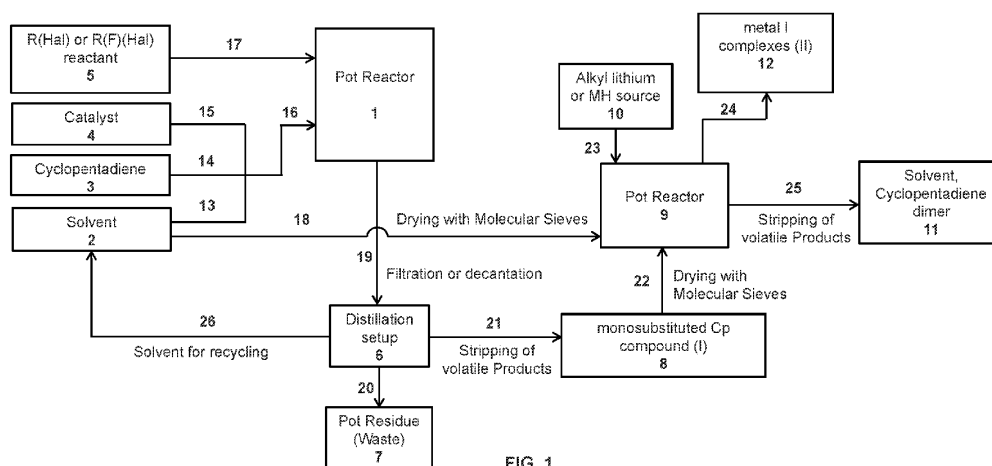


FIG. 1

(57) Abstract: Disclosed are mono-substituted cyclopentadienes, metal cyclopentadienyl complexes and methods for synthesizing them. The disclosed mono-substituted cyclopentadienes are synthesized by a selective catalytic carbon-carbon coupling reaction. The disclosed metal cyclopentadienyl complexes are synthesized from the disclosed mono-substituted cyclopentadienes. The disclosed metal cyclopentadienyl complexes include main group metal and transition metal cyclopentadienyl complexes, and may be used as deposition precursors contained in film forming compositions for film depositions in semiconductor industry, such as ALD, CVD, SOD, etc.