

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
17 June 2004 (17.06.2004)

PCT

(10) International Publication Number
WO 2004/050718 A1

- (51) International Patent Classification⁷: **C08F 4/645**, 210/16, B01J 31/00
- (21) International Application Number: PCT/US2003/028209
- (22) International Filing Date: 10 September 2003 (10.09.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 10/308,842 3 December 2002 (03.12.2002) US
- (71) Applicant: **EQUISTAR CHEMICALS, LP** [US/US]; One Houston Center, 1221 McKinney Street, Houston, TX 77010 (US).
- (72) Inventors: **NAGY, Sandor**; 561 Stanhope Court, Naperville, IL 60565 (US). **TSUIE, Barbara, M.**; 4125 Pillars Drive, Cincinnati, OH 45209 (US). **SARTAIN, William, J.**; 7934 Blackhawk Court, West Chester, OH 45069 (US).
- (74) Agents: **SCHUCHARDT, Jonathan, L.** et al.; Lyondell Chemical Company, 3801 West Chester Pike, Newtown Square, PA 19073 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: BIMETALLIC INDENOINDOLYL CATALYSTS

(57) Abstract: Catalyst systems useful for olefin polymerization are disclosed. The catalysts include a bimetallic complex that incorporates two linked indenoindolyl groups, each of which is pi-bonded through its cyclopentadienyl ring to one of the metals. Compared with conventional indenoindolyl complexes, the bimetallic complexes of the invention have enhanced ability to give polyolefins with desirably low melt indices. Certain bimetallic indenoindolyl complexes also provide a way to broaden polymer molecular weight distribution and thereby improve processability simply by regulating the amounts of comonomer and activator used in the polymerization.

