

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
1 February 2007 (01.02.2007)

PCT

(10) International Publication Number
WO 2007/013931 A3

(51) International Patent Classification:

C07F 15/02 (2006.01) C08F 10/00 (2006.01)
C07F 19/00 (2006.01)

(21) International Application Number:

PCT/US2006/028068

(22) International Filing Date: 19 July 2006 (19.07.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

11/186,039	21 July 2005 (21.07.2005)	US
11/186,306	21 July 2005 (21.07.2005)	US
11/186,038	21 July 2005 (21.07.2005)	US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, 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, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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))
- of inventorship (Rule 4.17(iv))

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
23 August 2007

(54) Title: DIIMINE METAL COMPLEXES, SYNTHESIS, AND USE IN OLIGOMERIZATION AND POLYMERIZATION

(57) Abstract: Methods for making α -diimine metal complexes are disclosed. The methods comprise forming an α -diimine metal complex imine bond in the presence of a metal salt or an α -acylimine metal complex. The method is particularly useful for the production of α -diimine metal complexes having two different α -diimine nitrogen groups. The α -diimine metal complexes are useful for polymerizing or oligomerizing olefins. Novel α -diimine metal complexes, particularly iron complexes are disclosed. The α -diimine metal complexes are produced by forming one of the α -diimine metal complex imine bonds in the presence of a metal salt or an α -acylimine metal complex, α -diimine metal complexes having two different α -diimine nitrogen groups may be produced. The α -diimine metal complexes are useful for polymerizing or oligomerizing olefins. Processes to polymerize or oligomerize olefins by contacting olefins with α -diimine metal complexes are disclosed. In particular, alpha olefins can be produced in high selectivity by contacting ethylene with selected α -diimine metal complexes.

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