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## **POLYMERISATION CATALYSIS**

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### **POLYMERIZATION CATALYST SYSTEMS, THEIR PRODUCTION AND USE**

Chang Mai Houston, TX, UNITED STATES assigned to Exxon Chemical Patents Inc

This invention is generally directed toward a supported catalyst system useful for polymerizing olefins. The method for supporting the catalyst of the invention provides for a supported mixed metallocene/non-metallocene catalyst useful in a process for polymerizing olefins.

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### **CATALYST AND PROCESS FOR (CO)POLYMERIZING ALPHA-OLEFINS**

Luciani Luciano; Milani Federico; Gila Liliana; Ballato Evelina Ferrara, ITALY assigned to Enichem SpA

A catalyst active in the polymerization of alpha-olefins is formed by: (a) a bis(cyclopentadienyl) bis(amide) derivative of an element of Group IVB of the Periodic Table of the Elements, to be defined by means of the formula: (\*See Patent for Chemical Structure\*) (I) wherein M represents a metal of Group IVB, each of R1, R2, R3 and R4, and Cp have the same meaning as reported in the disclosure, and (b) an aluminoxane

co-catalyst. This catalyst finds use in the processes of ethylene and other alpha-olefins polymerization and copolymerization.

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### **ADDITION POLYMERIZATION CATALYSTS COMPRISING REDUCED OXIDATION STATE METAL COMPLEXES**

Rosen Robert K; Nickias Peter N; Devore David D; Stevens James C; Timmers Francis J Sugar Land, TX, UNITED STATES assigned to The Dow Chemical Company

PCT No. PCT/US93/02584 Sec. 371 Date Sep. 2, 1994 Sec. 102(e) Date Sep. 2, 1994 PCT Filed Mar. 19, 1993 PCT Pub. No. WO93/19104 PCT Pub. Date Sep. 30, 1993. Metal complexes useful in the formation of addition polymerization catalysts of the formula: (\*See Patent for Chemical Structure\*) wherein Cp<sup>m</sup> is a cyclopentadienyl group or substituted derivative thereof; Z is a divalent moiety comprising oxygen, nitrogen, phosphorous, boron or a member of Group 4 of the Periodic Table of Elements; Y is a linking group comprising nitrogen, phosphorus, oxygen or sulfur; M is a Group 4 metal in the +3 oxidation state; and L<sup>m</sup> is a monovalent anionic stabilizing ligand.

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### **VANADIUM-CONTAINING CATALYST SYSTEM**

Winslow Linda N; Klendworth Douglas D; Menon Raghu; Lynch Michael W; Fields Garry L; Johnson Kenneth W Cincinnati, OH, UNITED STATES assigned to Quantum Chemical Corporation