

新一代高活性后过渡金属烯烃聚合催化剂

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收稿日期 修回日期 网络版发布日期 接受日期

摘要 介绍了近几年发展起来的新一代后期过渡金属(Fe,Co,Ni,Pd)烯烃聚合催化剂,对催化剂的结构、性能及催化烯烃聚合进行了阐述。

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分类号 [0629](#)

Novel highly active late transition metal catalysts for olefin polymerization

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Abstract The nickel (II) and palladium (II) systems coordinated by bulky diimine ligands are the first examples of late transition metal catalysts capable of polymerizing higher α -olefins as well as ethylene to high molecular weight polymers. The nickel (II)/MAO system can polymerize ethylene to produce a range of polyethylene materials with molecular weight up to 1×10^6 and degrees of branching from linear to over 70 branches per 1000 carbon atoms by simple variation of temperature, pressure, and ligand structures. The analogous palladium (II) complexes show moderate activity to produce very highly branched amorphous polyethylene. Furthermore, the palladium (II) catalysts are able to copolymerize α -olefins with functionalized monomers, including sulfonyl halide and carbonyl, resulting in highly branched random copolymers. In addition, A new family of complexes based on a five-coordinate iron or cobalt center supported by neutral tridentate 2,6-bis(imino)pyridyl ligands and, when activated with MAO, shows exceptional high activity for ethylene polymerization. Activity figures in many cases are comparable or even higher than those found for Group 4 metallocene under analogous conditions. The molecular weight of the polyethylene material generated shows a marked dependency upon the aryl substitution pattern. Therefore, this review mainly covers families of late transition metal catalysts based largely on chelating nitrogen-based ligands that are active for homopolymerization of ethylene and the copolymerization of ethylene with α -olefins and polar monomers. Catalysts syntheses, structures, activities, and chain-growth mechanisms and the influence of these factors on the structures of the resulting polymers are also discussed.

Key words [TRANSITION METAL COMPOUND](#) [TRANSITION METAL COMPLEX](#) [IRON COMPOUNDS](#) [COBALT COMPOUNDS](#) [NICKEL COMPOUNDS](#) [PALLADIUM COMPOUNDS](#) [ALKENE](#) [POLYMERIZATION](#) [CATALYST](#) [COPOLYMERIZATION](#)

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