

球形MgCl₂负载的MAO/rac-Et[Ind]₂ZrCl₂催化剂催化丙烯 聚合

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摘要 采用只在球形MgCl₂上负载MAO, 聚合前再同rac-Et[Ind]₂ZrCl₂

预混的负载方式进行丙烯聚合。在少量AlEt₃的活化下, 很低的Al

(MAO)/Zr摩尔比时即可获得比均相催化剂高一个数量级的活性, 考察了温度、压力、Al

(MAO)/Zr摩尔比和催化剂浓度对聚合的影响, 同时用

¹³C NMR测定了均相和载体催化体系所制备的聚丙烯的微结构,

发现负载型茂金属催化剂制得的聚丙烯立构规整性高于均相体系, 其五元组立构序列[mmmm]可从均相的52.6%

提高到负载催化剂的79.5%。扫描电镜观察表明, 聚合物颗粒可较好地复制球形催化剂的颗粒形态。

关键词 [氯化镁](#) [氯化锆](#) [金属茂络合物](#) [催化](#) [丙烯](#) [聚合](#)

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Spherical MgCl₂ supported MAO/rac-Et[Ind]₂ZrCl₂ catalyst for propylene polymerization

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Abstract Propylene polymerization was carried out with heterogeneous catalyst prepared by supporting methylaluminumoxane (MAO) on spherical MgCl₂ only and mixing it with rac-Et[Ind]₂ZrCl₂ before polymerization, which eliminated the need for a supporting step of rac-Et[Ind]₂ZrCl₂. Under the activation of AlEt₃ and lower Al(MAO)/Zr mole ratio, e.g. 150, in the absence of soluble MAO, the fair good activity of catalyst, e.g. 10⁷ gPP/mol-Zr·h, could be obtained, which is ten times higher than homogeneous catalyst. The influence of polymerization temperature, pressure of propylene, Al(MAO)/Zr mole ratio and catalyst concentration on polymerization activity and molecular weight of produced polypropylene was studied. The sequence structure of i-PP produced by homogeneous and heterogeneous catalyst was determined by ¹³C NMR spectra. It was found that the isotacticity of i-PP obtained by heterogeneous systems was higher, its pentad sequence [mmmm] increased to 79.5% from 52.6% for homogeneous systems. The particles morphology of catalyst and polymer was observed by scanning electron microscopy (SEM). It was found that the polymer particles showed spherical from, which copy the spherical morphology of catalyst.

Key words [MAGNESIUM CHLORIDE](#) [ZIRCONIUM CHLORIDE](#) [METALLOCENES](#) [CATALYSIS](#) [PROPENE](#) [POLYMERIZATION](#)

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