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论文

## 新固载型手性Salen Mn(III)催化剂的合成及催化苯乙烯不对称环氧化反应

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## 摘要：

以低聚苯乙烯基膦酸-磷酸氢锆(ZSPP)作为载体,对该载体进行氯甲基化、磺酸化修饰后与手性Salen Mn(III)轴向配位,合成了一种新固载型手性Salen Mn(III)催化剂;采用FTIR,DR UV-Vis, AAS, SEM, TEM, TG和N<sub>2</sub>吸附等手段对催化剂进行了表征。以苯乙烯不对称环氧化为探针反应,初步考察了催化剂在不同氧源、反应温度、反应时间和催化剂用量等因素下的催化性能。结果表明,该催化剂具有良好的催化活性,转化率最高达到85%,选择性为90%,e.e.值为64%。固载手性Salen Mn(III)催化剂性质稳定,能循环使用6次。

关键词：低聚苯乙烯基膦酸-磷酸氢锆 手性Salen Mn(III) 催化剂 固载 不对称环氧化

## Synthesis of New Immobilized Chiral Salen Mn(III) Complex as Effective Catalyst for Asymmetric Epoxidation of Styrene

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## Abstract:

Chiral salen complexes are among the most important catalysts for asymmetric synthesis. But the soluble salen manganese complex are more difficult to be separated and to handle than the technically well established heterogeneous catalysts. An important strategy to combine the best property of the two types is the heterogenization or immobilization of active salen complex on supports or carriers, which may be separated by filtration or precipitation. In this paper, a new way of the covalent immobilization of Salen Mn(III) complex on a organic-inorganic material to produce a stable heterogeneous catalyst for epoxidation are reported. Chiral Mn(Salen) complex was axially immobilized onto sulfomethylated zirconium oligostyrenyl phosphonate-phosphate(ZSMSPP), then characterized by FTIR, diffusion reflection UV-Vis, AAS, SEM, TEM, TG and N<sub>2</sub> volumetric adsorption. The effects of reaction parameters such as oxidant, temperature, time and catalyst amount in the epoxidation of styrene are discussed, the result shows that this heterogeneous catalyst exhibits effective catalytic activity, and this heterogeneous Salen Mn(III) catalyst is relatively stable and can be recycled for six times in the asymmetric epoxidation of styrene.

**Keywords:** Zirconium oligo-polystyrenylphosphonate-phosphate(ZSPP) Chiral Salen Mn(III) catalyst Immobilization Asymmetric epoxidation

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