

二茂基环己氧基稀土化合物的合成、分子结构和催化活性

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摘要 通过Cp<sub>3</sub>Ln(Ln=Sm, Yb)和环己醇在THF溶剂中按1: 1摩尔比反应, 合成了标题化合物[Cp<sub>2</sub>LnOC<sub>6</sub>H<sub>11</sub>]<sub>2</sub>(Ln=Sm, Yb)。化合物经元素分析、红外光谱分析表

征。镱配合物经X单晶衍射分析。它是一个以氧原子为桥的二聚体, 环己烷基呈椅式构型, O—C(环己烷基)键处于平伏e键位置。在上述基础上, 尝试了它对己内酯的催化聚合反应,

发现标题化合物对己内酯聚合具有一定的催化活性。进一步合成了[Cp<sub>2</sub>YbOC<sub>6</sub>H<sub>11</sub>]<sub>2</sub>与己内酯的1: 4预聚反应产物, 发现预聚物催化己内酯聚合活性比标题化合物大大增强,

从而说明催化聚合过程中引发反应速率慢是影响标题化合物表现催化活性的重要因素。

关键词 [钐络合物](#) [镱络合物](#) [己内酯](#) [催化活性](#) [X射线衍射分析](#) [环己醇](#)

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## Synthesis and Molecular Structure of Bis(cyclopentadienyl) Cyclohexyloxy Lanthanide Compounds and Their Catalytic Activity

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**Abstract** Reaction of Cp<sub>j</sub>Ln (Ln = Sm, Yb) with cyclohexanol in a 1:1 molar ratio afforded the title compounds [Cp<sub>j</sub>LnOC<sup>h</sup>Hn] (Ln = Sm, Yb). They were characterized by elemental analysis and infrared spectrum. The ytterbium complex was analyzed by X-ray crystallography. It is a dimer with two oxygen atoms bridging two ytterbium atoms. The cyclohexyl group displays chair-shape configuration and the O-C (cyclohexyl group) bond stretches as a level e-bond. [C<sup>h</sup>LnOC<sup>g</sup>Hn] (Ln = Sm, Yb) showed rather poor catalytic activity for the polymerization of e-caprolactone. The 1:4 adduct of [Cp<sub>j</sub>YbOC<sup>g</sup>Hn] and e-caprolactone showed much better catalytic activity than its precursor [C<sup>h</sup>YbOC<sup>h</sup>Hn]. This demonstrates that the slow reaction rate of initiation is an important factor to affect the apparent catalytic activity of [C<sup>h</sup>YbOC<sup>g</sup>Hn] for the polymerization of e-caprolactone.

**Key words** [SAMARIUM COMPLEX](#) [YTTERBIUM COMPLEX](#) [CAPROLACTONE](#) [CATALYTIC ACTIVITY](#) [XRD](#) [CYCLOHEXANOL](#)

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