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论文

稀土化合物参与的聚丙烯反应挤出接枝马来酸酐

朱连超^{1,2}, 唐功本¹, 石强^{1,2}, 殷敬华¹

1. 高分子物理与化学国家重点实验室, 中国科学院长春应用化学研究所, 长春 130022;
2. 中国科学院研究生院, 北京 100039

摘要:

将多种稀土化合物用于等规聚丙烯(iPP)与马来酸酐(MAH)的接枝反应, 对接枝共聚物的结构、接枝率和加工行为等进行了表征和研究. 结果表明, 稀土氧化物CeO₂和Nd₂O₃的加入促进了iPP熔体接枝MAH的反应, 与未加入稀土化合物的接枝体系相比, MAH单体接枝率最大值分别提高了14%和25%, 同时接枝共聚物的熔体流动速率(MFR)也分别增大了34%和56%. 根据实验条件下接枝共聚物的MFR与MAH单体接枝率间的关系, 并结合熔体接枝反应机理, 提出了采用MFR来表征接枝率的方法, 并建立了工作曲线. 同时, 对不同稀土化合物抑制或促进熔体接枝反应发生的机理进行了初步探讨.

关键词: [等规聚丙烯; 反应挤出; 马来酸酐; 稀土化合物zz'\)](#)" href="#">等规聚丙烯; 反应挤出; 马来酸酐; 稀土化合物

Rare Earth Compounds Assisted Melt Grafting of Maleic Anhydride onto Isotactic Polypropylene by Reactive Extrusion

ZHU Lian-Chao^{1,2}, TANG Gong-Ben¹, SHI Qiang^{1,2}, YIN Jing-Hua^{1*}

1. State Key Laboratory of Polymer Physics and Chemistry, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun 130022, China;
2. Graduate School of the Chinese Academy of Sciences, Beijing 100039, China

Abstract:

A series of rare earth compounds were employed for melt grafting of maleic anhydride(MAH) onto isotactic polypropylene(iPP) by reactive extrusion. Melt flow rate(MFR) of the graft copolymers and the grafting degree of MAH monomer were measured for determining the impact of rare earth compounds on the grafting reaction. It was shown that rare earth oxides, neodymium oxide as well as cerium oxide, promoted the grafting reaction. The increment of the grafting degree maximally were up to about 14% and 25% respectively compared with those of the related system without importing any rare earth compound, whereas MFR of the graft copolymers were enhanced by 36% and 56%. According to the correlation between MFR of the graft copolymers and the grafting degree of MAH under our experimental condition, a method that characterized the grafting degree by means of MFR was put forward and a calibration curve was also built up. The inhibition and synergism mechanisms that rare earth compounds having impact on grafting reaction were tentatively investigated.

Keywords: [Isotactic polypropylene; Reactive extrusion; Maleic anhydride; Rare earth compoundzz'\)](#)" href="#">Isotactic polypropylene; Reactive extrusion; Maleic anhydride; Rare earth compound

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通讯作者: 殷敬华

作者简介:

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