

论文

通过反应性单体法制备聚乙烯-接枝-聚甲基丙烯酸酯和聚乙烯-接枝-聚丙烯酸

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摘要 茂金属催化剂1, 1'-亚乙基双茛基二氯化锆[*rac*-C₂H₄(indenyl)₂ZrCl₂]-MAO催化乙烯和对-烯丙基甲苯共聚得到的共聚物为底物进行自由基溴化反应, ¹H-NMR表明所得的溴化聚乙烯共聚物中对-烯丙基甲苯单元两个苯基位上各有一个氢被溴取代. 以此溴化聚乙烯共聚物为大分子引发剂, 以CuCl/N, N', N'', N'''-五甲基二乙基三胺为催化剂, 分别进行了甲基丙烯酸甲酯和丙烯酸叔丁酯的原子转移自由基聚合, 制备出相应的聚乙烯接枝共聚物. 其中, 聚乙烯接枝聚丙烯酸叔丁酯共聚物在盐酸作用下可以高效水解为聚乙烯接枝聚丙烯酸共聚物, 然后在氢氧化钠作用下可以进一步转化为聚乙烯接枝聚丙烯酸钠共聚物. Mulao试验表明接枝共聚物对聚乙烯的极性具有明显的改善作用.

关键词 [聚乙烯](#) [功能化](#) [反应性单体法](#) [对烯丙基甲苯](#) [接枝共聚物](#)

分类号

PREPARATION OF POLYETHYLENE-GRAFT-POLYMETHACRYLATES AND POLYETHYLENE-GRAFT-POLY(ACRYLIC ACID) VIA REACTIVE MONOMER METHOD

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Abstract Ethylene and *p*-allyltoluene were copolymerized in the presence of metallocene catalyst *rac*-ethylenebis-(indenyl)zirconium dichloride-MAO. The polyethylene(PE)copolymer prepared was brominated using radical initiator and *N*-bromosuccinimide. ¹H-NMR showed that each benzyl site was substituted with one bromine atom. Methyl methacrylate and *t*-butyl acrylate were polymerized *via* ATRP process with brominated PE copolymer as macromolecular initiator and CuCl / *N, N', N'', N'''*-pentamethyldiethylenetriamine as catalyst and the corresponding graft copolymer was synthesized. Polyethylene-graft-poly(*t*-butyl acrylate) was subsequently converted by hydrolysis with hydrochloric acid to polyethylene-graft-poly(crylic acid), which was further converted to polyethylene-graft-poly(sodium acrylate) by reacting with sodium hydroxide. Mulao test indicated that the polarity of polyethylene graft copolymers relative to that of polyethylene was improved greatly.

Key words [Polyethylene](#) [Functionalization](#) [Reactive monomer](#) [p-Allyltoluene](#) [Graft copolymer](#)

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