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论文

光谱法分析乙丙共聚物的序列结构及链节比

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摘要:

用FTIR, ^1H NMR和 ^{13}C NMR分析乙丙共聚物的序列结构与链节比. 通过对乙丙共聚物 ^1H NMR, ^{13}C NMR和 ^{13}C - ^1H 二维核磁共振谱的综合分析, 提出了与前人不同的归属, 并提出了不同位置碳原子积分面积相关性分析方法, 该方法避免了烦琐的理论计算, 可简便地得到乙丙共聚物的主要序列结构. 通过比较 ^1H NMR和 ^{13}C NMR计算乙丙共聚物中乙烯、丙烯链节比, 表明可以用 ^1H NMR代替 ^{13}C NMR完成对乙丙共聚物中乙烯、丙烯链节比的定量计算.

关键词: 核磁共振谱; 红外光谱; 乙丙共聚物; 序列结构; 链节比

Analysis of Sequential Structure and Monomer Unit Ratio of Ethylene-propylene Copolymer by Spectroanalysis Method

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Abstract:

The sequential structures and monomer unit ratio of ethylene-propylene copolymer(EPC)were analyzed by FTIR, ^1H NMR and ^{13}C NMR. The spectra of ^1H NMR, ^{13}C NMR and two-dimensional NMR of EPC were also analyzed in detail, the differential explanations of the NMR spectra for EPC with predecessors, and an analytical method of the relativity of the integrated areas of differential carbon atoms in the inverse gated decoupling ^{13}C NMR spectrum were proposed in this paper. The proposed method can be used to determine the main sequential structures in EPC simply. The theoretical calculated results of the main sequence distribution for three EPR samples proved that the proposed method is feasible. Compared ^1H NMR with ^{13}C NMR, it is accepted that ^1H NMR method can be used to calculate the monomer unit ratio of ethylene and propylene in EPC.

Keywords: NMR spectrum; FTIR spectrum; Ethylene-propylene copolymer; Sequential structure; Monomer unit ratio

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