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化学

聚苯乙烯-二乙烯基苯胺肟螯合树脂的辐射接枝合成

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摘要 以聚苯乙烯-二乙烯基苯（SDB）树脂颗粒为基体，通过预辐照接枝聚合途径在空气气氛中接枝丙烯腈(AN)，然后用盐酸羟胺作功能化处理而引入胺肟基团。采用傅里叶红外光谱仪和扫描电镜等对产物的化学结构及表面微观形貌进行分析。分析结果表明：只有在高吸收剂量（0.6～2.4 MGy）条件下才能发生接枝反应，且接枝率随吸收剂量增加而提高。在选定的吸收剂量（2.4 MGy）条件下，以丙烯腈单体与水体积比1∶7，于80 ℃下反应4 h所得的接枝产物（SDBAN）再与盐酸羟胺溶液反应，在中性条件下获得了性能良好的偕胺肟基螯合树脂(SDBAO)产物。

关键词 聚苯乙烯-二乙烯基苯；丙烯腈；预辐照接枝聚合；胺肟化反应

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Pre-irradiation Grafting Synthesis of Polystyrene-Divinyl benze Amidoxime Resin

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Abstract Polystyrene divinylbenze amidoxime (SDBAO) resin was synthesized by preirradiation grafting and amidoximation reaction. Acrylonitrile was grafted onto preirradiated polystyrene-divinylbenze resin in air, and the target functional group was introduced through amidoximation reaction. The chemical structure and microstructure of the products were analyzed by using FT-IR and SEM. The results show that grafting reaction only occurs at high dose (0.6-2.4 MGy), and the grafting ratio increases with absorbed dose. Based on selected irradiation conditions (2.4 MGy), SDB-AN resin is obtained by using 1∶7 acrylonitrile monomer/water ratio and reacted at 80 ℃ for 4 h, then in neutral condition SDBAO resin with satisfied properties is synthesized by SDB-AN resin and hydroxylamine hydrochloride solution at 80 ℃ for 4 h.

Key words polystyrene-divinylbenze _ acrylonitrile _ pre-radiation grafting _ amidoximation

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