

聚合物基板表面状态对异相接枝的影响研究

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摘要 研究了对于羟丙基纤维素(HPC)基板进行表面修饰时,基板表面状态的调控对基板表面化学接枝的影响。用双官能团化合物2,4-甲苯二异氰酸酯(TDI)作为接枝桥梁,其对位的异氰酸酯基先和基板上的羟基反应,保留的邻位异氰酸酯基进一步再与丙烯酸的羟基反应,让接枝在基板上的活性丙烯酸分子继续和丙烯酸溶液聚合,通过这种途径在基板表面修饰聚丙烯酸。基板制备时,由于不同介质对HPC基板表面的不同诱导作用,导致表面组成各异,大大影响了接枝反应的效果。红外光谱和二次离子飞行时间质谱均证明了可以用2,4-甲苯二异氰酸酯(TDI)分子做接枝桥梁在基板表面异相接枝上羟基并进一步接枝聚丙烯酸,从而达到修饰基板的目的。

关键词 [纤维素](#) [接枝共聚](#) [飞行时间质谱法](#) [异氰酸酯 P](#) [聚丙烯酸](#)

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Study on Control of the Polymer Substrate Surface and Its Influence on Surface Grafting

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Abstract The control of the hydroxypropyl cellulose (HPC) substrate surface and its influence on the surface graft-modification of HPC was studied. In the modification process toluene-2,4-di-isocyanate (TDI), with the active bifunctional group, was used as a bridge. The paraisocyanate groups reacted with the hydroxyls of HPC substrate at first, while most orthoisocyanate groups still survived and can react with acrylic acid in the next procedure. The HPC substrate was modified by poly (acrylic acid) when the acrylic acid on the substrate participated in polymerization in acrylic acid solution. It was found that HPC substrates made from different polarity media led to different composition of hydroxy group on the HPC surface, and consequently affected the grafting reaction greatly. FT-IR spectra and TOF-SIMS proved that the reaction of the surface grafting by toluene-2, 4-di- isocyanate TDI molecules modified the substrate as a result of carboxyl groups or polyacrylic acid grafted onto the surface.

Key words [CELLULOSE](#) [GRAFT COPOLYMERIZATION](#) [TIME-OF FLIGHT MASS SPECTROMETRY](#) [ISOCYANATE P](#) [POLYACRYLIC ACID](#)

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