

## 化学与化工

### 等离子体引发接枝聚合丙烯酸对PET表面改性的溶剂效应研究

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摘要:

为研究混合溶剂对等离子体引发接枝聚合影响的本质,采用紫外可见分光光度法对丙烯酸在不同溶剂中的反应活性进行了研究;利用紫外可见分光光度法、红外光谱及原子力显微镜分析表征了接枝样品。实验结果表明溶剂对接枝反应有较大的影响,当选用醇和水为混合溶剂时,接枝率随着水与醇的体积比的增加而增大。利用紫外光谱中出现的红移现象可以解释丙烯酸在不同溶剂中的反应活性以及接枝率的变化规律。红外光谱中C=O伸缩振动吸收峰积分面积随接枝率的增加而增加,且呈线性关系,证实了丙烯酸单体已接枝到PET表面。

关键词: 等离子体聚合 溶剂效应 表面改性 接枝共聚

### The solvent effect on polyethylene terephthalate surface modification by plasma induced grafting polymerization of acrylic acid

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Abstract:

The reactive activities of acrylic acid in different solvents were studied by UV-vis spectroscopy in order to investigate the inherent essence of mixed solvent to the influence of plasma-induced grafting polymerization. The grafted samples were characterized by UV-vis spectroscopy, FTIR and AFM analysis. The results indicated that the solvent had great influence on the grafting reaction. The grafting yield increased with an increase of the volume ratio of water to alcohol, when using alcohol and water as mixed solvent. The red shift in the UV spectrum could be ascribed to different reactive activities of acrylic acid in different solvents, and the change trend of the grafting yield. The FTIR integrated peak area of C=O stretching increased with an increase of the grafting yield, which was nearly a linear relationship. It was confirmed that the acrylic acid was grafted onto the PET surface.

Keywords: plasma polymerization solvent effect surface modification grafting copolymerization

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