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材料化学工程与纳米技术

紫外光固化二氧化硅/丙烯酸酯亲水杂化薄膜

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摘要

紫外光照射下制备了用于改善玻璃表面亲水性的二氧化硅/丙烯酸酯透明杂化薄膜，其水接触角小于5°，具有优异的亲水性。讨论了反应时间、反应温度、丙烯酸羟丙酯用量和正丙醇用量与薄膜亲水性的关系。通过SEM对薄膜表面形貌进行了研究，发现薄膜具有多孔结构，SiO_2溶胶粒子均匀分布在膜层中。研究表明，以硅溶胶（ml）与丙烯酸羟丙酯（mol）配比为50∶0.15在40℃时反应1 h制备杂化溶胶，且涂膜液用20%（质量）正丙醇稀释时所制备的杂化薄膜亲水性最好。

关键词

紫外光固化 杂化薄膜 亲水性

分类号

UV cured silica/acrylate hydrophilic hybrid film

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Abstract

Transparent hybrid silica/acrylate films were prepared under UV irradiation to improve the hydrophilicity of the glass surface.The contact angle of the water drop on the films was less than five degrees，which indicated excellent hydrophilicity.The effects of reaction time，reaction temperature，content of hydroxyl propyl acrylate（HPA）and *n*-propanol on the hydrophilicity of the films were discussed respectively.The scanning electron microscope image results showed that the films had porous structure and SiO_2 sol particles were dispersed in the films uniformly.The hybrid films with the best hydrophilicity were under such conditions that the ratio between silica sol(ml) and HPA(mol) was 50∶0.15，reaction temperature was 40℃，reaction time was 1 h and the film coating solution was diluted using 20%(mass) *n*-propanol.

Key words

UV cured hybrid film hydrophilicity

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