

عنوان مقاله:

Synthesis of hydrophobic glasses by sol-gel method using silylating agents

محل انتشار:

دهمین کنگره سرامیک ایران (سال: 1394)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

In this research work, in order to study the effect of iso-octyltrimethoxysilane (iso-OTMS) and phenyltriethoxysilane (PhTES) as hydrophobic agents on the water repellent properties of the silicacoatings, the coating films on the glass substrates were prepared by two-step sol-gel dip coating process using alkoxide solutions. In this work, the influence of different organosilanes was discussed on the hydrophobic properties and surface modification of the silica films. Silica alcocol was prepared by keeping the molar ratio of TEOS:H₂O:EtOH constant at ۱:۶.۳۵:۳۰.۳ respectively, and the percentage of hydrophobic agents was varied from ۰ to ۸ vol.%. The iso-OTMS modified film showed the higher contact angle (۱۴۰°) in comparison of the PhTES modified film. The silica films were characterized by the field emission scanning electron microscopy (FE-SEM), atomic force microscopy (AFM), percentage of optical transmission and static contact angle measurement (CA). The obtained results showed that the hydrophobic character and morphology of the silicananoparticles are completely dependent on the organic moiety nature of organosilanes. The iso-OTMS modified film showed the higher contact angle (۱۴۰°) in comparison of the PhTES modified film. The FE-SEM images showed that the better coverage of nanoparticles in iso-OTMS modified film caused the higher contact angle than that of PhTES modified film

کلمات کلیدی:

.Surface properties, Thin films, Atomic force microscopy (AFM), Organosilane

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