COMPARISON OF HYDROPHOBIC COATING STABILITY ON A GLASS SUBSTRATE BY SOL-GEL METHOD FROM WATERGLASS AND ALKOXIDE COMPOUND

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ABSTRACT

In this research, we report on the comparison of hydrophobic film on a glass substrate made of waterglass and of tetraethylortosilicate (TEOS) as the alkoxide compound. The purpose is to get into insight that waterglass can be used as a substitute for the expensive TEOS precursor. The silica sol used as precursor from waterglass and TEOS was made to be the same concentration, 1.07%. Then the glass substrate was coated with silica by dip-coating method followed by aging and modifying the silica surface with alcohol and TMCS 10 %wt. And after drying, the hydrophobic glass was tested by thermal test at range of 120°C - 200°C for 0 – 4 hours; acid test using HCl 1N for 0 – 4 hours; soap test using soap solution for 0 – 4 hours; and scratch test using pencil at hardness range of H – 6H. The result showed that the hydrophobic film from waterglass and TEOS was relatively stable against heat. As the other result, the contact angle of water on TEOS film went down after it was soaked into HCl 1N while waterglass not. In the soap test, the contact angle of water went down on both precursor. Mechanically, the waterglass film has more stable than the TEOS film. Shortly, by result we can judge that waterglass can be used as precursor to coat the glass substrate in order to make a hydrophobic glass.

keywords: water glass, TEOS, hydrophobic, and stability