

Characteristics of Sol-Gel Derived Fluorinated Hybrid Coating Films using Melamine Resin System

김남이, 안수진, 김성우*
경기대학교
(wookim@kgu.ac.kr*)

Recently, development of functionalized hybrid hard coating materials has been performed for the application of touchscreen display panel. In this study, tridecafluoro-n-octylsilane (TFS) as a fluorinated alkoxy silane was used to obtain hybrid coating films with anti-pollution surface property. The hydrophobic and oleophobic property could be derived through chemical fixation of fluorine alkyl group onto the surface of silica particles during sol-gel process. Thermally curable melamine system consisting of Hexamethoxy melamine (HMM) and Hexamethoxymethyl melamine (HMMM) was employed as an organic component in the hybrid coating materials. Surface property and energy of the coated films were evaluated in terms of contact angle for water, ethylene glycol, and n-hexadecane. In addition, the influence of TFS and silica content on the morphology, abrasive resistance, and optical transmittance of the coated film was investigated. Conclusively, hybrid coating films with improved anti-pollution property could be produced through incorporation of a quite small amount of TFS, which may not result in reduction in surface hardness.