

Characteristics of UV-curable polyester-acrylate nanocomposites with antimony doped tin oxide nanoparticles

성시현, 김대수*

충북대학교

(dskim@chungbuk.ac.kr*)

Antimony doped tin oxide (ATO) nanoparticles were used as nanofillers for UV-curable polyester-acrylate resin system to improve thermal, mechanical, and electrical properties. In this study, ATO nanoparticles were grafted by 3-glycidyloxypropyltrimethoxysilane (GPTS) and 3-methacryloxypropyltrimethoxysilane (MPS) respectively to improve dispersion and interfacial adhesion in a UV-curable polyester-acrylate nanocomposite system. The organic modification of ATO nanoparticles was confirmed by FTIR spectroscopy and thermogravimetric analysis (TGA). UV-curing behavior of the nanocomposite system was investigated by FTIR spectroscopy. The physical properties of the nanocomposites were examined by universal testing machine, TGA and UV-visible spectroscopy. The physical properties of the UV-curable nanocomposite resin system were improved considerably by introducing the modified ATO nanoparticles.