

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

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The electrical conductivity of insulating materials can be increased by the addition of electrically conductive fillers. Particularly interesting conductive filler is antimony doped tin oxide (ATO) as it combines a good electrical conductivity with optical transparency. By modifying ATO, We studied about improvement of electrically conductive filler efficiency. ATO were grafted by 3-Glycidyloxypropyltrimethoxysilane (GPTS) and 3-methacryloxypropyltrimethoxysilane (MPS). Modified ATO nanoparticles were investigated by FTIR spectroscopy and thermogravimetric analysis (TGA). Conversion of the nanocomposite system was investigated by FTIR spectroscopy. The physical properties of the nanocomposites were examined by universal testing machine (UTM), thermogravimetric analysis and UV-visible spectroscopy. The physical and electrical properties of the resin system were improved by introducing the modified ATO nanoparticles.