

Fabrication of Polyurethane Composites containing Polyaniline and Graphene for DLP-Type 3D Printing

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Digital light processing (DLP)-type 3D printing ensures several advantages, such as an easy solution process, a short printing time, high-quality printing, and selective light curing. Furthermore, polyurethane (PU) is among the promising candidates for 3D printing because of its wide range of applications. This work

reports comparative studies on the fabrication and optimization of PU composites using a polyaniline (PAN) nanomaterial and a graphene sheet (GS) for DLP-type 3D printing. The morphologies and dispersion of the printed PU composites were studied by field FE-SEM images. Bonding structures in the PU composites were investigated by FT-IR spectroscopy. As-prepared PU/PAN and PU/GS composites with different filler contents were successfully printed into sculptures with different sizes and shapes. The PU/PAN and PU/GS composites exhibit the improved sheet resistance and mechanical properties than the pristine PU.