

## Photocurable Elastomer Composites with SiO<sub>2</sub> Particles for 3D Printing Materials

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Photopolymer-based 3D printing techniques have gained a lot of interest due to their ability to fabricate products with high resolution and excellent surface finish devoid of roughness. Particularly, it is urgent to develop photopolymer-based 3D printing resins with exceptional features such as enhanced mechanical properties, which can be utilized in practical 3D printing applications. Herein, we developed 3D printable elastomers with improved mechanical properties by incorporating surface-tailored SiO<sub>2</sub> particles. Due to the exceptional dispersibility of surface-tailored SiO<sub>2</sub> particles, 3D printing of various structures with high contents of SiO<sub>2</sub> particles was successfully conducted without any defects. Tensile testing was performed to reveal the effect of SiO<sub>2</sub> particles on the mechanical properties of 3D-printed structures, and 20 wt% of surface-tailored SiO<sub>2</sub> particles was observed to enhance the tensile strength of elastomer by 87%. Furthermore, mechanical robustness and durability of 3D printed structures containing surface-tailored SiO<sub>2</sub> particles were evaluated.