

## **BLOCKED ISOCYANATE CONTAINING MONOMERS FOR TOUGH PHOTOPOLYMERS**

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Photopolymers are a widely spread class of materials used for additive manufacturing, medical applications, or as coatings or inks. However, their lack of toughness limits industrial use. Therefore, options like the use of toughening additives or modification of the polymer network are applied to overcome these drawbacks. The aim of this work was to investigate new approaches to tackle brittleness in photopolymers. Blocked isocyanates were incorporated into the spacer between the methacrylate moieties of a multifunctional methacrylate, enabling thermally induced cleavage of crosslinks after curing. A difunctional amine was added to the photopolymer resin, which reacts with the regenerated isocyanate motif and forms a linear polyurea. Hence, a highly cross-linked thermoset polymer was transformed into a linear thermoplastic material, which resulted in a toughened material. Elongation at break was improved with no negative effect on the strength at break. First 3D printing experiments of the material using stereolithography were performed successfully.