

Polyurethane elastomers for stimuli-responsive materials

백승환, 김정현[†]

서울시립대학교

(jhkimad@uos.ac.kr[†])

Stimuli-responsive polymer is a typical class of smart materials that dynamic covalent bonds that are activated by external stimuli such as heat, light, and electricity. The polyurethane elastomer is one of the most widely investigated stimuli-responsive polymers owing to the ease of production and mechanical robustness. In this study, we used hexamethylene isocyanate and isophorone isocyanate to synthesize shape memory polyurethane (SMPU) elastomers. The hard segments of the SMPU matrix, which were related to the shape memory properties of the SMPU, were tunable by varying the molar ratio of isocyanate mixtures. Additionally, our thermoset SMPU samples showed thermoplastic behavior which was verified with the stress relaxation tests.