

Magneto-Responsive Vitrimer Micropillar Arrays

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Vitrimers have been emerged in materials community as thermoset polymers with thermoplastic properties including reprocessability through dynamic covalent bonding networks. Although various methods have been demonstrated in order to endow non-responsive materials stimuli-responsivity, inclusion of magnetic particles has an advantage of penetrable feature of external magnetic field through the materials which can induce contactless actuation at room temperature. In this study, we embedded magnetic particles into vitrimer micropillar arrays for magnetic actuation by external magnetic fields. We investigated optimum concentration of magnetic particles to achieve highest bending angle considering magnetization and mechanical stiffness according to the particle loading. We will discuss detailed structure-property relationships as well as the shape fixation of magnetically actuated vitrimer micropillar arrays via thermomechanical process.