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Mechanically tunable elastomeric hydrogels made from melt-fabricated photoreactive block copolymer micelles NABILA HUQ, TRAVIS BAILEY, Colorado State University — Recently, our group has developed a range of novel elastomeric hydrogels using thermoplastic elastomer design concepts. These have been traditionally formed using two-component blends of AB diblock and ABA triblock copolymer designed to self-assemble into micelle-like domains in the melt. Vitrification of the micelle cores (A blocks) followed by swelling in aqueous media leads to an elastic network of spheres tethered by the population of bridging ABA chains in the blend. The concentration of ABA used has a strong influence on the mechanical properties exhibited by the hydrogels. We have built on this by replacing the traditional AB with a photoreactive AB-p. This construct provides flexibility to install specific concentrations of ABA tethering molecules at any point in the fabrication process as well as at any location simply through intensity-controlled, spatially directed irradiation with UV light. Increasing UV exposure time results in greater ABA concentrations, reinforcing the area of exposure. In this presentation we explore the influence of patterned ABA installation on shape, surface topography, and mechanical properties of the resulting hydrogels.

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