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Mechanical Characterization of Photo-crosslinkable Hydrogels with AFM[1] ALYSSA MCKENNA, Mount Holyoke College, MYUNGHWAN BYUN, RYAN HAYWARD, University of Massachusetts Amherst, KATHERINE AIDALA, Mount Holyoke College — Stimuli-responsive hydrogel films formed from photo-crosslinkable polymers are versatile materials for controlled drug delivery devices, three-dimensional micro-assemblies, and components in microfluidic systems. For such applications, it is important to understand both the mechanical properties and the dynamics responses of these materials. We describe the use of atomic force microscope (AFM) based indentation experiments to characterize the properties of poly(*N*-isopropylacrylamide) copolymer films, crosslinked by activation of pendent benzophenone units using ultraviolet light. In particular, we study how the elastic modulus of the material, determined using the Johnson, Kendall, and Roberts model, depends on UV dose, and simultaneously investigate stress relaxation in these materials in the context of viscoelastic and poroelastic relaxation models.

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