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**Measuring the Local Modulus of Soft Polymer Networks** JESSICA ZIMBERLIN, ALFRED CROSBY, University of Massachusetts — Biological tissues often rely upon local “heterogeneities” to define their structure –property relationship. An example is the integrated layered structure of the mitral valve. For most native tissues, these “heterogeneities” are attributed to the local arrangement and structure of the collagen fibril network. To guide the development of tissue scaffolds, we characterize and understand these structure-property relationships on local length scales. In our research we have developed a method to determine the local modulus at specific points within a material. The method involves inducing cavitation and monitoring the pressure of the cavity instability. This pressure is directly related to the local modulus of the material. Initial results focus on the network development of poly vinyl alcohol hydrogels. We monitor the process of gelation and the mechanical response of these hydrogels on length scales similar to their pore structure.

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