

Abstract Submitted
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Flow-induced fiber deformation in a confined microchannel: *in situ* **mechanical testing of gels** CAMILLE DUPRAT, Ladhyx, Ecole Polytechnique, HELENE BERTHET, PMMH, ESPCI, JASON WEXLER, Princeton University, OLIVIA DU ROURE, ANKE LINDNER, PMMH, ESPCI — Photopolymerized hydrogels are a functional template for micro-particle fabrication, microflowsensors and microbiology experiments. The control and knowledge of their mechanical properties are paramount to many applications. We have designed a novel robust method to determine these properties. We measure the deformation of a gel beam of precisely controlled shape, under a controlled flow forcing, which provides a direct measurement of the Young's modulus of the gel upon its fabrication. We then use this method to determine the mechanical properties of the commonly used poly(ethylene glycol) diacrylate (PEGDA) under various experimental conditions. The mechanical properties of the gel can be highly tuned, yielding two orders of magnitude in the Young's modulus. We provide a simple control parameter, the UV exposure time, to have a great control over the network properties, and rationalize these observations by studying the kinetics of the polymerization reaction.

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