

Dry and hydraulic fractures in colloidal gels under tension

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We study the propagation of dry cracks in colloidal gels, using a combination of optical techniques to probe the microscopic deformation field surrounding the tip of the crack as well as the shape and dynamics of the tip itself. We find remarkable similarities between cracks induced by drying of the solvent and by injecting an immiscible fluid into it. These similarities highlight the surprising role of the internal tension of the gels in driving the fractures.