

Abstract Submitted
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Separating Viscoelasticity and Poroelasticity of Gels with Different Length and Time Scales ANIRUDH MOHAN, XUANHE ZHAO, Soft Active Materials Laboratory, Duke University, SOFT ACTIVE MATERIALS LABORATORY, DUKE UNIVERSITY TEAM — Viscoelasticity and poroelasticity commonly coexist in polymer gels. We propose a method capable of separating the viscoelasticity and poroelasticity of gels in various mechanical tests. The viscoelastic characteristic times and the poroelastic diffusivities of a gel can define intrinsic material length scales of the gel. The experimental setup can give sample length scales, over which the solvent migrates in the gel. By setting the sample lengths to be much larger or smaller than the material lengths, the viscoelasticity and poroelasticity of the gel will manifest at different time scales in a test. Therefore, the viscoelastic and poroelastic properties of the gel can be probed separately at different time scales of the test.

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