

Abstract Submitted
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Visualize space-dependence of viscosity LINGXIANG JIANG, BOYCE TSANG, STEVE GRANICK, University of Illinois at Champaign-Urbana, GRANICK'S GROUP TEAM — The space-time dependence of viscosity plays a fundamental, crucial role in a number of natural and industrial processes, where the time dependence has been extensively studied by conventional methods, yet its spatial counterpart has not been directly determined. Here, we propose an imaging based method to measure the space-time dependent cooperative viscosity and confirm its validity in a biopolymer, F-actin solution. A space dependent master curve of cooperative viscosity is identified with an exponential growth at short distance (correlation length 8 times of mesh size) and a plateau at long distance (surprisingly large crossover distance 18 times of mesh size), therefore visualizing the discrete-to-continuum transition of viscosity in real space.

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