

Abstract Submitted
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Rheology of densely packed soft particles JUNG-REN HUANG, Physics Department, National Taiwan Normal University, M.-R. CHOU, P.-C. HUANG, Physics Department, National Taiwan University, C.-Y. TAO, JIH-CHIANG TSAI, Institute of Physics, Academia Sinica — We measure the rheological response of densely packed hydrogel particles in a density-matched solution over different volume fractions. The particles are sandwiched between two roughened cone-shaped surfaces. The top surface, driven by a motor, provides an oscillatory shear of variable strain amplitude. The irreversibility and the thixotropic loop observed in the stress-strain and stress-strain rate curves illustrate the transition from a nearly elastic response to a plastic flow. At large strain amplitudes and low oscillation frequencies, the system approaches the steady state and the intercept of stress extrapolated to zero strain rate becomes zero below a well-defined volume fraction. Internal imaging of immersed tracers provides clues behind these transitions.

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