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Shear banding in colloidal glasses VIJAYAKUMAR CHIKKADI, University of Amsterdam, The Netherlands, ANDREW SCHOFIELD, University of Edinburgh, U.K., PETER SCHALL, University of Amsterdam, The Netherlands — We perform slow shear of colloidal glasses using a confocal microscope and shear-cell set up. The particles are tracked in time and space to construct the local strain field, which is observed to be non-uniform with high strain and low strain zones interspersed in space. Our measurements at a volume fraction $\sim$ 59% show the existence of homogeneously sheared regime at a shear rate $\sim$5x10^{-5} s^{-1} and shear localization at higher shear rates ($>10^{-4}$ s^{-1}). The set-up offers a unique opportunity to elucidate the evolution of shear-bands using the concept of shear transformations. In particular, the aim is to understand the role of correlation between the shear transformations in the growth of shear bands. We present an overview over the homogeneous versus inhomogeneous shear regime in terms of a deformation map for these systems.

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