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Controlled Crystal Growth and Solid-Liquid Interface in temperature-sensitive colloidal systems DUC NGUYEN, University of Amsterdam, The Netherlands, ZHIBING HU, University of North Texas, PETER SCHALL, University of Amsterdam, The Netherlands — We use temperature-sensitive colloidal NIPA systems to study crystal growth at the "atomic scale". By applying a temperature gradient we are able to control the growth of large colloidal single crystals. We visualize the nucleation of these crystals and solidification at the crystal-liquid interface in three dimensions by using confocal microscopy. Trajectories of particles on both the crystal and liquid side of an advancing interface are determined. These elucidate the mechanism of particle assembly at the interface of a growing crystal. At later stages of crystal growth, the interface becomes stationary, and we use the fluctuations of the stationary interface to determine the interface stiffness. Our data suggests a strong anisotropy of the interface tension. These microscopic observations provide unique insight into the mechanism of solidification.

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