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Exploring the role of strain in colloidal thin film crystallization JOHN SAVAGE, RAJESH GANAPATHY, ITAI COHEN, Cornell University — We present results of experiments studying the effect of isotropic and directed strain on the dynamics of thin film crystallization in colloids with short-range attractive interaction. Our system consists of micron size colloidal particles and a tunable depletant allowing reversible control of the interaction with small temperature changes. We explore the role of strain on the dynamics of melting and freezing and the equilibrium structures formed under directed strain. We find that in comparison with previously performed experiments on flat unpatterned substrates, dynamics and equilibrium morphologies on such surfaces alter dramatically. For example, crystals formed on square lattices strained along one direction tend to become highly elongated along the other direction. We consider the competition of strain and surface tension during the nucleation process under these extreme conditions.

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