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Modeling Mobility in Glassy Thin Films JEFFREY DEFELICE, JANE LIPSON, Dartmouth College, NICHOLAS TITO, Cambridge University, SCOTT MILNER, Pennsylvania State University — In this talk we explore the role of mobility in glassy systems and examine the effect of coupling sample mobility to system equilibration. Using our Limited Mobility (LM) model, we implement a new kinetic constraint such that the presence of mobility is required to facilitate local density equilibration. The LM model was developed to study dynamic heterogeneity in systems that exhibit kinetic arrest, i.e. a glass transition. It has been applied to investigate the behavior of sample mobility at and near this transition in bulk, buried slab, and supported film systems. Here we aim to probe the competition between kinetic and thermodynamic driving forces in the vicinity of the glass transition by coupling mobility with density equilibration. In thin films, the depth to which enhanced mobility from the free surface extends into the film diminishes upon cooling below the glass transition. We find that the new requirement that density equilibration be facilitated by mobility leads to “frustrated” behavior.

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