Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Dynamic Phase Transitions in Driven Kinetically Constrained Lattice Models THOMAS SPECK, Department of Chemistry, University of California, Berkeley — Kinetically constraint models (KCMs) have become an important tool to study and understand the origin of glassy dynamics. While possessing trivial thermodynamic properties, their dynamics slow down dramatically for low temperatures, showing dynamical heterogeneity as attributed to glass forming supercooled liquids. A dynamical first order ergodic-nonergodic phase transition is observed when biasing the dynamics of KCMs in trajectory space. In contrast to the previous equilibrium models, we consider various modified KCMs driven into a nonequilibrium steady state through non-conservative forces. We use the concept of entropy production along single trajectories to bias the dynamics, leading to dynamical first-order phase transitions similar to those found for the unmodified models. Finally, we discuss how the biased dynamics can be mapped onto physical unbiased dynamics with modified forces.

Thomas Speck
Department of Chemistry, University of California, Berkeley

Date submitted: 20 Nov 2009 Electronic form version 1.4