

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Measurement of two-state energy landscapes on amorphous hafnium diboride surface by direct observation of dynamics DUC NGUYEN, JUSTIN MALLEK, ANDREW CLOUD, JOHN ABELSON, GREGORY GIROLAMI, JOSEPH LYDING, MARTIN GRUEBELE, University of Illinois at Urbana-Champaign — Direct visualization of free energy landscape for individual Cooperatively Rearranging Regions (CRRs) is important in glassy dynamics, both for the bulk and the surface. We used scanning tunneling microscopy to track individual CRRs on amorphous hafnium diboride surface, temporally from microseconds to hours with sub-nanometer spatial resolution. CRRs have a diameter of ~ 5 atoms and mostly relax in a two-state fashion. From single cluster tunneling current traces, we can reconstruct local free energy landscapes, complete with energy difference, barrier height, a numerically defined reaction coordinate and shape of the free energy minima.

Duc Nguyen
University of Illinois at Urbana-Champaign

Date submitted: 05 Nov 2013

Electronic form version 1.4