Abstract Submitted
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Nanoscale dynamics of binary metallic glass Cu_xHf_{1-x} films[1] JACOB BURGESS, University of Alberta Department of Physics, National Institute for Nanotechnology, CHRIS HOLT, University of Alberta Department of Chemical and Materials Engineering, National Institute for Nanotechnology, DAVID FORTIN, GREG POPOWICH, University of Alberta Department of Physics, ERIK LUBER, DAVID MITLIN, University of Alberta Department of Chemical and Materials Engineering, National Institute for Nanotechnology, MARK FREEMAN, University of Alberta Department of Physics, National Institute for Nanotechnology — Scanning probe microscopy provides a valuable tool for investigating nanoscale structure of thin films. Less commonly it can be applied to study the low speed dynamical behavior of these systems as well. Presented here are scanning tunneling microscope investigations of sputtered glass Cu_xHf_{1-x} films which reveal the nanocrystalline structure of the films as well as hopping dynamics of crystal clusters on the surface. A correction for limited bandwidth and a range of activation energies is developed in the context of an Arrhenius process to allow extraction of the average energy barrier for cluster hopping. Concentration of the component metals in the films was varied allowing observation of the change in cluster size as well as the transition to the amorphous state. A second form of dynamics, more diffusive in character, was found for amorphous samples.

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