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Studies of Ripple Formation on Si Surfaces During Ar^+ Ion Bombardment[1] GOZDE OZAYDIN, Department of Aerospace and Mechanical Engineering, Boston University, Boston, MA, KARL F. LUDWIG, Department of Physics, Boston University, Boston, MA 02215, USA, HUA ZHOU, RANDALL L. HEADRICK, Department of Physics, University of Vermont, Burlington, VT 05405, USA — A study of formation of ripples on Si surfaces during bombardment with Ar^+ ions is reported. Real-time grazing incidence small-angle x-ray scattering (GISAXS) measurements are performed at the National Synchrotron Light Source. Si (100) samples are bombarded by Ar^+ ions from a PHI sputter gun at off-normal incidence. The formation of ripple structures is monitored in real time. The effects of different ion energies and high temperatures on the formation of these ripples are studied. A separate study on the smoothening of ripples by ion bombardment at normal incidence is also performed. The real time smoothening of these ripples is monitored using GISAXS during ion bombardment of the surface at room temperature and at higher temperatures. The effects of ion energy and substrate temperature on the smoothening of ripples are discussed.

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