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Nano-structured Au surfaces by off-normal gas cluster ion beam technique BUDDHI TILAKARATNE, DHARSHANA WIJESUNDERA, XUE-MEI WANG, WEI-KAN CHU, Department of Physics and Texas center for Superconductivity at University of Houston — Surface nano pattern formation has generated great interest in semiconductor, optoelectronics and bio-medical industries. For the past three decade cluster ion beam technology has developed significantly. A gas cluster ion consists thousands of atoms and usually energy per atom in the cluster is about 10eV and cluster ion surface penetration is minimum. Therefore, cluster ion impact form shallow depth modifications. When a cluster ion incident on to the surface off-normal beyond a certain angle from the normal surface target atoms gains forward momentum and creates clear surface nano-ripples between angles 40 to 60 degrees from surface normal. Even though many experiments have demonstrated cluster ion ripple formation, a mechanism of these formations has limited cluster ion beam industrial applications. We will discuss experimental results of surface evolution during the cluster ion off-normal incident irradiation and azimuthal sample rotation dependence of surface patterns, and compare results with a theoretical model.

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