

Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Three dimensional simulation of the surface roughness induced by the isotropic and anisotropic etch processes MARIJA RADMILOVIC-RADJENOVIC, BRANISLAV RADJENOVIC, Institute of Physics — One of the limiting issues in applications of plasma etch process in new generations of plasma technologies will be the control of surface roughness. As devices become smaller, reactive ion etching (RIE) has become a key process in anisotropic etching of semiconductor features. Ion-enhanced etching works by a combination of physical and chemical mechanisms to achieve selectivity and anisotropy during the etching process. Finding the effective ways for controlling the morphology of nanophase materials plays a crucial role in nanotechnology dictating development of advanced nanostructured materials. Decreasing the roughness of a surface will usually increase exponentially its manufacturing costs. In this paper, simulation results illustrating roughening of nanocomposite materials during both isotropic and anisotropic etching based on the level set method are shown. The obtained three-dimensional (3D) simulation results clearly demonstrate that the presence of two phases with different etch rates takes effect on development of the surface roughness.

Marija Radmilovic-Radjenovic
Institute of Physics

Date submitted: 11 Jun 2010

Electronic form version 1.4