Simulation of surface roughness by 3D level set method\textsuperscript{1}

BRANISLAV RADJENOVIC, MARIJA RADMILOVIC-RADJENOVIC, ZORAN PETROVIC, Institute of Physics, Belgrade-Serbia — Reactive Ion Etching is a major process in the fabrication of semiconductors devices for transferring patterns from masks to semiconductors substrates. One of the limiting factors in applications of plasma etching in new generations of plasma technologies will be the control of plasma induced roughness or perhaps control of the surface roughness by plasma etching. In this paper we consider both large scale roughness, sidewall roughness and roughness in general by using a 3D level set method. Predictions of surface roughness are based on statistical variations of the properties of the material and ion flux. In addition, we study how stochastic properties of material on different scales and of the beam affect the resulting roughness.

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