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**Simulation of surface roughness by 3D level set method<sup>1</sup>**  
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PETROVIC, Institute of Physics, Belgrade-Serbia — Reactive Ion Etching is a ma-  
jor process in the fabrication of semiconductors devices for transferring patterns  
from masks to semiconductors substrates. One of the limiting factors in applica-  
tions 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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