

Abstract Submitted  
for the DPP15 Meeting of  
The American Physical Society

**Improved Fractal Surface Algorithm for Modeling Evolving Surface Roughness in Dynamic-Composition BCA Codes** JON DROBNY, KYLE LINDQUIST, DAVID RUZIC, University of Illinois at Urbana Champaign — Fractal TRIDYN (FTRIDYN) is a modified version of the Monte Carlo BCA code TRIDYN that includes an explicit fractal model of surface roughness. Surface roughness plays a significant role in ion irradiation processes such as sputtering; roughness can reduce the maximum yield by as much as a third and can significantly shift the angle of incidence at which yield is maximized. The complete effect of surface roughness is still not completely understood. Fractals provide a consistent and physically realistic method to model rough surfaces using fractal dimension as a single input parameter. FTRIDYN includes a robust fractal surface algorithm that is more efficient than previous fractal codes and which reproduces the available experimental data of sputtering yields from rough surfaces. Surface evolution is handled in FTRIDYN by tracking the position of displaced target atoms and calculating the fractal dimension of the surface modified by ion bombardment. In the presented study, the effects of evolving surface roughness on the angular sputtering yield and sputtering yield versus energy curves for Be and W plasma facing materials are investigated.

Jon Drobny  
University of Illinois

Date submitted: 24 Jul 2015

Electronic form version 1.4