Abstract Submitted
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2D/3D Monte Carlo Feature Profile Simulator FPS-3D PAUL MOROZ, Tokyo Electron US Holdings — Numerical simulation of etching/deposition profiles is important for semiconductor industry, as it allows analysis and prediction of the outcome of materials processing on a micron and sub-micron scale. The difficulty, however, is in making such a simulator a reliable, general, and easy to use tool applicable to different situations, for example, with different ratios of ion to neutral fluxes, different chemistries, different energies of incoming particles, and different angular and energy dependencies for surface reactions, without recompiling the code each time when the parameters change. The FPS-3D simulator [1] does not need recompilation when the features, materials, gases, or plasma are changed – modifications to input, chemistry, and flux files are enough. The code allows interaction of neutral low-energy species with the surface mono-layer, while considering finite penetration depth into the volume for fast particles and ions. The FPS-3D code can simulate etching and deposition processes, both for 2D and 3D geometries. FPS-3D is using an advanced graphics package from HFS for presenting real-time process and profile evolution. The presentation will discuss the FPS-3D code with examples for different process conditions. The author is thankful to Drs. S.-Y. Kang of TEL TDC and P. Miller of HFS for valuable discussions.

[1] P. Moroz, URP.00101, GEC, Saratoga, NY, 2009.

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