Abstract Submitted
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Elemental and topographical imaging of microscopic variations in deposition on NSTX-U and DIII-D samples[1] C.H. SKINNER, R. KAITA, PPPL, B.E. KOEL, Princeton U., C.P. CHROBAK, GA, W.R. WAMPLER, SNL — Tokamak plasma facing components (PFCs) have surface roughness that can cause microscopic spatial variations in erosion and deposition and hence influence material migration. Previous RBS measurements showed indirect evidence for this but the spatial (0.5mm) resolution was insufficient for direct imaging. We will present elemental images at sub-micron resolution of deposition on NSTX-U and DiMES samples that show strong microscopic variations and correlate this with 3D topographical maps of surface irregularities. The elemental imaging is performed with a Scanning Auger Microprobe (SAM) that measures element-specific Auger electrons excited by an SEM electron beam. 3D topographical maps of the samples are performed with a Leica DCM 3D confocal light microscope and compared to the elemental deposition pattern. The initial results appear consistent with erosion at the downstream edges of the surface pores exposed to the incident ion flux, whereas the deeper regions are shadowed and serve as deposition traps.

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