Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Investigation Of A Tin-Lithium Alloy As A Liquid Plasma-Facing Material HEATHER SANDEFUR, DAVID RUZIC, Center for Plasma-Material Interactions, University of Illinois, ROBERT KOLASINSKI, DEAN BUCHENAUER, Plasma-Surface Interactions Science Center, Sandia National Laboratories, SANDIA NATIONAL LABORATORIES COLLABORATION, UNIVERSITY OF ILLINOIS COLLABORATION — Sn-Li is a low melting-point alloy that has been identified as a material with favorable performance in plasma material interaction studies. While lithium is a low Z material with a demonstrated ability to absorb impinging ions, pure lithium is plagued by high evaporation rates in the liquid phase. The Sn-Li alloy is a more stable alternative that provides a lower rate of evaporative flux due to the high vapor pressure of tin. In the liquid phase, the bulk segregation of lithium to the surface of the material has also been observed. While the alloy is of considerable interest, little data has been collected on its surface chemistry in a plasma environment. In order to expand the existing body of knowledge in this area, samples of an 80 percent Sn—20 percent Li alloy were prepared and analyzed in order to assess the surface composition and degree of lithium segregation in the liquid phase. The Angle-Resolved Ion Energy Spectrometer (ARIES) at Sandia National Laboratories was used to probe the surfaces of the alloy using the low energy ion scattering method. The lithium coverage at the surface was measured, and the material's affinity for hydrogen chemisorption was investigated.

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Date submitted: 16 Jul 2017 Electronic form version 1.4