Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Sputtering, impurity transport, and redeposition at the divertor and first wall[1] JEFFREY N. BROOKS, Argonne National Laboratory — These wall-related processes are critical for ITER and future fusion reactor plasma facing component surfaces. REDEP/WBC code-package full kinetic, 3-D Monte Carlo calculations (with typical input of UEDGE/DEGAS plasma edge parameters and TRIM-SP sputter yields/distributions) are used to study the sputtering erosion/redeposition process. A major issue is formation of mixed surface materials e.g., Be/C or Be/W, and resulting sputtering, thermomechanical, and tritium codeposition properties. Generally, divertor-sputtered tungsten is highly locally redeposited with essentially zero net sputter erosion and plasma contamination predicted. Beryllium and physically sputtered carbon travel farther, but are still confined to the near-surface divertor region. In contrast, chemically sputtered divertor carbon and wall-sputtered material of any type can travel much further, with implications for T/C and T/Be codeposition, and Be or W wall-to-divertor transport and mixing.

[1]Work supported by US DOE Office of Fusion Energy Sciences

Thomas Rognlien
LLNL

Date submitted: 25 Jul 2007 Electronic form version 1.4