

Abstract Submitted  
for the DPP15 Meeting of  
The American Physical Society

**ERO modelling of RF-Induced Erosion at Antenna-Connected Beryllium Limiters in JET**<sup>1</sup> A. LASA, C.C. KLEPPER, ORNL, D. BORODIN, A. KIRSCHNER, FZ-Juelich, M. GROTH, Aalto Univ., I. BORODKINA, MEPHI, E. SAFI, K. NORDLUND, Univ. Helsinki — Experiments at JET showed enhanced, asymmetric Be limiter erosion when magnetically connected, high power ICRH antennas were in use [1,2]. A first modeling exercise of this effect, using the 3D Monte Carlo (MC) code ERO has already been presented [3]. ERO was capable of reproducing the asymmetric Be emission pattern, erosion yields matching best for biasing voltages – that represent antenna-connection effect – of 100–200 eV, consistent with experimental findings and code predicted values. However, this model missed finer features, presented here: i) improved angular and energy distributions of impacting particles; ii) a detailed treatment of plasma-shadowed zones, as the connection length varies spatially; iii) additional fluxes due to charge-exchange neutrals – an important erosion source in shadowed areas and; iv) more accurate Be-D molecular erosion yields, as a function of surface temperature and D concentration, computed in a Molecular Dynamics-Kinetic MC multi-scale approach. With this new database, other important cases, such as erosion of inner wall limiters or during main wall surface temperature scans, can be revisited in the future.

[1] C.C. Klepper et al., J. Nucl. Mater. 438 (2013) S594–S598

[2] C.C. Klepper et al., this conference.

[3] C. C. Klepper et al., PFMC-15. Submitted.

<sup>1</sup>Work supported by U.S. DOE under Contract DE-AC05-00OR22725

John Canik  
ORNL

Date submitted: 24 Jul 2015

Electronic form version 1.4