

Abstract Submitted
for the GEC08 Meeting of
The American Physical Society

Revibrational Spectra of Molecules Sputtered of Carbon Surfaces¹ PREDRAG KRSTIC, Oak Ridge National Laboratory — Irradiation of the carbon surfaces by hydrogen isotopes results in processes of crucial importance for the carbon based divertor tiles of a fusion reactor. Thus the sputtering and implantation, result in erosion, plasma pollution, and tritium retention, as well as carbon deposition all over the reactor first wall. The molecules chemically sputtered upon impact of deuterium of deuterated carbon surface are various hydrocarbons as well as We study the translational and rovibrational energy and angular spectra of sputtered molecules. The energy distributions of ejected molecules confirm the partial thermalization of the impact cascade. Sputtered hydrocarbon molecules have rovibrational energies in the range 1.5-2 eV, with relatively cold translational and rotational motion, close to 0.5 eV. In contrast, translational and rovibrational energies of sputtered deuterium molecules are close to 1 eV, with approximate equipartition between rotational and vibrational modes.

¹Research supported by DOE, through Oak Ridge National Laboratory, managed by UT-Battelle, LLC under contract DE-AC05-00OR22725 and through SciDac program.

Predrag Krstic
Oak Ridge National Laboratory

Date submitted: 16 Jun 2008

Electronic form version 1.4