Abstract Submitted for the GEC13 Meeting of The American Physical Society

RF models for plasma-surface interactions¹ THOMAS JENKINS, DAVID SMITHE, MING-CHIEH LIN, SCOTT KRUGER, PETER STOLTZ, Tech-X Corporation — Computational models for DC and oscillatory (RF-driven) sheath potentials, arising at metal or dielectric-coated surfaces in contact with plasma, are developed within the VSim code and applied in parameter regimes characteristic of fusion plasma experiments and plasma processing scenarios. Results from initial studies quantifying the effects of various dielectric wall coating materials and thicknesses on these sheath potentials, as well as on the ensuing flux of plasma particles to the wall, are presented. As well, the developed models are used to model plasmafacing ICRF antenna structures in the ITER device; we present initial assessments of the efficacy of dielectric-coated antenna surfaces in reducing sputtering-induced high-Z impurity contamination of the fusion reaction.

¹Funded by U.S. DoE via a Phase I SBIR grant, award DE-SC0009501.

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Date submitted: 12 Jun 2013

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