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Simulation of Neutral Particle Transport During HiPIMS[1] JAN TRIESCHMANN, SARA GALLIAN, RALF PETER BRINKMANN, THOMAS MUSSENBROCK, Institute of Theoretical Electrical Engineering, Ruhr University Bochum — In this work the importance of the knowledge of the spatial distribution, its temporal evolution as well as their energy distribution of heavy particles within sputtering processes is discussed. To describe these discharges – typically operated at very low pressures below 1 Pa – specific modeling approaches are required. Our approach comprises a three-dimensional kinetic Lagrangian description of neutral particles. A modified version of the direct simulation Monte Carlo (DSMC) code *dsmcFoam* [1] is used, with the aim to describe the evolution of background and sputtered particles of a High Power Impulse Magnetron Sputtering (HiPIMS) process in a research reactor. Emphasize is put on the influence of the initial angular distribution of sputtered particles, as well as their energy distribution and its angular dependence. Based on the work of Stepanova and Dew [2] a modified Thompson energy distribution [3] is used. Differently distributed sputtered particles provide densities and fluxes concerning the corresponding film formation.

[1] T.J. Scanlon *et al.*, Computers and Fluids **39**, 2078–2089 (2010).
[2] M. Stepanova, S.K. Dew, J. Vac. Sci. Technol. A **19**, 2805 (2001).
[3] M.W. Thompson, Phil. Mag. **18**, 377–414 (1968).

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Jan Trieschmann
Institute of Theoretical Electrical Engineering, Ruhr University Bochum

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