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Consistent kinetic simulation of plasma and sputtering in low temperature plasmas[1] FREDERIK SCHMIDT, JAN TRIESCHMANN, THOMAS MUSSENBROCK, Institute of Theoretical Electrical Engineering, Ruhr University Bochum — Plasmas are commonly used in sputtering applications for the deposition of thin films. Although magnetron sources are a prominent choice, capacitively coupled plasmas have certain advantages (e.g., sputtering of non-conducting and/or ferromagnetic materials, aside of excellent control of the ion energy distribution). In order to understand the collective plasma and sputtering dynamics, a kinetic simulation model is helpful. Particle-in-Cell has been proven to be successful in simulating the plasma dynamics, while the Test-Multi-Particle-Method can be used to describe the sputtered neutral species. In this talk a consistent combination of these methods is presented by consistently coupling the simulated ion flux as input to a neutral particle transport model. The combined model is used to simulate and discuss the spatially dependent densities, fluxes and velocity distributions of all particles.

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Frederik Schmidt
Institute of Theoretical Electrical Engineering, Ruhr University Bochum

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