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Current-dependent microturbulence features in pulsed magnetron operation : experiments and simulations SEDINA TSIKATA, CNRS - ICARE, TIBERIU MINEA, ADRIEN REVEL, LPGP, Universite Paris-Sud —
Interest in the pulsed, high-current operation of planar magnetrons has grown over the last decade. Under certain conditions, operation in such regimes may favor the deposition of thin films with properties superior to those generated under direct current operation. However, the physics of the magnetron plasma is notoriously complex: the discharge exhibits transient features and complex phenomena such as plasma turbulence and large-scale self-organization. In addition, realistic modeling of high-current, high-density regimes poses a major challenge. In this work, we present recent progress in our understanding of this discharge. Recent experimental measurements of microturbulence using coherent Thomson scattering are discussed, with a focus on transient features observed within microsecond-duration pulses. These experimental analyses are complemented by information gained from quasi-3D particle-in-cell simulations.

Sedina Tsikata
CNRS - ICARE

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