Serial co-sputtering for functional multi component thin films - COSMOS

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This project investigates the deposition of multi-component materials by applying a novel type of magnetron sputtering, namely "serial co-sputtering". The basic principle is sketched as follows: The sputter source consists of a primary rotatable sputter target of material A and a secondary, fixed sputter target of material B. During operation of the primary sputter target, a thin metallic film of the material sputtered from target B is deposited onto its backside. In the primary sputtering process, this film gets implanted into the primary target material A, thereby enabling an increased sputtering rate and/or the metallic or reactive deposition of doped layers with an adjustable doping concentration [B]/[A].The project goal is to establish a sound theoretical understanding of this concept by means of computer simulations and experimental work and to employ this for high rate production of thin film materials with enhanced properties or with even novel phase compositions. As a second objective, the development and implementation of advanced process control techniques will further support the achievement of this goal.

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