

PO1046

Characterization of a triode sputter source used for the deposition of inner walls of narrow hollow cylindersJohann Laimer¹, Eva Ruppert¹, Herbert Störi¹¹Vienna University of Technology, Wien, Austria

laimer@iap.tuwien.ac.at

Nowadays, it is common practice to deposit coatings by magnetron sputtering with sufficiently high deposition rate. Even inner walls of hollow cylinders may be coated by this technique. However, due to the space required for magnets in the interior of the cylindrical sputter source there is a limit in down sizing the diameter of the source and hence a limit in the minimal diameter of hollow cylinders to be coated.

Triode sputter deposition, which is known since a long time, does not need the incorporation of magnets into the cylindrical sputter target and would therefore allow smaller diameters of the sputter target and hence would allow the deposition of inner walls of narrower hollow cylinders. We present a hot filament supported triode sputter system, optimised for high rate deposition inside narrow spaces. In the present study a steel sleeve with an inner diameter of 30 mm and a height of 50 mm was used as a substrate to prove the principle. This inner diameter is not the limit of the process, it could be easily further decreased.

Depositing metallic alloys, deposition rates in excess of 1 $\mu\text{m}/\text{min}$, comparable to high performance magnetron sputter systems have been achieved. Furthermore, the thickness of the deposited coating was very uniform.

A detailed electrical characterization of the discharge will be presented.

Keywords

triode sputter system

high rate deposition

coating of inner walls