# Quantitative analysis of sputter processes in a small magnetron system

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Sputter deposition of titanium in argon from a small circular magnetron is characterized. The dependence of the deposition rate on pressure, power, and target–substrate distance has been measured. A framework for the application of the analytic approach by Keller and Simmons of ballistic and diffusive transport to simple three-dimensional sputter geometries is developed and applied. The sputter yield and the pressure–distance product are determined from the data set as the only fit parameters of the model. For the entire range of operation of the magnetron, the sputter process can be described in terms of the relatively simple approach.