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**The shape of the erosion racetrack in a magnetron target**

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In magnetron sputtering, the momentum exchange between gas ions from the magnetically confined plasma and the cathode target causes the emission of atoms towards the substrate. The spatial geometry of the magnetron plasma is known to depend on the gas pressure, discharge voltage, current and magnetic field strength. The erosion racetrack formed in the target surface is determined by the spatial and directional distribution of the ions that are incident on the target, and these depend on a combination of the strength and configuration of the magnetic field. In this study we have measured the spatial variation of the magnetic field of one 2" diameter and two 4" diameter magnetron cathodes, each of different maximum magnetic field strengths, and we have compared that data with the spatial distribution of the erosion racetrack in the corresponding targets. Each magnetron had been used to deposit different materials, but similar discharge voltages and argon gas pressures had been used. The results showed that the inner and outer edges of the racetrack correspond to given value magnetic field vector. We report how the shape of the racetrack profile corresponds to the configuration of the magnetic field.

**Keywords**

Magnetron

racetrack

magnetic field