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During DC magnetron sputtering what is the surface temperature of the water-cooled target?

The surface temperature of a 2”diameter water-cooled titanium target was measured, using an electrically floating fine, 0.005”wire, type K chromel-alumel thermocouple, during sputtering as a function of the DC plasma power (power densities of 1.0, 2.2 and 4.1 W/cm2) and gas pressures of 10 to 60 sccm. The temperature difference between the centre of the target and inside the racetrack was more than 200 oC, the racetrack temperature increased almost linearly with the applied power to a maximum value of ⊠850 oC.
The target temperature measurements were also carried out as a function of the N2 gas concentration in the Ar gas mixture (1 to 20%), and these measurements were complemented with the analysis of the elemental composition of the deposits prepared under the different conditions.

Keywords

magnetron sputtering, target, reactive sputtering

Reference

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Author approval

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