

HIGH-RATE DEPOSITION OF CHROMIUM COATINGS BY MAGNETRON SPUTTERING

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Magnetron sputtering of a heated (“hot”) chromium target can significantly improve the productivity of Cr coating deposition [1-5]. This is possible due to the formation of additional particle flux by sublimation process on the target surface. Apart from the increase of the deposition rate, a powerful energy flux onto the substrate appears due to the thermal radiation of the sputtered “hot” Cr target. Therefore, in such conditions, we should expect a significant change in the fluxes of matter and energy on the substrate and their specific characteristics (energy per one deposited atom).

This article presents data on the deposition rates of chromium coatings when a “hot” Cr target is sputtered and the energy characteristics of this process. These parameters is necessary to predict the properties of chromium coatings and to choice of the optimal deposition mode of a chromium coating both from the higher productivity and to ensure better functional properties.

The paper considers the influence of substrate pre-heating, discharge power, substrate bias, substrate location relative to the magnetron sputtering system and deposition time on the deposition rates and properties pf chromium coatings.

REFERENCES

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