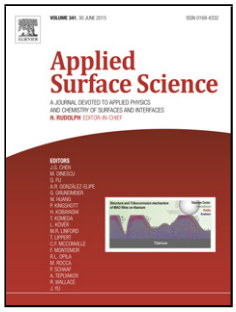

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Application of Valence-to-core X-ray Emission Spectroscopy for Identification and Estimation of Amount of Carbon Covalently Bonded to Chromium in Amorphous Cr-C Coatings Prepared by Magnetron Sputtering

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Highlights

- Magnetron sputtered Cr-C coatings (MSC) contain covalently bounded and free carbon.
- Vtc-XES method allows the amount of covalently bounded carbon in MSC to be estimated.
- Annealing results in a growth of the amount of covalently bounded carbon in MSC.
- Electrodeposited Cr-C samples (as compared with MSC) do not contain free carbon.

Abstract

Cr-C coatings containing different amount of carbon ranging from ~5 to 50 at. % were prepared