**The use of synchrotron radiation for the characterization of sputtered WC-Co thin films**

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Abstract

Synthesis of nano-crystalline WC-Co films has attracted great research interest owing to the outstanding mechanical properties of the material and its potential to be utilized in extreme engineering applications such as in wear-resistance, heavy cutting, and excavation industries. The growth in the use of WC-Co thin films in the general mechanical industry is however slow due to a lack of data on the tribological properties of WC-Co coated materials. Control and manipulation of synthesis parameters are of critical concern in order to tailor the material’s properties and performance. This work focuses on the use of synchrotron facilities and universal tribometers to investigate the influence of deposition parameters on the WC-Co films properties and nature for tribological applications. The surface morphology and nature of the thin film were acquired using x-ray photoelectron spectroscopy (XPS) and Grazing Incidence x-ray absorption spectroscopy (GI-XAS). Finally, the wear performance of the film-substrate system was determined via a sliding wear test [1,2].

**Reference:**

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2. R.R. Phiri, O.P. Oladijo, H. Nakajim, A. Rattanachata, E. T. Akinlabi, Structural and morphological dataset for rf-sputtered WC-Co thin films using synchrotron radiation methods. Data in Brief, vol 25, 104383, 2019.