Characterization of TiB2 deposits from KF-NaF-LiF and from NaCl-KCl-NaF melts: comparison between layer properties.

Andres Pascual, Rafael Krendelsberger, Nataliya Krendelsberger, Gerhard E Nauer
ECHEM GmbH - Austria

Abstract

Titanium diboride (TiB2) is a highly promising coating material for industry applications due to its high chemical stability, high hardness, low electrical resistivity, high wear resistance and high melting point. Thin films of homogeneous and dense TiB2 were electro plated from KF-NaF-LiF-K2TiF6-KBF4 and NaCl-KCl-NaF-K2TiF6-KBF4 melts on steel, Mo and W substrates using direct and pulsed current. In the present investigation, a comparative study between the layers obtained using each of the previous mentioned electrolytes will be presented. The influence of deposition parameters (i.e: temperature, frequency, current density, composition of the electrolyte) on the chemical composition, hardness, texture, residual stresses and microstructure of the deposits was analysed.