

Dependence of magnetic properties of CoWP films on the electrolyte concentration

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Magnetic metal alloys find a wide range of applications including aerospace, magnetic data storage, magnetic resonance imaging (MRI), automotive component, and spintronics. CoP is known for its magnetic properties and it has been used in integrated sensors. Recently, CoW films have shown some promising physical and mechanical properties. Therefore, one approach has been made to introduce magnetic material (Co) with metallic alloys (WP). Considerable success has been achieved in inducing ferromagnetism properties by doping transition element within metallic alloy.

In the present work, magnetic properties of electrodeposited CoWP films were investigated. The deposition of CoWP films was carried out from a citrate electrolyte containing CoSO_4 , Na_2WO_4 , and NaH_2PO_2 . The effects of electrolyte concentration were studied using X-ray diffraction (XRD), atomic force microscopy (AFM), vibrating sample magnetometry (VSM) and super conducting quantum interference device (SQUID) measurements.