Surface morphology of Ni-Fe thin films grown on copper substrates using pulse electrodeposition in ultrasonic field

ABSTRACT

Nickel-Iron (Ni-Fe) thin films were pulse-electrodeposited on copper (Cu) substrates under galvanostatic mode in the presence/absence of an ultrasonic field. The as-prepared thin films were characterized by X-Ray Diffractometer (XRD) and Scanning Electron Microscopy (SEM). The XRD results confirmed the deposition of NiFe on Cu substrates and the crystallite size calculated from Scherrerpsilas formula is 22.28 nm and 20.17 nm respectively for the films fabricated in the absence and presence of ultrasonic field. The grain sizes, from SEM micrographs, were found to be 225.52 nm and 79.64 nm respectively for the films fabricated in the absence and presence of ultrasonic field and the grains were in the shape of spherical balls.