Short Communication

Saccharin-assisted Galvanostatic Electrodeposition of Nanocrystalline FeCo Films on a Flexible Substrate

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The electrodeposition of functional materials on a flexible substrate has become an interesting topic because of the current development of flexible devices, called flexible technology, for various electronic applications. This study investigated FeCo film electrodeposition on a flexible polyethylene coated with indium tin oxide using the galvanostatic technique. The obtained FeCo films have a very fine crystallite size with a uniform surface morphology that changed remarkably upon introduction of a saccharin additive and upon increasing the deposition temperature. The effect of the saccharin concentration and deposition temperature on the current efficiency and anomalous co-deposition of FeCo was discussed. In this work, electrodeposition from an electrolyte containing 1 g/L saccharin at a very high current efficiency and a low deposition temperature was successfully achieved. The obtained composition ratio indicated that saccharin could reduce the anomalous co-deposition of Fe and Co. This phenomenon was also observed at a high deposition temperature. These results convincingly show the high current efficiency and reduced anomalous characteristic of the saccharin-assisted electrodeposition of FeCo.

Keywords: High current efficiency electrodeposition, anomalous co-deposition, galvanostatic technique, saccharin additive, nanocrystalline FeCo

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