Short Communication

Mechanism for the Formation of Cuprous Oxide Nanowires in AAO template by Electrodeposition

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The effect of potential and pH on the formation of Cu2O and Cu nanowires in AAO template have systematically been studied by Potentiostate, XRD, SEM, TEM and EDX. The pure Cu2O nanowires were electrodeposited at voltage (−0.3 V) and pH (8.2). At higher voltage (−0.6 V and −0.5 V) with low pH 8.2, there was co-existence of Cu and Cu2O nanowires. At voltage −0.5 V with pH 9, the pure Cu2O nanowires are formed. A mechanism is proposed for the formation of cuprous oxides nanowires. The formation of pure Cu2O nanowires can be attributed to the formation of large size critical Cu nuclei, the larger size of nuclei favors the formation of pure cuprous oxides nanowires.

Keywords: Electrochemical Deposition; Cuprous Oxide; Growth; Nanowires

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