Short Communication

Al Thin Films Electrodeposited on Copper in an Aqueous Solution

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Electrodeposits formed from an aqueous solution by rectangular pulse voltages over a megahertz frequency range were investigated through scanning electron microscopy-energy dispersive X-ray (SEM-EDX) microanalysis and X-ray diffraction (XRD). The SEM-EDX analysis demonstrated that the electrodeposits comprised Al. The current efficiency increased with the cathode potential and tended to become constant, which is in accordance with the phenomenological theory of electrodeposition. The oscillatory change in the current efficiency occurred at resonant frequencies when the cathode potential was equal to the Al^{3+} potential barrier. The maximum current efficiency was 2.6 % at the resonant frequencies. XRD analysis revealed that the Al thin films had amorphous structures.

Keywords: Al thin film; aqueous solution; potential barrier; cathode potential; amorphous structure

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