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Role of additives in an eco-friendly electroless copper deposition bath

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This article reports the effect of additives in an eco-friendly electroless copper deposition bath containing glycerol as the complexing agent and dimethylamineborane (DMAB) as the reducing agent. The copper methanesulphonate bath was studied by adding stabilizers such as tolytriazole (TTA) and cytosine (CYS) with potassium hydroxide as the pH adjuster. The electroless bath was optimized by the addition of 1 ppm concentration of stabilizers at 11.50±0.25 pH. The effect of stabilizers on plating bath were studied and reported. Surface morphologies of the electroless copper coated epoxy substrates were investigated using Scanning Electron Microscope (SEM) and surface roughness by Atomic Force Microscopic (AFM) analysis. Crystallite size and specific surface area of copper thin film were observed by X-ray diffraction (XRD). Electrochemical characteristics were studied by cyclic voltammetry while the CYS does not have much effect.

Keywords: Glycerol, dimethylamineborane, tolytriazole, cytosine, crystallite size.