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### Effect of physical property and surface morphology of copper foil at electro deposition parameter

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The effect of additives, current density and plated temperature on the surface morphology and physical property during copper electrodeposition on the polyimide (PI) film was investigated. Two kinds of additives such as activator (additive A) and leveler (additive B) were used in this study. Electrochemical experiments, in conjunction with SEM, XRD and four-point probe, were performed to characterize the morphology and mechanical characteristics of copper electrodeposited in the presence of the additives. The surface roughness, crystal growth orientation and resistivity could be controlled using various quantity of additive B. High resistivity and lower peel strength were observed on the surface of the copper layer electroplated onto the electrolyte of no additive B. However, a uniform surface, lower resistivity and high flexibility were obtained when a combination of 20 ppm additive A and 100 ppm additive B was used. Large particles were observed on the surface of the copper layer electroplated onto the current density of 25mA/cm<sup>2</sup>. However, a uniform surface and lower resistivity were obtained when a current density of 10mA/cm<sup>2</sup> was used. One of the required important properties of FCCL is the flexibility of copper foil. High flexibility of FCCL could be obtained at the low current density rather than high current density. Moreover, the reasonable current density is 20mA/cm<sup>2</sup> considering the productivity and mechanical properties of copper foil. q

#### Biography

Tae-Gyu Woo has completed his Ph.D. at the age of 32 years from Chonbuk National University in Metal Engineering. He is the general manager of leaders in industry university cooperation center and adjunct Professor of Division of Advanced Materials Engineering. He has published more than 12 papers in reputed journals for the last five years.

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