

## Plasma Surface Treatment of Polyimide Films for Electroless Plating

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In this work plasma surface treatment effect of polyimide films on electroless plating is investigated. The technologies for copper metallization on polyimide films are essential parts in flexible printed circuit board fabrication. The plasma treatment has been successfully used strength of the electroless copper to the polyimide surface so that electroless copper plating can occur. Polyimide surface is exposed to NH<sub>3</sub>/Ar plasma for the improvement in adhesion between copper and polyimide surface. Immobilization of palladium particle catalyst on polyimide is essential before the copper plating in the electroless plating process and is realized by a wet process. The adhesion strength of the electroless copper to the polyimide surface is measured and correlated with the plasma induced chemical and physical modifications of the polyimide surface. A specific bonding configuration on the polyimide surface is shown to promote adsorption of palladium, which in turn promotes covalent bonding with copper. The relative importance of surface roughness and chemical bonding on the adhesion strength is discussed.