Copper Electrodeposition on Polyimide Substrate Using Polyaniline Film as a Seed Layer for Metallization of Flexible Devices

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The Metallization of flexible printed circuit boards is a key issue for the fabrication of flexible devices. In this study, Cu electrodeposition was performed on a flexible polyimide substrate using polyaniline film as a seed layer for the first time. A conductive polyaniline film was formed on the surface of the polyimide substrate by dip and spin coating methods. It was revealed that the spin coating method was advantageous in forming a uniform and continuous polyaniline film because it reduces the secondary nucleation of polyaniline by removing excess reactants from the polyimide substrate. Pd nanoparticles were also introduced onto the polyaniline-deposited substrate to promote Cu nucleation during the Cu electrodeposition process. With the aid of polyaniline film and Pd nanoparticles, a continuous and uniform Cu film was successfully deposited on a polyimide substrate.

Keywords: Flexible printed circuit board, electrodeposition, polyaniline, palladium, seed layer, copper

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