

Preparation and characterization of polyimide films modified by plasma treatments for copper metallization

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In this work, Kapton-H (pyromellitic dianhydride/oxydianiline), one of polyimide films, was modified by CHF₃/He plasma treatment. Surface modified polyimide films were analyzed by X-ray photoelectron spectroscopy (XPS), Fourier transform-IR (FT-IR) spectroscopy, atomic force microscopy (AFM). Changes in wettability were evaluated by measuring a contact angle with the sessile drop method. After a deposition of copper on surface modified polyimide films, an adhesion strength of the copper/polyimide system was measured. From the results, it was found that the plasma treatment successfully introduced fluorine functional groups on the polyimide surfaces. AFM and sessile drop method indicated the surface roughness and the surface energy of polyimide films were much increased by plasma treatment. The results explained the increased peel strengths of polyimide films with copper.