

## Surface and Adhesion Characteristics of Polyimide Film Treated by Atmospheric Pressure Plasma

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In this work, the effect of atmospheric pressure plasma treatments on surface properties of polyimide film are investigated in terms of X-ray photoelectron spectroscopy (XPS), contact angles, and atomic force microscopy (AFM). And, the adhesion characteristics of film are also studied in the peel strengths of polyimide/copper foil. As experimental results, the polyimide surfaces treated by atmospheric pressure plasma lead to an increase of oxygen-containing functional groups or polar component of the surface free energy, resulting in improving the adhesion characteristics of the polyimide/copper foil. Also, the roughness of the film surfaces, confirmed by AFM observation, is largely increased. These results can be explained by the fact that the atmospheric pressure plasma treatment of polyimide surface yields several oxygen complexes in hydrophobic surfaces, which can play an important role in increasing the surface polarity or adhesion characteristics of the polyimide/copper foil.