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**Atmospheric Pressure non-thermal plasmas for surface treatment of polymer films** HSIAO-FENG HUANG, CHUN-HSIANG WEN, Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, 310, Taiwan, R.O.C., HSIAO-KUAN WEI, CHWUNG-SHAN KOU, Department of Physics, National Tsing Hua University Hsinchu, 310, Taiwan, R.O.C. — Interest has grown over the past few years in applying atmospheric pressure non-thermal plasmas to surface treatment. In this work, we used an asymmetric glow dielectric-barrier discharge (GDBD), at atmospheric pressure in nitrogen, to improve the surface hydrophilicity of three kinds of polymer films, biaxially oriented polypropylene (BOPP), polyimide (PI), and triacetyl cellulose (TAC). This set-up consists of two asymmetric electrodes covered by dielectrics. And to prevent the filamentary discharge occur, the frequency, gas flow rate and uniformity of gas flow distribution should be carefully controlled. The discharge performance is monitored through an oscilloscope, which is connected to a high voltage probe and a current monitor. The physical and chemical properties of polymer surfaces before and after GDBD treatment were analyzed via water contact angle (CA) measurements, atomic force microscopy (AFM), and X-ray photoelectron spectroscopy (XPS) techniques.

Hsiao-Feng Huang  
Material and Chemical Research Laboratories,  
Industrial Technology Research Institute, Hsinchu, 310, Taiwan, R.O.C.

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