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**Influence of ECR SF<sub>6</sub> plasma treatment on polymer surface**Miao Ju Chuang<sup>1</sup>, Wan-Jun Chao<sup>2</sup><sup>1</sup>AE/ Chienkuo Technology University, Changhua City, Taiwan <sup>2</sup>National Chung Hsing University, Taichung, Taiwan

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We demonstrate a simple method to form high hydrophilic/hydrophobic contrast surfaces on polyethersulfone (PES) and poly(methyl methacrylate) (PMMA) samples in just a single processing step using a shadow mask in electron cyclotron resonance generated sulfur hexafluoride (SF<sub>6</sub>) plasma atmosphere. The surface properties of plasma-treated polymer films are characterized by contact angle measurement, atomic force microscopy (AFM), and x-ray photoelectron spectroscopy (XPS). The contact angle measurement and XPS analyses clearly indicate that the unmasked areas on the polymer surfaces were hydrophobic with large water contact angle due to surfaces contained a high proportion of the CF<sub>2</sub>-CF<sub>2</sub> group and therefore decreased the wettability of the surface. On the other hand, the masked areas on the polymer surfaces contained oxygen-containing groups, resulting in increased wettability of the surface. In addition, the surface wetting property of the masked areas was found to change drastically with the mask-to-substrate distance. The best contact in water contact angle obtained from the treated surfaces was larger than 100 degrees.

**Keywords**

Hydrophilic

Hydrophobic

X-ray photoelectron spectroscopy (XPS)

polyethersulfone (PES)

poly(methyl methacrylate) (PMMA)