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OES와 XPS를 이용한 대기압 플라즈마의 폴리프로필렌 표면 처리 분석

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Polymer surfaces were investigated after exposure to the dielectric barrier discharge (DBD) using different gases (He, CF₄) at atmospheric pressure. The relationship between the gas characteristics and the surface properties of polypropylene (PP) is determined by contact angle measurement, optical emission spectroscopy (OES) and X-ray photoelectronspectroscopy (XPS). Experimental results reveal that there is a relationship between the surface energy and surface chemical composition of PP, and also indicate that the hydrophilicity of PP in atmospheric pressure discharge is more dependent on the increase of surface energy by ionic bombardment than the increase of atomic oxygen composition at the surface and its hydrophobicity also depends on fluorine concentration on the PP surface. In addition, it turns out that in CF₄ discharge at atmospheric pressure, CF₃ molecular band exhibits a continuum band at the orange line in visible spectrum.