

## عنوان مقاله:

influence of plasma power to improvement of polyethylene surface properties

## محل انتشار:

پانزدهمین کنگره ملی مهندسی شیمی ایران (سال: 1393)

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## خلاصه مقاله:

In this study, the surface of polyethylene (PE) has been treated using radio frequency (RF) plasma system with oxygen gas. The effect of different plasma powers (25, 50, 75 and 100 W) on surface property of PE in term of surface hydrophilicity was investigated. Hydrophilicity values were evaluated using water contact angle (WCA) measurement at different powers. The successful treatment of the PE was confirmed by contact angle and X-ray photoelectron spectroscopy (XPS) analysis. Surface roughness and topology was also evaluated using atomic force microscopy (AFM) analysis. The results showed a remarkable increasing in surface hydrophilicity with increasing plasma power. Changes in surface chemical composition, made the PE surface highly hydrophilic, which is due to formation of oxygen-containing polar groups such as C-O, C=O, -O-C=O, -COH on the surface. In addition, AFM analysis show obvious changes in PE surface topology as a consequence of the increasing power strength.

## کلمات کلیدی:

plasma treatment, hydrophilicity, polyethylene

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