
Investigation of surface properties of atmospheric air plasma treated polystyrene and study of its antibacterial properties

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An atmospheric pressure air plasma jet has been used to modify the surface properties of polystyrene. Polystyrene was treated by air plasma and its surface properties have been studied using contact angle, X-ray diffraction (XRD), Scanning electron spectroscopy (SEM), Energy dispersive X-ray spectroscopy (EDS) and Raman spectroscopy. After the plasma treatment, contact angle decreased significantly as the treatment time was increased. From scanning electron microscope observation, the surface roughness increased due to the effect of plasma discharge, and there were no significant changes observed using XRD and Raman spectroscopy. Also, the antibacterial properties of polystyrene have been investigated. The results show that using an air plasma jet for surface modification of polystyrene is worthwhile to change its surface properties without changing its bulk properties.