

Nanostructured Surface and Superhydrophobic Properties of ePTFE Materials

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Abstract

Structured surface displaying microroughness or nanoroughness are significantly more hydrophobic than smooth surfaces. This study aims to produce nanostructured surface on ePTFE surface by plasma etching process in order to further enhance their hydrophobic properties and applications. The results showed that a porous and needle-like structure can be formed on ePTFE surface after O₂ plasma treatment at a higher RF power (> 400W), which leading to the wetting angle significantly increased to over 160° due to the occurrence of the lotus effects. At high energy oxygen plasma condition, etching process predominates the surface modification of PTFE materials rather than by the oxidation or cross-linking reaction.

Keyword : Superhydrophobic, ePTFE, Nanostructured surface