Atmospheric rf plasma for superhydrophobic coatings

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Superhydrophobicity has recently drawn a great deal of attention for both fundamental understandings and practical applications due to its potential applications in various technologies and consumer products such as weather-resistant self-cleaning fabrics, windshields, display panels, microfluidic devices, etc. Superhydrophobicity requires both hydrophobic surface chemistry and proper surface roughness. In this talk, we will discuss one-step deposition of superhydrophobic coatings on various substrates without pre-roughening process using atmospheric rf plasma. The coatings can be deposited on wafers, metals, glasses, fabric, or papers. We have tested CF4/H2, benzene, and tetramethylsilane as precursor gases. Among these, tetramethylsilane produced the most robust superhydrophobic coatings.