

## Solvent effect on aggregation of SiO<sub>2</sub>/HDTMS particles for brush-painted self-cleaning films

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The self-cleaning property has been utilized in numerous industrial fields such as solar cell panels and windows of the automobile. Various technology has been applied to prepare superhydrophobic features such as dip-coating, sol-gel, and wet etching. However, these approaches still have limitations of coating condition and environment to use industrials field and diverse substrate. The brush painting method has numerous potential to apply the various fields for making high roughness of the surface without substrate and solvent dependence. In this paper, superhydrophobic silica films were manufactured via the brush painting method by controlling solvent composition to improve the roughness of the films according to the agglomeration of silica particles. Surface modified hydrophobic silica particles with 10 nm were synthesized using the sol-gel method by controlling ammonium solution. By adjusting the solvent ratio to enhance the aggregation, hydrophobic silica particles were coated on the different types of substrates using the brush painting method. Finally, the self-cleaning property was acquired with a high contact angle of 150° and a low sliding angle of 10°.