

Supplementary Materials

Long-Time Persisting Superhydrophilicity on Sapphire Surface via Femtosecond Laser Processing with the Varnish of TiO₂

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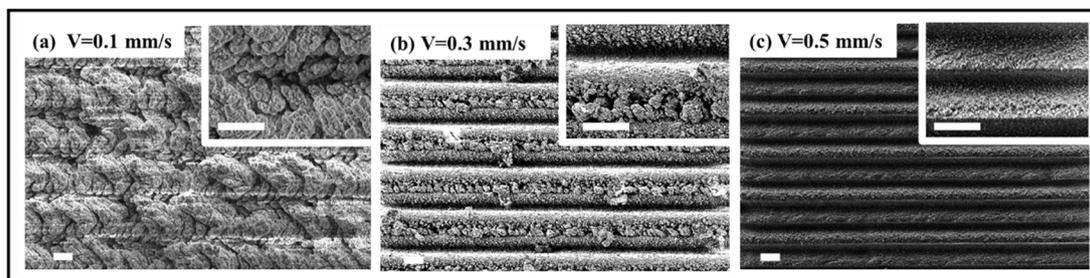


Figure S1. Observation of the surface morphologies after femtosecond laser processing with different scanning speeds (a–c). Scale bars are 30 μm .

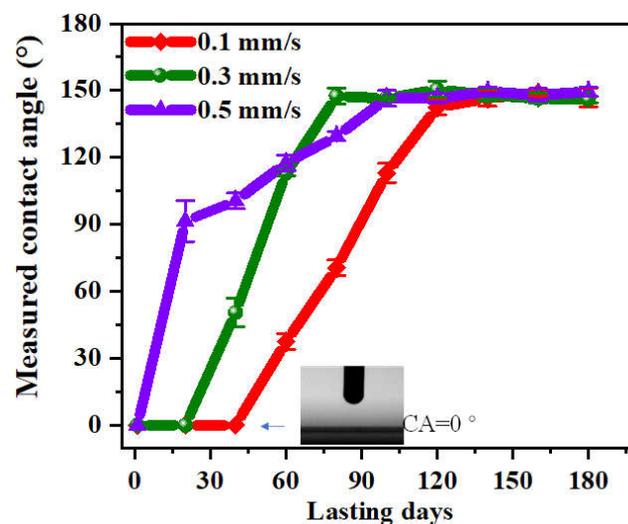


Figure S2. Measured superhydrophilic permanence over the time for three different samples without TiO₂ varnish. Superhydrophilic (CA = 0°) property of V=0.1, 0.3, 0.5 mm/s can be maintained for 45 days, 17 days and a few days, respectively.

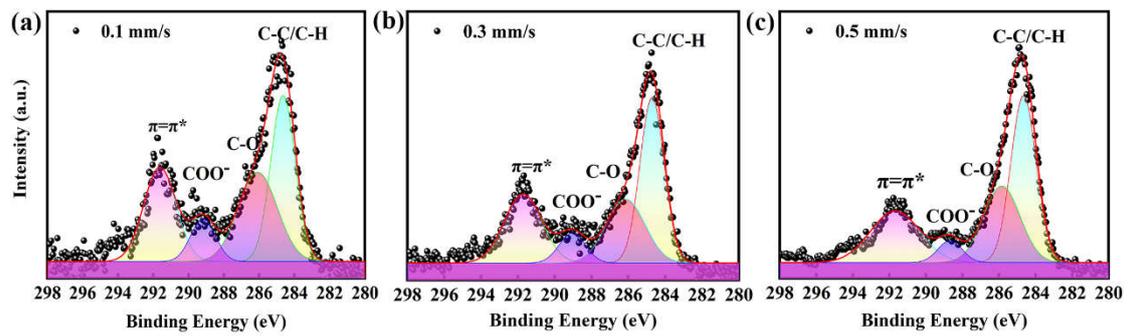


Figure S3. Measured XPS results of C 1s spectra for the laser treated samples with different scanning speeds (a–c).

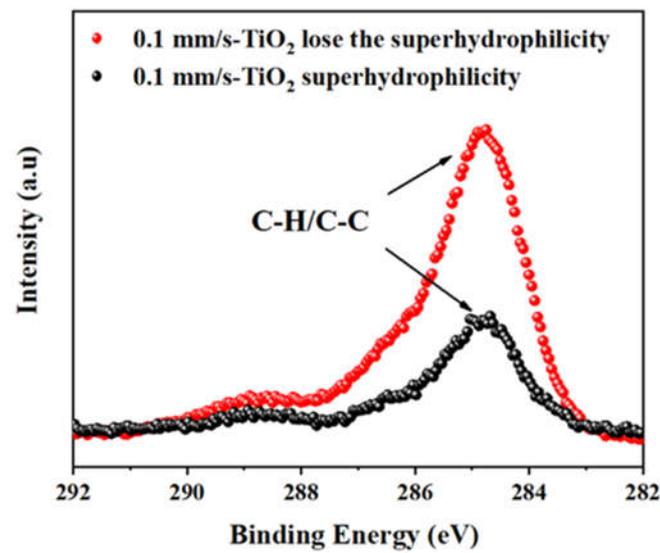


Figure S4. Measured XPS results of the sample surfaces before and after losing the superhydrophilicity. Clearly, there is a significant increase in the hydrophobic group C-C/C-H; moreover, the atomic percentage of the carbon element on the surface is increased by 9.42%. This indicates that some uncoordinated Al^{3+} ions are still present on the structured surface.