Supplemental Document

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Femtosecond laser patterned superhydrophobic/hydrophobic SERS sensors for rapid positioning ultratrace detection: supplement

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Fig. S1. Schematic illustration of the laser fabrication process for patterned SH/HB surfaces.



Fig. S2. 3D profiles, cross-sectional profiles, and surface roughness of the laser-ablated surface at the scanning speeds of (a, c, and e) 20 mm/s, and (b, d, and f) 170 mm/s, respectively.

As shown in Fig. S3a, when the diameter of HB pattern is 400 μ m, the analytes are mainly deposited along the edges of HA pattern. As the diameter of HB pattern decreases to 300 μ m, the concentration effect is further enhanced (Fig. S3b), resulting in an increase in the SERS intensity. However, when the diameter of HB pattern is reduced to 200 μ m, the distribution of sediments becomes unstable (Fig. S3c), and partial analytes are deposited on the SH surface. Since the SERS signals are measured at the edges of HA-HB patterns, the Raman signal on the 200- μ m-HB pattern is weaker than that on the 300- μ m-HB pattern.



Fig. S3. Micrographs of polystyrene deposited on hybrid SH/HB surfaces. The diameters of HB patterns are (a) $400 \mu m$, (b) $300 \mu m$, and (c) $200 \mu m$, respectively.



