Supporting Information

Electrochemical SERS on 2D Mapping for Metabolites Detection

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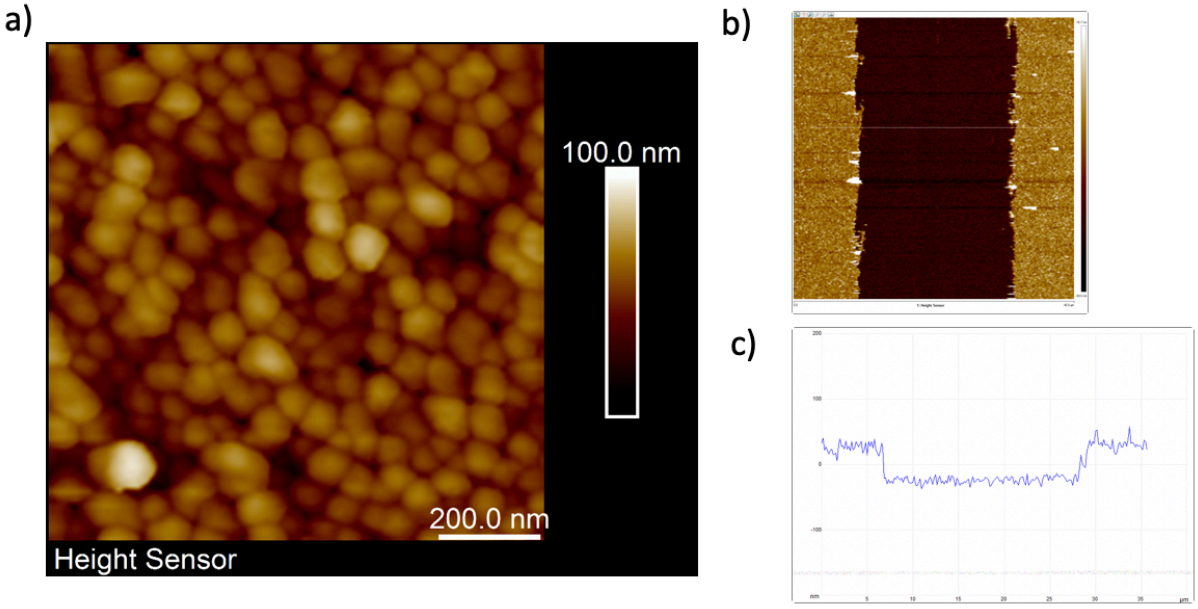

Figure S1. a) The morphology of AuNP-coated substrates; b) The cross-section image of AuNP-coated substrates; c) 2D plot of the cross-section, which shows the thickness of AuNPs at about 50 nm.

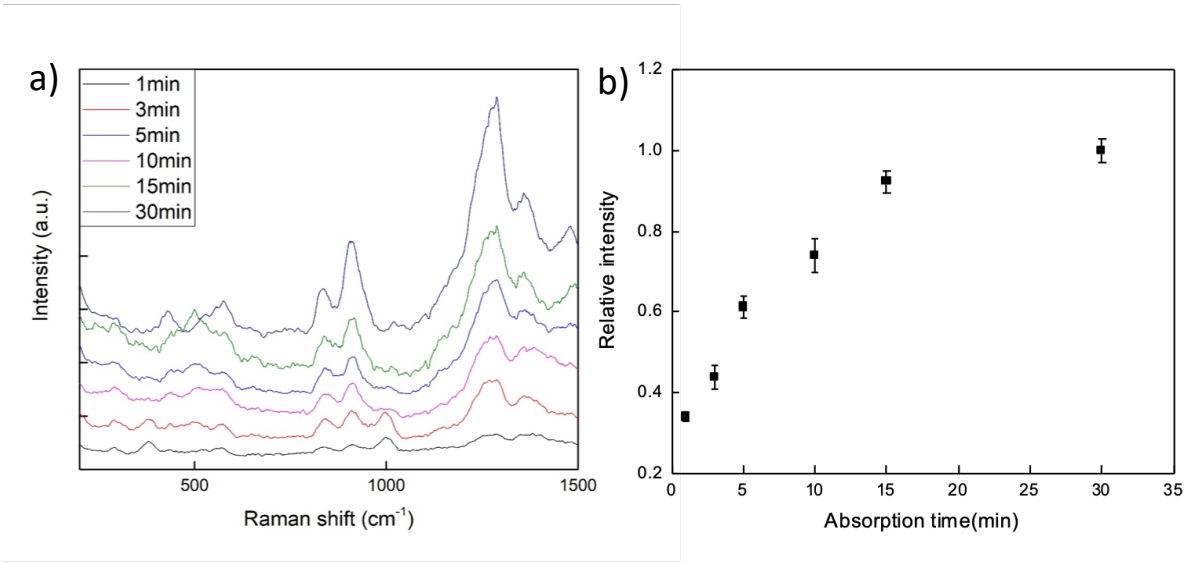

Figure S2. (a) SERS spectrum of 6-TGNs with incremental absorption time (b) Relative intensity of different absorption time at 1290 cm^{-1}, which indicates that the absorption saturates after 30 mins.

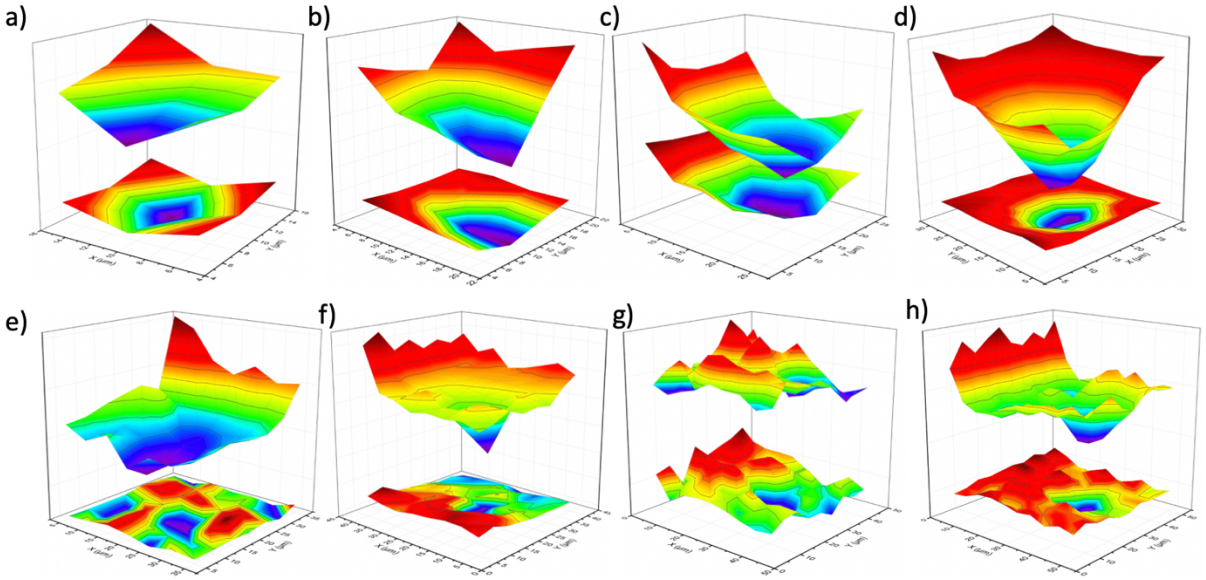

Figure S3. Surface mapping of 5 μM 6-TGNs with varying scan range at a) 15 × 15, b) 20 × 20, c) 25 × 25, d) 30 × 30, e) 35 × 35, f) 40 × 40, g) 45 × 45, h) 50 × 50 μm^2 before and after applying voltage at -0.6 V. The lower one is the pre-enhanced intensity distribution while the upper one is the intensity distribution after applying voltage.

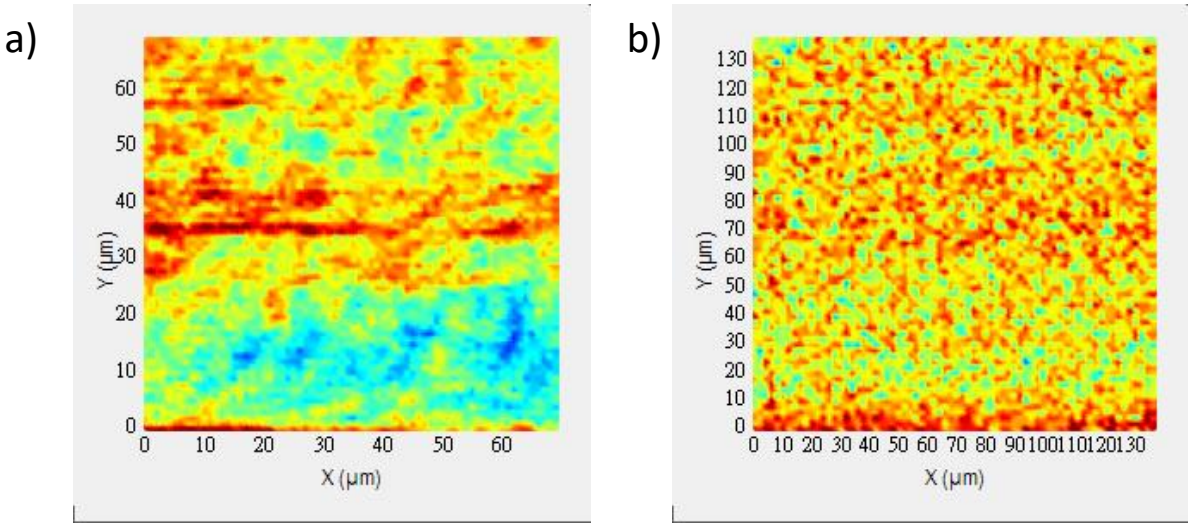

Figure S4. Surface mapping of a) AuNPs substrate at a scan resolution of 1 µm, and b) silicon wafer at a scan resolution at 2 µm.

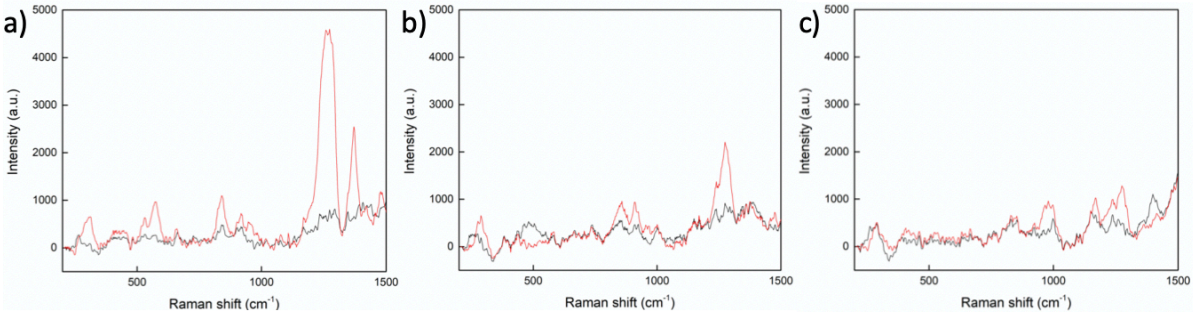

Figure S5. Electrochemical SERS result of 6-TGNs at a) 500, b) 50, and c) 10 nM. The black line indicates Raman spectrum before apply voltage, while red line indicates Raman spectrum after applying voltage at -0.8 V vs. Ag/AgCl.