Electronic Supplementary Information

Nanowell-enhanced Raman spectroscopy enables the visualization and quantification of nanoplastics in the environment

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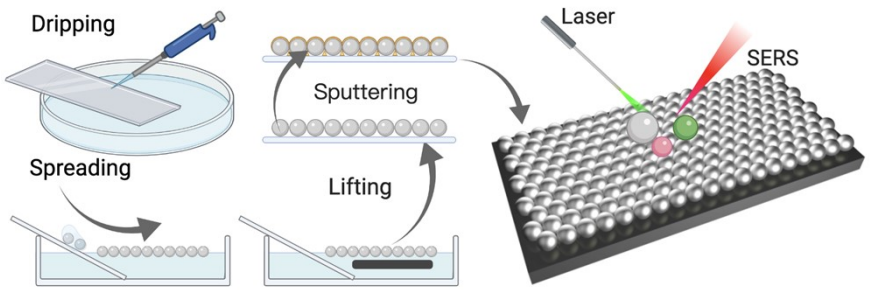

Figure S1. the assembling setup for SiO_2 PC@Ag substrates.

The coffee ring effects refers to the unchanged water-air-substrates interface during sample evaporation. The following pictures illustrate the evaporation of 10μL DI water pipetted on SiO_2 PC@80Ag substrates. Due to its hydrophobicity property, the WCA of the droplet on the substrates is more than 90℃. The WCA decreased as the water evaporates, keeping the interface at the very same location until the volume is too low.

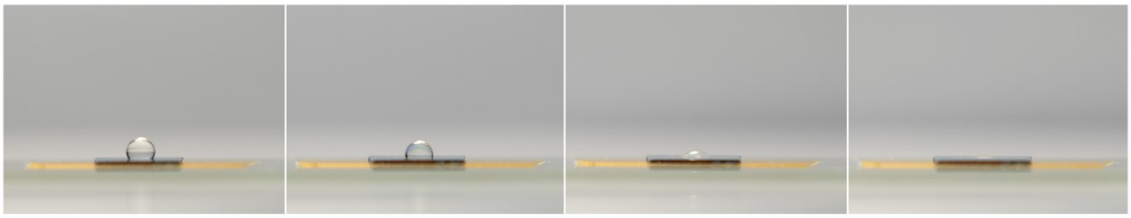

Figure S2. Coffee ring effects during sample evaporation

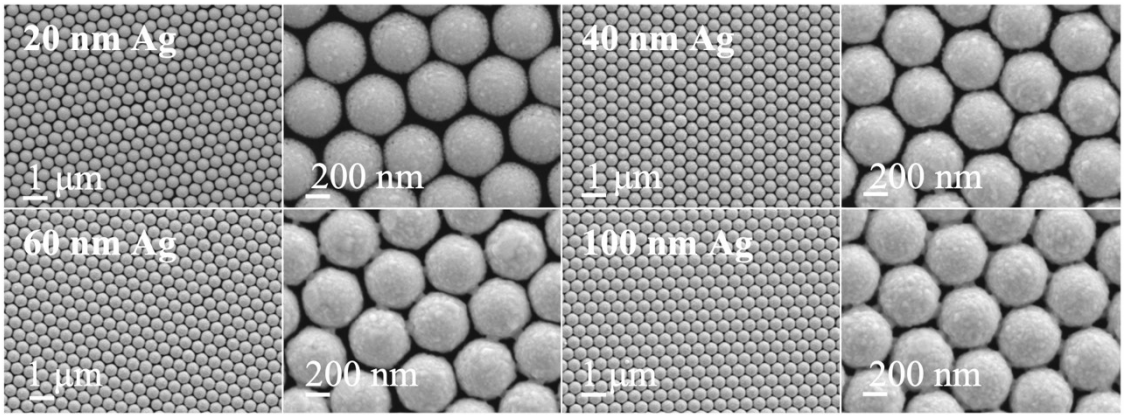

Figure S3. SEM graphics of 500nm SiO_2 PC@Ag (20, 40, 60, 100nm)

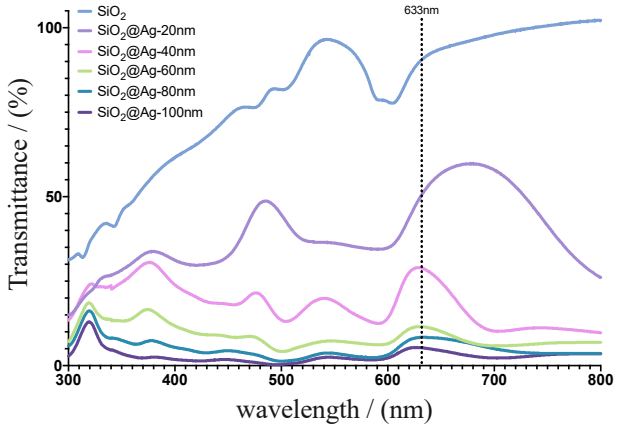

Figure S4. UV-Vis spectrum of the SiO_2 PC and SiO_2 PC@ Ag with different Ag shell thickness.

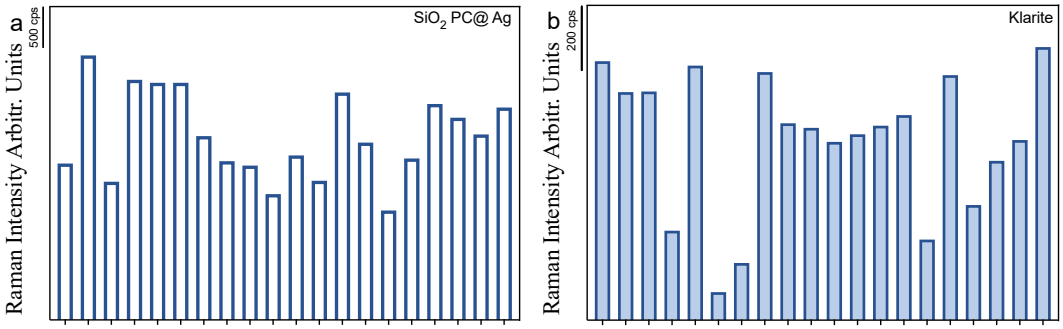

Figure S5. Peak intensities of 1078cm^{-1} on random 20 points collected from a) SiO_2 PC@80Ag substrate and b) Klarite substrates.

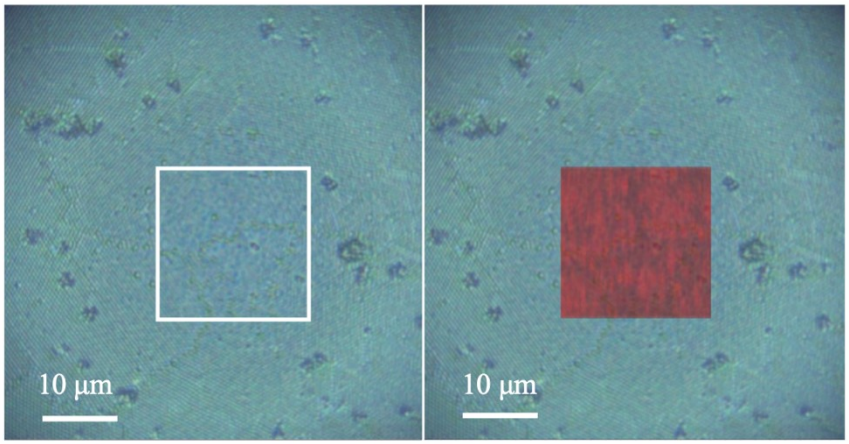

Figure S6. Map data and map area overlay of the uniformity measurements spanning 400µm^2 area square on SiO_2 PC@Ag substrates.

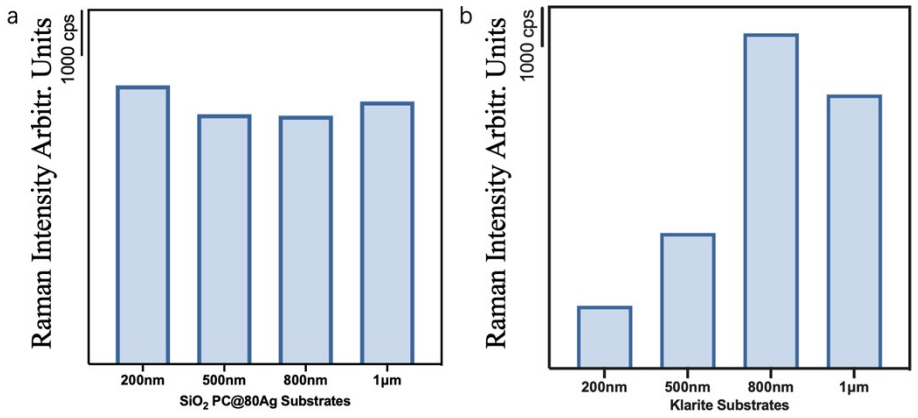

Figure S7. Characteristic peak intensity at 1003cm^{-1} of a) 200nm, 500nm, 800nm, and 1µm PS spheres on SiO_2 PC@80Ag and b) Klarite substrates.

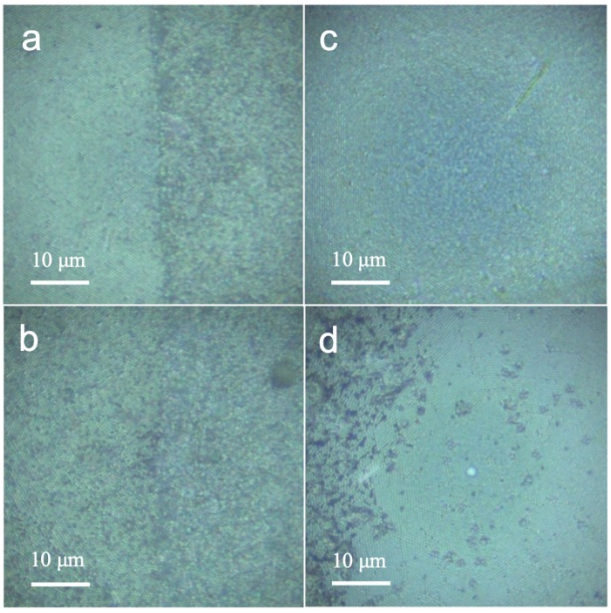

Figure S8. Microscope morphology of 200nm, 500nm, 800nm, 1μm PS nanosphere on SiO_2 PC@Ag substrates.

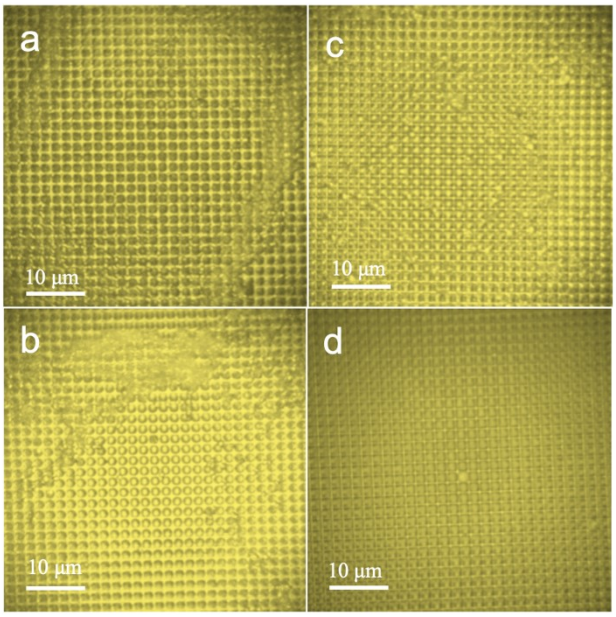

Figure S9. Microscope morphology of 200nm, 500nm, 800nm, 1μm PS nanosphere on Klarite substrates.

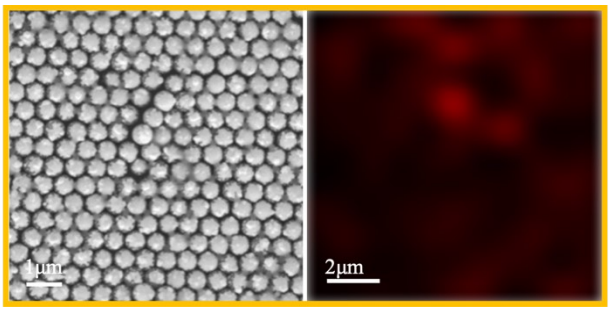

Figure S10. 200nm PS nanosphere mapping results on SiO_2 PC@Ag substrates.

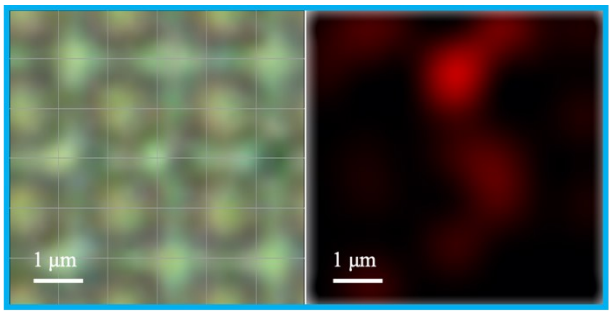

Figure S11. 200nm PS nanosphere mapping results on Klarite substrates.

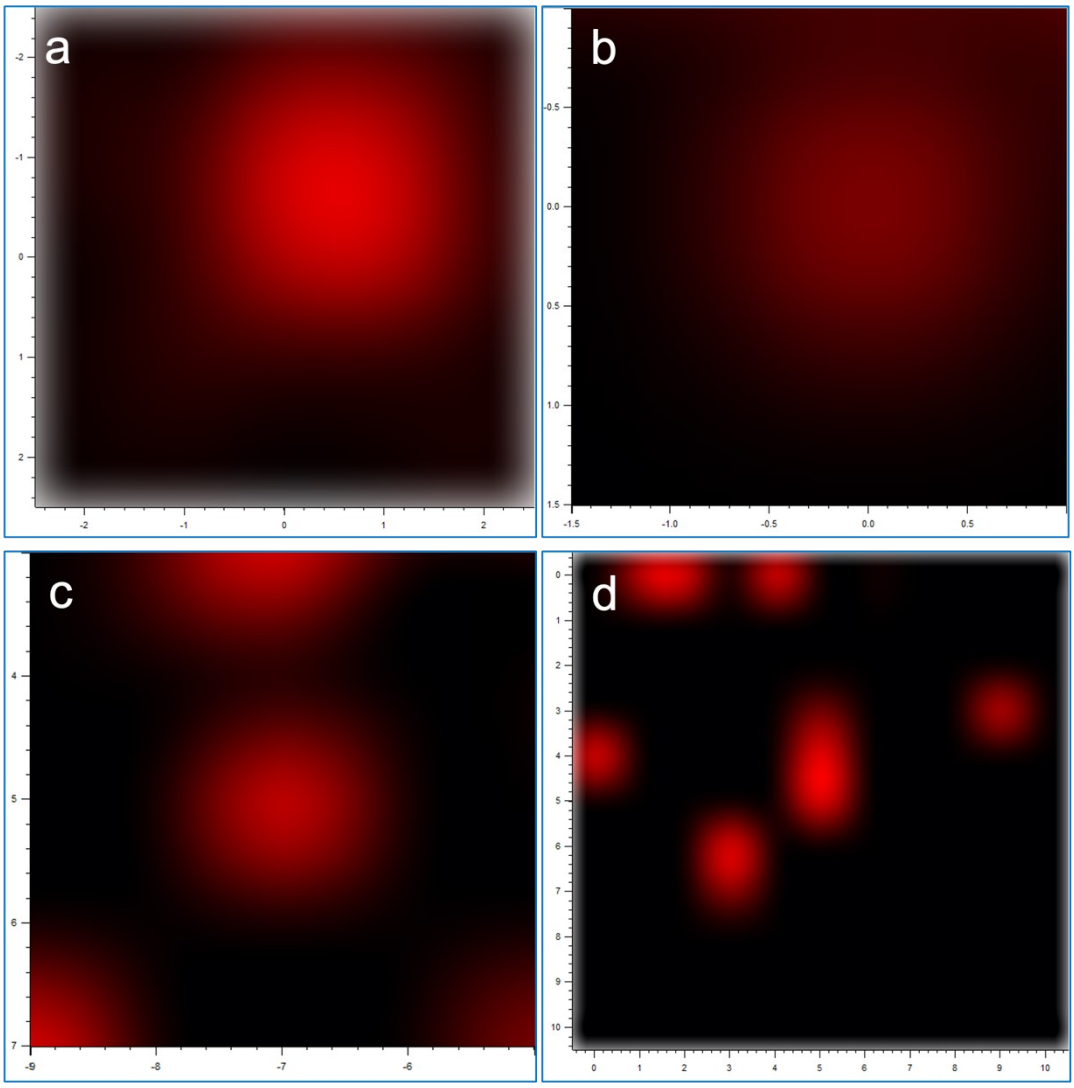

Figure.S12 Raw images of mapping results correspond to a) 1μm, b) 800nm, c) 500nm, and d) 200nm PS spheres.