

NANOFABRICATED GOLD NANOSTRUCTURES FOR SINGLE PARTICLE SURFACE ENHANCED RAMAN SCATTERING OF MIXED LANGMUIR-BLODGETT FILMS

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To further advance surface enhanced Raman scattering (SERS) to a technique that is both reproducible and applicable to a wide range of chemical systems, better substrates are needed. That is, greater control over nano-architecture is required. Advances in scanning probe-based nanolithography have opened doors to achieve this goal. Here reproducible fabricated substrates are tailored to generate effective enhancing single particles surfaces, which are in turn, used for trace detection. The test system here is a mixed Langmuir-Blodgett film consisting of the probe dye molecule in a spectroscopic inert matrix of arachidic acid. The SERS signal from the film is collected via point by point collection giving a spatial resolved spectral map. This control of architecture when coupled with advancing instrumentation leads to wide ranges of possible sensing applications as well as a practical and insightful nanoparticle characterization. One can envision the tailoring of the surface chemistry of single nanostructures to be selective to particular classes of molecules. When matched with mapping and imaging abilities, assay could be generated to be used in the analysis of multi-component systems.

References:**References**

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