

## Rapid Close-packed Assembly of Gold Nanorods using Oleic Acid Droplet for Oil-soluble Molecule Detection

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Detection of oil-soluble molecules holds great importance since oils can be contaminated by molecules hazardous to environment and human body. Conventionally, liquid chromatography is generally used for the detection of molecules in organic solvents. However, proper choice of column is necessary for the analysis, making inadequate for the analysis of unknown sample. Here, we propose a rapid close-packed assembly of gold nanorods at oleic acid/water interface for the detection of oil-soluble molecules in oleic acid droplet via surface enhanced Raman spectroscopy (SERS). Gold nanorods were closely packed by adding a droplet of oleic acid on gold nanorods at water/air interface. Due to electrostatic attraction between gold nanorods and oleic acid droplet, nanorods rapidly assemble and become closely packed due to weakened electrostatic repulsion between nanorods. Close-packed assembly of gold nanorods is systematically characterized by dark-field scattering spectrophotometer and transmission electron microscope. Oil-soluble molecules in oleic acid droplet were analyzed by SERS.