

Abstract Submitted
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Electric field induced self-assembly of monolayers of gold nanoparticles for surface enhanced Raman scattering applications. SUCHANDRA DAS, NAGA MUSUNURI, New Jersey Inst of Tech, PAVEL KUCHERYAVY, JENNY LOCKARD, Rutgers University Newark, IAN FISCHER, PUSHPENDRA SINGH, New Jersey Inst of Tech, NEW JERSEY INSTITUTE OF TECHNOLOGY COLLABORATION, RUTGERS UNIVERSITY NEWARK COLLABORATION — We present a technique that uses an electric field in the direction normal to the interface for self-assembling monolayers of gold nanoparticles on fluid-liquid interfaces and freezing these monolayers onto the surface of a flexible thin film. The electric field gives rise to dipole-dipole and capillary forces which cause the particles to arrange in a triangular pattern. The technique involves assembling the monolayer on the interface between a UV-curable resin and another fluid by applying an electric field, and then curing the resin by applying UV light. The monolayer becomes embedded on the surface of the solidified resin film. We are using these films for surface enhanced Raman scattering (SERS) applications. Initial measurements indicate improved performance over commercially available SERS substrates.

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