

Abstract Submitted  
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**Nano-Optical Properties of Noble Metal Nano-Arrays** FERNANDO MONJARAZ<sup>1</sup>, DIPIKA PATEL<sup>2</sup>, SOYEUN PARK, Texas Tech University, DR. PARK'S BIOPHYSICS LAB TEAM — NanoSphere Lithography (NSL) is a relatively inexpensive versatile, and high throughput technique which allows us to create two dimensional (2D) periodic nanoparticle arrays. Using NSL, we successfully fabricated size-variable gold nanoparticles. We controlled sizes (16 nm to 610 nm) and spacing (115 nm to 1  $\mu$ m) of patterns by varying sizes of the nano-spheres (200 nm to 1 micron). The size and spacing of the pattern can be independently controlled by adjusting the sphere deposition parameters such as deposition speed and humidity to form either a monolayer/bilayer. The heights of the nanoislands are also controlled by the deposition of gold particles. The obtained 2D gold nano-arrays are known to display the size-dependent nanoparticle optical properties. We have examined the size-dependent nano-optical properties of 2D gold nanoarrays by measuring the Localized Surface Plasmon Resonance Spectroscopy using the UV-VIS spectrometer. This systematic investigation will provide the fundamental information to use the 2D nanoarrays as nanosensors to detect the chemical and biological events.

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