

Detection of Mycoplasma with SERS
Current Laboratory Results and Progress Towards Clinical Applications

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Development of diagnostic methods for rapid and sensitive identification of biomedical pathogens is essential for the advancement of therapeutic and intervention strategies necessary to protect public health. Current diagnostic methods, e.g. culture, isolation, PCR, antigen detection, and serology, are often time-consuming, cumbersome, or lack sensitivity. We have investigated several different nanoparticle platforms for surface-enhanced Raman (SERS)-based identification and classification of pathogens. These platforms included metal colloids, nanosphere arrays, OAD nanorod arrays, and layer-by-layer nanoparticle assembly. The current talk will address the development of spectroscopic methods for pathogen detection based on these nanostructured SERS platforms. This presentation will describe the use of these nanofabricated arrays in conjunction with SERS for direct detection of the respiratory pathogen *Mycoplasma pneumoniae*. An overview of the challenges and successes that have marked progress toward a real-time SERS-based diagnostic platform for these bacteria is described, as well as strategies employed to address future clinical applications.