

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Aligned Silver Nanorod Array as SERS Substrates for Viral Sensing¹ YIPING ZHAO, Department of Physics and Astronomy, SARATCHANDRA SHANMUKH, Department of Chemistry, STEPHEN B. CHANEY, Department of Physics and Astronomy, LES JONES, Department of Infectious Diseases, RICHARD A. DLUHY, Department of Chemistry, RALPH A. TRIPP, Department of Infectious Diseases, The University of Georgia — The aligned silver nanorod array substrates prepared by the oblique angle deposition method are capable of providing extremely high enhancement factors ($\sim 10^9$) at near-infrared wavelengths (785 nm) for a standard reporter molecule 1,2 trans-(bis)pyridyl-ethene (BPE). The enhancement factor depends strongly on the length of the Ag nanorods, the substrate coating, as well as the polarization of the excitation laser beam. With the current optimum structure, we demonstrate that the detection limit for BPE can be lower than 0.1 fM. The applicability of this substrate to the detection of bioagents has been investigated by looking several viruses, such as Adenovirus, HIV, Rhinovirus and Respiratory Syncytial Virus (RSV), at low quantities (~ 0.5 uL). Different viruses have different fingerprint Raman spectrum. The detection of virus presented in infected cells has also been demonstrated.

¹Work supported by NSF and NIH

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Date submitted: 28 Nov 2005

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