

Abstract Submitted
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Surface Enhanced Raman Scattering from Vertical Arrays of Silver Nanowires G. CHEN, Department of Physics, The Pennsylvania State University, University Park, PA 16802 USA, J. HABIB, Illuminex Corporation, T. RUSSIN, H.G. GUITIERREZ, PETER EKLUND, Department of Physics, The Pennsylvania State University, University Park, PA 16802 — We present results of optical studies of surface plasmons and surface enhanced Raman scattering (SERS) from vertical arrays of Ag nanowires. Arrays based on Ag wires with mean diameters $d=100$ nm have been studied. The wires were grown electrochemically in the pores of anodic aluminum oxide (AAO). To test the SERS activity of these vertical Ag nanowire arrays, we have carried out experiments to detect pyridine on the surface of the nanowires. The SERS enhancement factor is found to be in the order of 10^6 compared to the Raman signal from bulk liquid. We also studied the surface plasmons of these nanowire arrays in transmission with the incident photon wavevector approximately parallel to the wire axis. Calculations of the plasmon resonances have been made and are found in reasonable agreement with the data.

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