Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Surface-enhanced Raman scattering by silver clusters at planar dielectric interface above the critical angle. DENIS PRISTINSKI, NIST, SILIU TAN, HENRY DU, Stevens Inst of Tech — Light refraction at the planar interface of dielectric media prevents light propagation in the optically denser medium at angles above the critical value. This limitation is broken when the evanescent wave is excited at the opposite side of the interface. The polarization and angle dependence of the light emitted above the critical angle has been previously studied for both luminescence and elastic scattering. In this work we demonstrate the possibility to quantitatively characterize the effect using surface-enhanced Raman signal from thiocyanate molecules adsorbed on clustered silver nanoparticles at the water-glass interface. Evanescently excited silver nanoparticles demonstrate stronger polarization dependence for both absorption and emission, and wider range of emittance angles, as compared with the model of a radiating dipole at a similar interface.

Denis Pristinski
NIST

Date submitted: 27 Nov 2007 Electronic form version 1.4