

Abstract Submitted
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Molecular Adsorption on Nano Colloidal Particles Probed by Second Harmonic Generation SHIH-HUI JEN, HAI-LUNG DAI, Department of Chemistry, University of Pennsylvania, Philadelphia, PA 19104-6323 — It is shown that second-harmonic generation (SHG), detected at 90 degree angle from the fundamental beam propagation direction, can be used to probe molecular adsorption on spherical nano colloidal particles with diameter as small as 50 nm. Measurements done with the malachite green dye adsorbed on polystyrene particles with diameters ranging from 50 to 250 nm show that the SHG signal from these surface adsorbed molecules tilts toward larger scattering angles when the particle size becomes smaller. This phenomenon can be rigorously described by the nonlinear Rayleigh-Gans-Debye theory and used for measuring the density and adsorption free energy of molecules adsorbed on nanometer size colloidal particles.

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