

Sessions

Monday

Tuesday

Wednesday

Thursday

WFF2 4:00pm (Invited)

Angle-resolved second harmonic generation from colloidal particles in suspension, Arjun Yodh, Univ. of Pennsylvania, USA.

We report angle-resolved second-harmonic generation measurements from suspensions of centrosymmetric micron-size polystyrene spheres with surface-adsorbed dye (malachite green). We investigated these radiation patterns using several polarization configurations and particle diameters. A simple Rayleigh-Gans-Debye model accounts for the experimental SHG scattering anisotropy.

WFF3 4:30pm (Invited)

Nonlinear surface vibrational spectroscopies probing intermolecular interactions, Mischa Bonn, Leiden Inst. of Chemistry, The Netherlands; Christian Hess, Fritz-Haber-Inst. der Max-Planck-Gesellschaft, Germany; Martin Wolf Freie Univ. Berlin, Germany; Minhaeng Cho, Korea Univ., Korea.

The second-order nonlinear optical technique of infrared-visible sum-frequency generation is a versatile tool in studying surface structure and dynamics. We demonstrate for carbonmonoxide adsorbed on Ruthenium that higher-order (third and fourth) nonlinear spectroscopic techniques can be used to obtain information about intermolecular coupling of surface molecules.

WFF4 5:00pm

Energy transfer in light-harvesting dendrimers, Valeria D. Kleiman, Univ. of Florida, USA; Dale McMorrow, Joseph S. Melinger, Naval Res. Lab., USA.

Femtosecond pump-probe spectroscopy is used to probe the ultrafast dynamics of electronic excitations in phenylacetylene symmetric and unsymmetric dendrimers. The transients show a number of components, with timescales ranging from <300fs to several tens of picoseconds. We interpret our results in terms of the Förster mechanism in which energy transfer occurs through dipole-dipole interactions.

WFF5 5:15pm

Short pulse Nd:YAG laser in dental enamel surface: Spectroscopic analysis, A. Antunes, S.S. Vianna, A.S.L. Gomes, W. de Rossi, D.M. Zecell, IPEN-CNEN, Brazil.

We used short pulse Nd:YAG laser which damage in the tissue is reduced and heat load can be better controlled. The use of nano and picosecond pulselength also assures better accuracy in affected zone as well as smaller deepness. For the analysis of modifications due to chemical reactions we used a FTIR. These results have indicated a chemical reaction of organic and mineral compounds by laser.

PEREIRA, A.A.

WGG 3:30pm-5:15pm

Room: Paradise C

OPTICAL MANIPULATION AND CHARACTERIZATION OF NANOCCLUSERS II

Marsha I. Lester, Univ. of Pennsylvania, USA, Presider

WGG1 3:30pm (Invited)

Mass selected argon nano-matrix isolation spectroscopy, M.A. Johnson, Yale Univ., USA.

We describe a method which uses preparative mass spectrometry in conjunction with pulsed infrared laser photodissociation spectroscopy to measure the spectra of molecular ions and ion-molecule complexes embedded in argon clusters. The advantages of this technique are its generality, its ability to study delicate and reactive species at low temperature, and the high sensitivity afforded by action spectroscopy in the large mass loss regime.

WGG2 4:00pm (Invited)

Oriented dynamics in small clusters, Michael C. Heaven, Emory Univ., USA.

The effects of relative orientation on collision and reaction dynamics can be examined by characterizing the unimolecular decay of van der Waals complexes. Through selective excitation of the intermolecular degrees of freedom, a considerable range of starting configurations may be accessed. Recent results from spectroscopic studies of the NH/D-Rg, CN-H₂/D₂ and I₂-Rg complexes will be Presented.

WGG3 4:30pm

Photon probes of nanoscale metal-mineral interactions, S.H. Withers, A. Schulte, G. Braunstein, R.E. Peale, Univ. of Central Florida, USA; K.M. Beck, W.P. Hess, Pacific Northwest Natl. Lab., USA; R.J. Reeder, State Univ. of New York-Stony Brook, USA.

Understanding the interactions of metal ions with minerals on nanometer length scales is important to a variety of environmental remediation scenarios. Useful photon probes, including x-ray absorption fine structure, x-ray microprobe, laser induced micro-fluorescence, and infrared absorption suggest that uptake of Nd³⁺ by calcite involves inclusion of a hydration shell.

WGG4 4:45pm (Invited)

Metal-ligand bonding: Gas-phase electronic spectroscopy and ab initio calculation, Philip Brucat, Univ. of Florida, USA.

Novel gas-phase ion complexes exhibiting transition-metal/ligand interaction are studied by resonant photodissociation spectroscopy at optical resolution sufficient to reveal structure and bonding behavior in both ground and excited electronic states. These properties are compared with quantum chemical and ab initio computation, providing a quantitative benchmark for such methods.