

List of Publications

1. A Simple Route of multimodal composite nanoparticles, Kim Y. van Berkel, Ashley M. Piekarski, Paul H. Kierstead, Eric D. Pressly, Paresh C. Ray and Craig J. Hawker, *Macromolecules*, (*communication*) **2009** (ASAP Article)
2. Sequence Specific HCV-RNA Quantification Using Size Dependent Nonlinear Optical Properties of Gold Nanoparticles, Jelani Griffin, Anant Kumar Singh, Dulal Senapati, Eumin Lee, Kevin Gaylor, Jeanette Jones-Boone, and Paresh Chandra Ray, *Small*, **2009** (ASAP Article)
3. Photosensitized Singlet Oxygen Production upon Two-Photon Excitation of Single-Walled Carbon Nanotubes and Their Functionalized Analogs, Naveen Gandra, Pui Lam Chiu, Wenbing Li, Yolanda R. Anderson, Somenath Mitra, Huixin He, and Ruomei Gao, *J. Phys. Chem. C*, **2009** (in press)
4. Size and Distance Dependent NSET Ruler for Selective Sensing of Hepatitis C virus RNA, Jelani Griffin, Anant Kumar Singh, Dulal Senapati, Patsy Rhodes, Kanieshia Mitchell, Brianica Robinson, Eugene Yu, and Paresh Chandra Ray, *Chem. Eur. J.*, **2009**, 15, 342-351.
5. On the origin of the large electron correlation contribution to the hyperpolarizabilities of some diacetylene rare gas compounds, Pluta, Tadeusz; Avramopoulos, Aggelos; Papadopoulos, Manthos G.; Leszczynski, Jerzy, *J. Chem. Phys.* **2008**, 129, 144308.
6. Highly Selective detection of Hg²⁺ ion using NLO properties of gold nanomaterial, Darbha, G. K., Rai, U. S., Singh, A. K., Ray, P. C., *J. Am. Chem. Soc.*, **2008**, 130, 8038-8042
7. Simple STM tip functionalization for rapid DNA sequencing: an Ab initio Green's function study, Yanov. I., Palacios, J., Hill, G., *J. Phys. Chem. A*. **2008**; 112, 2069-73
8. Gold Nanoparticle Based NSET For Monitoring Mg²⁺ Dependent RNA Folding Griffin, J.; Ray, P. C., *J. Phys. Chem. B.; (Letter)*; **2008**; 112, 11198-11201
9. Electric Dipole (Hyper)polarizabilities of Selected X₂Y₂ and X₃Y₃ (X = Al, Ga, In and Y = P, As): III-V Semiconductor Clusters. An ab Initio Comparative Study, Karamanis, Panaghiotis; Pouchan, Claude; Leszczynski, Jerzy, *J. Phys. Chem. A* **2008**, 112, 13662
10. Gold Nanorod Based Sensing of Sequence Specific HIV-1 Virus DNA using Hyper Rayleigh Scattering Spectroscopy, Darbha, G. K., Rai, U. S., Singh, A. K., Ray, P. C., *Chem. Eur. J.*, **2008**, 14, 3896-3903

11. Singlet Oxygen Chemistry in Water. A Porous Vycor Glass-Supported Photosensitizer .David Aebisher, Nikolay S. Azar, Matibur Zamadar, Naveen Gandra, Harry D. Gafney, Ruomei Gao, and Alexander Greer, *J. Phys. Chem. B*, **2008**, 112, 1913-1917.
12. Miniaturized NSET Sensor for Microbial Pathogens DNA and Chemical Toxins, Darbha, G K, LE, Glenn, E, Anderson, Y R, Preston F, Mitchell K, Ray P. C., *IEEE Sensor Journal*, **2008**, 8, 693-701
13. Polarizability evolution on natural and artificial low dimensional binary semiconductor systems: A case study of stoichiometric aluminum phosphide semiconductor clusters, Karamanis, Panaghiotis; Xenides, Demetrios; Leszczynski, Jerzy, *J. Chem. Phys.* **2008**, 129, 094708-1
14. Gold Nanomaterial Based Surface-Enhanced Fluorescence Assay For Detection of Organophosphorus Agents, Samuel S. R. Dasary, Uma S. Rai, Hongtao Yu, Yerramilli Anjaneyulu, Madan Dubey¹ and Paresh Chandra Ray, *Chem. Phys. Lett.* **2008**, 460, 187-190
15. Correlations between bonding, size, and second hyperpolarizability (g) of small semiconductor clusters: Ab initio study on AlnPn clusters with n = 2, 3, 4, 6, and 9, Karamanis, Panaghiotis; Leszczynski, Jerzy, *J. Chem. Phys.* **2008**, 128, 154323.
16. Challenge in Understanding Size and Shape Dependent Toxicity of Gold Nanomaterials in Human Skin Keratinocytes, Shuguang Wang, Wentong Lu, Oleg Tovmachenko, Uma Shanker Rai, Hongtao Yu and Paresh Chandra Ray, *Chem. Phys. Lett.* **2008**, 463, 145
17. Theoretical Study of Adsorption and Emission Spectra of the Monomer PFBT, Wang, Jing, Gu, Jiande and Leszczynski, Jerzy, *Chemical Physics Letters*, 2008, 456, 206-210
18. Understanding the High Energetic Behavior of Nano-Energetic Porous Silicon, Wayne Churaman, Luke Currano, Anant Kumar Singh , Uma Shankar Rai , Madan Dubey , Paul Amirtharaj and Paresh Chandra Ray, *Chem. Phys. Lett.* **2008**, **464**, 198-201
19. Influence of Central Metal Ions on Nonlinear Optical and Two-Photon Absorption Properties of Push-Pull Transition Metal Porphyrins, Paresh C Ray and P. Bonafasi, *J. Phys. Chem. A.*, **2008**, 112; 2870-2879
20. Gold nanoparticle-based miniaturized NSET Probe for rapid and ultra-sensitive detection of **mercury in soil, water and fish**, Gopala Krishna Darbha, Anandhi Ray and Paresh Chandra Ray, *ACS Nano*, **2007**, 3, 208-214

21. Electron transport properties of the porphyrin molecule located between gold electrodes, I. Yanov, Y. Kholod, Yana, J. Leszczynski, J.J. Palacios, *Chem. Phys. Letters*, **2007**, 445, 238-242.
22. Non-resonance SERS effects of silver colloids with different shapes, Vidhu S. Tiwari, Tovmachenko Oleg, Gopala Krishna Darbha, William Hardy, J.P. Singh and Paresh Chandra Ray, *Chemical Physics Letters*, **2007**, 446, 77-82.
23. Gold Nanoparticle Based FRET for DNA Detection, P C Ray, G K Darbha, A Ray, J. Walker, W Hardy and A Perryman, *Plasmonics*, **2007**, 2, 173
24. Theoretical Study on the Structure and Property Relationship of the Cationic Conjugated Polyelectrolytes, Yinghong Sheng, Jerzy Leszczynski, Thuc-Quyen Nguyen, and Anu Bamgbelu, *Struct. Chem.* **2007**, 18, 827-832
25. Gold Nanoparticle Based FRET Probe for Multiplexed Hybridization Detection: Accurate identification of Bio-agents DNA, Paresh Chandra Ray*, Gopala K Darbha, Anandhi Ray, William Hardy and Joshua Walker, *Nanotechnology*, **2007**, 18, 375504
26. On the cooperativity of the interaction-induced (hyper)polarizabilities of the selected hydrogen-bonded trimers, B. Skwara, W. Bartkowiak, A. Zawada, R. W. Gora, J. Leszczynski, *Chem. Phys. Letters*, **2007**, 436, 116-123
27. Label Free Detection of single base-mismatch DNA hybridization on gold nanoparticles using hyper-Rayleigh scattering technique: Size Dependent Optical Properties, P. C. Ray, *SPIE*, 2006, 6377, 637705/1-637705/9
28. Near Infrared Photo-Induced DNA Damage in the Presence of Copper-dppz Complex: Evidence for the Involvement of Singlet Oxygen, Angela Fortner, Shuguang Wang, Gopala Krishna Darbha, Anandhi Ray, Hongtao Yu and Paresh Chandra Ray, Rajamohan R. Kalluru, Chan Kyu Kim, Vinita Rai and Jagdish P. Singh, *Chem. Phys. Lett.* **2007**, 434, 12.
29. Gold Nanoparticle Based FRET Assay for the Detection of DNA Cleavage, P. C. Ray, A. Fortner and G. K. Darbha, *J. Phys. Chem. B* , 2006, 110, 20745
30. Very Large Infrared two Photon Absorption Cross Section of Asymmetric Zinc Porphyrin Aggregates: Role of Intermolecular Interaction and Donor-Acceptor Strengths, P. C. Ray, Z. Sainuideen, *J. Phys. Chem. A*, 2006, 110, 12342
31. Possible singlet oxygen generation from the photolysis of indigo dyes in methanol, DMSO, water, and ionic liquid, 1-butyl-3-methylimidazolium tetrafluoroborate, Gandra, Naveen; Frank, Aaron T.; Le Gendre, Onica; Sawwan, Nahed; Aebisher, David; Liebman, Joel F.; Houk, K. N.; Greer, Alexander; Gao, Ruomei, *Tetrahedron* 2006, 62, 10771

- 32.** Effect of central metal ions on first hyperpolarizability of unsymmetrical metal porphyrin, Bonifassi, P.; Ray, Paresh C.; Leszczynski, J, *Chem. Phys. Lett.* 2006, 431, 321.