

Bhabha Atomic research centre
Radiation & Photochemistry Division

PUBLICATIONS 2008

Journals (Published)

1. Unusual Mechanisms Can Dominate Reactions at Hyperthermal Energies: An Example from $O(^3P) + HCl \rightarrow ClO + H$
J. Zhang, J. P. Camden, A. L. Brunsvold, H. P. Upadhyaya, T. K. Minton, G. C. Schatz
J. Am. Chem. Soc. (Communication), 130 (2008) 8896-8897
2. Salt-induced guest relocation from a macrocyclic cavity into a biomolecular pocket: Interplay between cucurbit[7]uril and albumin
S. Mhejabeen, J. Mohanty, A. C. Bhasikuttan, V. D. Uzunova, W. M. Nau and H. Pal
Chem. Commun. (Communication), 31 (2008) 3681-3683
3. Quantitative cellular uptake, localization and cytotoxicity of curcumin in normal and tumor cells
A. Kunwar, A. Barik B. Mishra, K. Rathinasamy, R. Pandey, K. I. Priyadarsini
Biochimica et Biophysica Acta 1780 (2008) 673-679
4. Multiple-Timescale Photoreactivity of a Model Compound Related to the Active Site of [FeFe]-Hydrogenase
A.R. Ridley, A. Ian Stewart, K. Adamczyk, H. N. Ghosh, B. Kerkeni, Z. Xiao Guo, E. T. J. Nibbering, C. J. Pickett, N.T. Hunt
Inorg. Chem. 47 (2008) 7453-7455
5. Non-covalent interaction of 5,10,15,20-tetrakis(4-N-methylpyridyl)porphyrin with cucurbit[7]uril: A supramolecular architecture
J. Mohanty, A. C. Bhasikuttan, S. Dutta Choudhury, and H. Pal
J. Phys. Chem. B. (Letter) 112 (2008) 10782-10785
6. A nanoreactor for tuning the chemical reactivity of a solute
P. K. Singh, A. K. Satpati, M. Kumbhakar, H. Pal and S. Nath
J. Phys. Chem. B. (Letter) 112 (2008) 11447-11450
7. Pulse Radiolysis studies on reactions of hydroxyl radicals with selenocystine derivatives
B. Mishra, L. B. Kumbhare, V. K. Jain, K. I. Priyadarsini
J. Phys. Chem. B. 112 (2008) 4441-4446
8. Effect of block size of pluronic polymers on the water structure in corona region and its effect on the electron transfer reactions
P. Verma, S. Nath, P. K. Singh, M. Kumbhakar and H. Pal
J. Phys. Chem. B. 112 (2008) 6363-6372
9. Ultrafast bimolecular electron transfer dynamics in micellar media
M. Kumbhakar, P.K. Singh, S. Nath, A. C. Bhasikuttan and H. Pal
J. Phys. Chem. B. 112 (2008) 6646-6652

10. Fluorescence Anisotropy of Ionic Probes in AOT Reverse Micelles: Influence of Water Droplet Size and Electrostatic Interactions on Probe Dynamics
G. B Dutt
J. Phys. Chem. B 112 (2008) 7220-7226
11. Excited state proton transfer behavior of 7-hydroxy-4-methylcoumarin in AOT reverse micelles
S. Dutta Choudhury, S. Nath and H. Pal
J. Phys. Chem. B 112 (2008) 7748-7753
12. Effect of electrostatic interaction on the location of molecular probe in polymer-surfactant supramolecular assembly: A solvent relaxation study
P. K. Singh, M. Kumbhakar, H. Pal and S. Nath
J. Phys. Chem. B 112 (2008) 7771-7777
13. Acrylonitrile-induced synthesis of polyvinyl alcohol-stabilized selenium nanoparticles.
Chetan Shah, Manmohan Kumar, K.K. Pushpa and P. N. Bajaj
Crystal Growth & Design 8 (2008) 4159-4164
14. Interfacial Electron Transfer Dynamics on TiO₂ and ZrO₂ Nanoparticles Surface Sensitized by New Catechol Derivatives of Os(II)-polypyridyl Complexes: Monitoring by Charge Transfer Emission
S. Verma, P. Kar, A. Das, D. K. Palit, H. N. Ghosh
J. Phys. Chem. C 112 (2008) 2918-2926
15. Biological activities of curcumin and its analogues (Congeners) made by man and Mother Nature
Preetha Anand, Sherin G. Thomas, Ajaikumar B. Kunnumakkara, Chitra Sundaram, Kuzhuvilil B. Harikumar, Bokyung Sung, Sheeja T. Tharakan, Krishna Misra, Indira K. Priyadarsini, Kallikat N. Rajasekharan, Bharat B. Aggarwal
Biochemical pharmacology 76 (2008) 1590 – 1611
16. Tuning of the electrical parameters of a twisted-nematic display material by using electron beam irradiation
R. Dhar, Rohit Verma, M.C. Rath, S.K. Sarkar, V. K. Wadhawan, R. Dabrowski and M. Tykarska
Appl. Phys. Lett. 92 (2008) 14108-3
17. Theoretical Study on Spectroscopic Properties of CO₃²⁻·nH₂O Clusters: Extrapolation to Bulk
A. K. Pathak, T. Mukherjee, and D. K. Maity
Chem Phys Chem 9 (2008) 2259-2264
18. Acid-induced synthesis of polyvinyl alcohol-stabilized selenium nanoparticles
C. P. Shah, M. Kumar and P. N. Bajaj
Nanotechnology 18 (2007) 385607.
19. Antioxidant activity of an aminothiazole compound: Possible mechanisms
Strayo De, S. Adhikari., J.C. Tilak, V.P. Menon, T.P.A. Devasagayam
Chemico-Biological Interactions, 173 (2008) 215-223
20. Concentration Dependent Antioxidant/Pro-oxidant Activity of Curcumin: Studies from AAPH Induced Hemolysis of RBCs
Arnab Banerjee, A. Kunwar, B.Mishra, K. I. Priyadarsini
Chemico-Biological Interactions. 174 (2008) 134-139

21. Rotational Diffusion of a Nonpolar and a Dipolar Solute in 1-Butyl-3-Methylimidazolium Hexafluorophosphate and Glycerol: Interplay of Size Effects and Specific Interactions
K. S. Mali, G. B Dutt and T. Mukherjee
J. Chem. Phys. 128 (2008) 054504-9
22. Photoisomerization of Cyanine Derivatives in 1-Butyl-3-Methylimidazolium Hexafluorophosphate and Aqueous Glycerol: Influence of Specific Interactions
K. S. Mali, G. B Dutt and T. Mukherjee
J. Chem. Phys. 128 (2008) 124515-9
23. Hyperthermal Ar atom scattering from a C(0001) surface
K. D. Gibson, S.J. Sibener, Hari P. Upadhyaya, Amy L. Brunsvold, Jianming Zhang, Timothy K. Minton, Diego Troya
J. Chem. Phys. 128 (2008) 224708-7
24. Studies on photodissociation dynamics of butadiene monoxide at 193 nm
Sumana SenGupta, Yogesh Indulkar, Awadhesh Kumar, P.D. Naik and P.N. Bajaj
J. Chem. Phys. 128 (2008) 24309-10
25. Do Ionic and Hydrophobic Probes Sense Similar Microenvironment in Triton X-100 Nonionic Reverse Micelles?
G. B Dutt
J. Chem. Phys. 129 (2008) 014501-6
26. Effect of donor orientation on ultrafast intermolecular electron transfer in coumarin-amine systems
P. K. Singh, S. Nath, A. C. Bhasikuttan, M. Kumbhakar, J. Mohanty, S. K. Sarkar, T. Mukherjee and H. Pal
J. Chem. Phys. 129 (2008) 114504-11
27. Studies on adsorption of mono- and multi-chromophoric hemicyanine dyes on silver nanoparticles by surface-enhanced resonance Raman and theoretical calculations
Nandita Biswas, Susy Thomas, Sudhir Kapoor, Amaresh Mishra, Sanjay Wategaonkar and Tulsi Mukherjee
J. Chem. Phys. 129 (2008) 184702-15
28. Vertical detachment energy of $I_2^- \cdot nCO_2$ clusters ($n=1-8$): Experiment versus theory
A. K. Pathak, T. Mukherjee, and D. K. Maity
J. Chem. Phys. 129 (2008) 246101-2
29. Microhydration study of X_2 -gas ($X=Cl, Br$ and I): A theoretical study on $X_2 \cdot nH_2O$ clusters ($n=1-8$)
A. K. Pathak, T. Mukherjee, and D. K. Maity
J. Phys. Chem. A, 112 (2008) 744-751
30. Dynamics of hyperthermal collisions of $O(^3P)$ with CO
Amy L. Brunsvold, Hari P. Upadhyaya, Jianming Zhang, Russell Cooper, Timothy K. Minton, Matthew Braunstein and James W. Duff
J. Phys. Chem. A 112 (2008) 2192-2205
31. Microhydration of NO_3^- : A Theoretical Study on Structure, Stability and IR Spectra
A. K. Pathak, T. Mukherjee, and D. K. Maity
J. Phys. Chem. A, 112 (2008) 3399-3408

32. Quantitative distinction between competing intramolecular bond twisting & solvent relaxation dynamics: An ultrafast study
P. K. Singh, S. Nath, M. Kumbhakar, A. C. Bhasikuttan and H. Pal
J. Phys. Chem. A. 112 (2008) 5598-5603
33. Vibrational analysis of $I_2 \cdot nCO_2$ clusters (n=1-10): A first principle study on microsolvation
A. K. Pathak, T. Mukherjee and D. K. Maity
J. Phys. Chem A 112 (2008) 12037
34. Photodissociation dynamics of 2-nitropropane and 2-methyl-2-nitropropane at 248 and 193 nm
Sumana SenGupta, Awadhesh Kumar, S. Dhanya, Prakash D. Naik, P.N. Bajaj
J. Phys. Chem. A. 112 (2008) 12572-12581
35. Inhibitory property of the Piper betel phenolics against photosensitization-induced biological damages
S. Mula, D. Banerjee, B. S. Patro, S. Bhattacharya, A. Barik, Sandip K. Bandyopadhyay and Subrata Chattopadhyaya
Bioorganic & Medicinal Chemistry 16(2008) 2932–2938
36. Lower rim 1,3-di-amide-derivative of calix[4]arene possessing bis-{N-(2-2'-dipyridylamide)} pendants: A dual fluorescence sensor for Zn^{2+} and Ni^{2+}
Roymon Joseph, Balaji Ramanujam, Haridas Pal and Chebrolu P. Rao
Tetrahedron Letters 49 (2008) 6257-6261
37. In-vivo radioprotection by 5-aminosalicylic acid
S.K. Mantena, M.K. Unnikrishnan, Ravi Joshi, V. Radha, P. Uma Devi, T. Mukherjee
Mut. Res. 650 (2008) 63-79
38. Photodetachment and UV–Vis spectral properties of $Cl_2 \cdot nH_2O$ clusters: Extrapolation to bulk
A. K. Pathak, T. Mukherjee, and D. K. Maity
Chem. Phys. Lett. 454 (2008) 17-23
39. The dynamics of OH generation by photodissociation of morpholine molecule at 193 nm
Sumana SenGupta, Awadhesh Kumar, Prakash D. Naik and Parmanand Bajaj
Chem. Phys. Lett. 465 (2008) 197-202
40. Photodissociation dynamics of nitrotoluene at 193 and 248 nm: Direct observation of OH formation
Sumana SenGupta, H.P. Upadhyaya, Awadhesh Kumar, S. Dhanya, P.D. Naik and P.N. Bajaj
Chem. Phys. Lett. 452 (2008) 239-244
41. Complexation of Acridine Orange by Cucurbit[7]uril and β -Cyclodextrin: Photophysical Effects and pKa Shifts
M. Shaikh, J. Mohanty, P. K. Singh, W. M. Nau, H. Pal
Photochem. Photobiol. Sci., 7 (2008) 408-414
42. Tuning dual emission behavior of *p*-dialkylaminobenzonitrile by supramolecular interactions with cyclodextrin hosts
S. Mhejabeen, J. Mohanty, A. C. Bhasikuttan and H. Pal
Photochem. Photobiol. Sc. 7 (2008) 979-985

43. Collective proton motion in the intramolecular hydrogen bonding network and the consequent enhancement in the acidity of hydroxycalixarenes
M. Shaikh, J. Mohanty, D. K. Maity, S. K. Nayak, and H. Pal
J. Photochem. Photobiol. A, Chem 195 (2008) 116-126
44. Photoinduced electron transfer between quinines and amines in micellar media: Tuning the Marcus inversion region
A. K. Satpati, M. Kumbhakar, S. Nath and H. Pal
J. Photochem. Photobiol. A. Chem. 200 (2008) 270-276
45. Protection of polymer from atomic-oxygen erosion using Al₂O₃ atomic layer deposition coatings
Russell Cooper, Hari P. Upadhyaya, Timothy K. Minton, Michael R. Berman, Xiaohua Du and Steven M. George
Thin Solid Films 516 (2008) 4036-4039
46. Solvent polarity induced structural changes in 2,6-diamino-9,10-anthraquinone dye
P. Dahiya, S. Dutta Choudhury, D. K. Maity, T. Mukherjee and H. Pal
Spectrochimica Acta, Part A. 69 (2008) 134-138
47. Bimolecular electron transfer reactions in coumarin-amine systems: donor-acceptor orientational effect on diffusion-controlled reaction rates
A. K. Satpati, S. Nath, M. Kumbhakar, D. K. Maity, S. Senthikumar and H. Pal
J. Mol. Str. 878 (2008) 84-94
48. Reactions and structural investigation of chlorpromazine radical cation
R. Joshi, T. K. Ghanty, T. Mukherjee
J. Mol. Str. 888 (2008) 401-408
49. A theoretical study on SCN⁻ + XH reactions (X=O, S): Hemi bonded vs. H-bonded intermediates
A. K. Pathak, T. Mukherjee, and D. K. Maity
J. Mol. Str. THEOCHEM 851 (2008) 158-166
50. Electron beam radiation induced changes in liquid-crystal compounds 5CB
M. C. Rath, S. K. Sarkar, V. K. Wadhawan, Rohit Verma, R. Dabrowski and M. Tykarska and R. Dhar
Optoelectronic Review, 16 (2008) 399-403
51. Pulse and γ -radiolysis studies on aqueous solution of 1,1'-dimethyl-2-selenourea
B. Mishra, B. S. Kumar, K. I. Priyadarsini
Radiation Physics & Chemistry 77 (2008) 125-130
52. Radiation chemistry research using PULAF
P. Gaekwad, K. I. Priyadarsini and B. S. M. Rao
Radiation Physics & Chemistry 77 (2008) 1124-1130
53. Radical cations of some water-soluble organoselenium compounds: Insights from Pulse Radiolysis Studies
K. I. Priyadarsini and B. Mishra
Radiation Physics & Chemistry 77 (2008) 1294-1299

54. Investigation of the dynamics of radiolytic formation of ZnO nanostructured materials by pulse radiolysis
M. C. Rath, Y. Sunitha, H. N. Ghosh, S. K. Sarkar and T. Mukherjee
Radiation Physics & Chemistry. 78 (2008) 77-80
55. Binding studies of curcumin to polyvinyl alcohol/polyvinyl alcohol hydrogel and its delivery to liposomes.
C. P. Shah, B. Mishra, M. Kumar, K.I. Priyadarsini and P. N. Bajaj
Current Science: 95 (2008) 1426-1432
56. IR Spectra of Carbonate-Water Clusters, $\text{CO}_3^{2-}(\text{H}_2\text{O})_n$: A Theoretical Study
A. K. Pathak, T. Mukherjee and D. K. Maity
Syn. React. Inorg. MetOrg. Nano Met. Chem. 38 (2008) 76-83
57. Reactions of reducing radicals with 2- and 3- nitroanilines in aqueous solutions: A pulse radiolysis study
P. Rajesh, G.R. Dey, D.B. Naik and K. Kishore
Research on Chem. Intermed. 34 (2008) 53-65
58. Mode Selective Excitation Using Coherent Control Spectroscopy
Ajay K. Singh, J. Konaradi, Sisir K. Sarkar and Arnulf Materny
American Institute of Physics (AIP) Proc. 1075 (2008) 64-66
59. Relaxation Dynamics of the excited states of a ketocyanine dye probed by femtosecond transient absorption Spectroscopy
J. A. Mondal, S. Verma, H. N. Ghosh and D. K. Palit
J. Chem. Science. 120 (2008) 1-11

Books

- Dr. G R Dey has edited a book entitled 'Radiation Induced Free radical Chemistry; In Homogeneous & Heterogeneous Media, for publisher Research Signpost, Kerala, India, 2008 Following THREE articles are published in this book :
 - Radiation Induced Redox Chemistry in Aqueous- H_2SO_4 Solvent
T. N. Das
 - Generation and Kinetic Studies of Gold Nanoparticles in the Absence and Presence of Copper ions in 2-Propanol following Radiation Induced Free Radicals Reactions
G.R. Dey
 - Pulse Radiolysis Studies on One-electron Oxidation of Organoselenium Compounds
K. Indira Priyadarsini and B. Mishra
- Laser Induced Fluorescence Spectroscopy
P.D. Naik, Awadhesh Kumar, H.P. Upadhyaya, P.N. Bajaj and S.K. Sarkar
Lasers in Chemistry, Wiley-VCH Publications 2008
- Laser Isotope separation
V. Parthasarthy, S.K. Sarkar and P.N. Bajaj
Lasers in Chemistry, Wiley-VCH Publications 2008