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Dept. of Chemistry
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Education:

M.Sc. (Chemistry) 2006 Visva-Bharati *First Class*

Ph.D. 2011 Jadavpur University, Worked at Indian Association for the Cultivation of Science (IACS)

Thesis Title: A Femtosecond Study of Dynamics in Micelles and Other Self-Organized Systems

Supervisor: Professor Kankan Bhattacharyya, FNA, FASc, FNASc

Shanti Swarup Bhatnagar Award in 1997

TWAS Prize in 2007

Ex-Director IACS

J C Bose Fellow

Editor Journal of Physical Chemistry (ACS publications)

Honours and awards:

2006: Junior Research Fellowship (JRF) award from CSIR, India

2006: Qualified SLET

2006: Qualified GATE (AIR- 114), IIT, India

Research Experience:

Post-Doc, Feb 2012 – Feb, 2014
(2 years) Chemical Physics, Lund University
Sweden
With **Prof. Villy Sundstrom**
Editor Chemical Physics Letter

Topic: Molecular Structure Dynamics by Time Resolved X-RAY spectroscopy

Visiting Fellow: NIST, Boulder, Colorado (Dec, 2013)
Research Fellow July 2006- May 2010 Physical Chemistry Department
IACS, Kolkata (with Prof. K. Bhattacharyya)

Teaching Experience:

Assistant Professor in Chemistry Jogamaya Devi College
May 2010-August 2016 92 S.P. Mukherjee Road,
Kolkata 700 026

Technical experience:

- In house X-Ray Production from Laser Induced Water Jet Plasma Source
- Superconducting Microcalorimeter Detector
- Extended X-Ray Absorption Fine Structure (EXAFS)
- Time Resolved Structural Dynamics
- Confocal Microscope and Fluorescence Lifetime Imaging
- Femtosecond and Picosecond laser spectroscopy
- Solvation Dynamics, Proton/Electron Transfer, Energy Transfer (FRET), Anisotropy

Presentations:

2014 Poster ASUD-2014 IACS, Kolkata
2009 Poster Fluorescence 2009 TIFR, Mumbai, India
2008 Oral Departmental Lecture IACS, Kolkata, India
2008 Poster Trombay Symposiu on Rad. and Photochem. BARC, Pune, India

Conferences/Seminars/Symposia Attended:

1. 2014: Advanced in Spectroscopy and Ultrafast Dynamics (ASUD-2014), IACS, Kolkata
2. 10th Nordic Femtochemistry Conference 2012 (NFC'12): May 31st - June 2nd 2012, Hovs Hallar, Skåne, Sweden
3. 2010: Attended Foundation Day Celebration, IACS, Kolkata-700032.
4. 2009: Poster presentation in Fluorescence in Biology: Fluorescence 2009, TIFR, Mumbai
5. 2008: Attended National Symposium on Quantum Chemistry, Soft Computation and Optimization, IACS, Kolkata-700 032.
6. 2008: Poster presentation in Trombay Symposium on Radiation and Photochemistry, TSRP-2008, Pune
7. 2006: Attended International Conference on Structure and Dynamics: From Micro to Macro Post Century Golden Jubilee Celebration University of Calcutta, Kolkata.

Brief Summary of the Research as a Postdoctoral Fellow (Feb, 2012 – Feb, 2014):

At Chemical Physics, Lund University I worked in a project namely "Molecular Structure Dynamics by Time Resolved X-Ray Spectroscopy". Time resolved X-Ray

spectroscopy performed as visible/uv pump X-Ray probe are powerful technique for obtaining electronic and geometrical information of molecules. We use a water jet plasma source for generation of ultra short x-ray pulse and superconducting Microcalorimeter as detector.

Brief Summary of the Research Done in the Ph.D.:

During my doctoral research I have studied various photo physical processes using picosecond and Femtosecond time resolved spectroscopy. Organized assembly plays key role in biology and chemistry. I have studied solvation dynamics, fluorescence resonance energy transfer, photo induced electron transfer, excited state proton transfer, fluorescence anisotropy decay in wide variety of complex and biological systems including protein, micelles, reverse micelle, polymer and protein-surfactant aggregates. Dynamics in these systems will improve our knowledge to understand the fundamental processes occurring in such systems.

Scopus h-index: 13

Journal Publications:

1. "Ultrafast fluorescence resonance energy transfer in a reverse micelle: Excitation wavelength dependence"
Sudip Kumar Mondal, SubhadipGhosh, KalyanasisSahu, Ujjwal Mandal, and Kankan Bhattacharyya
J. Chem. Phys. 125, 224710 (2006).
2. "Excitation Wavelength Dependence of Solvation Dynamics in a Supramolecular Assembly: PEO-PPO-PEO Triblock Copolymer and SDS"
Ujjwal Mandal, AniruddhaAdhikari, ShantanuDey, SubhadipGhosh, Sudip Kumar Mondal, and Kankan Bhattacharyya
J. Phys. Chem. B 111, 5896 (2007).
3. "Ultrafast photoinduced electron transfer in the micelle and the gel phase of a PEO-PPO-PEO triblock copolymer"
Ujjwal Mandal, SubhadipGhosh, ShantanuDey, AniruddhaAdhikari, and Kankan Bhattacharyya
J. Chem. Phys 128, 164505, (2008).
4. "A Femtosecond Study of the Interaction of Human Serum Albumin with a Surfactant (SDS)"
Ujjwal Mandal, SubhadipGhosh, GopaMitra, AniruddhaAdhikari, ShantanuDey, and Kankan Bhattacharyya
Chemistry.An Asian Journal 3, 1430, (2008).
5. "Study of Organized and Biological Systems Using an Ultrafast Laser"
SubhadipGhosh, Ujjwal Mandal, AniruddhaAdhikari, ShantanuDey, and Kankan Bhattacharyya
Int. Rev. Phys. Chem. 26, 421, (2007).
6. "Ultrafast Fluorescence Resonance Energy Transfer in the Micelle and Gel Phase of a PEO-PPO-PEO Triblock Copolymer: Excitation Wavelength Dependence"
SubhadipGhosh, ShantanuDey, AniruddhaAdhikari, Ujjwal Mandal, and Kankan Bhattacharyya

***J. Phys. Chem. B* 111, 7085, (2007).**

7. “Ultrafast Proton Transfer of Pyranine in a Supramolecular Assembly: PEO-PPO-PEO Triblock Copolymer and CTAC”

SubhadipGhosh, ShantanuDey, Ujjwal Mandal, AniruddhaAdhikari, Sudip Kumar Mondal, and Kankan Bhattacharyya

***J. Phys. Chem. B* 111, 13504, (2007).**

8. “Excitation Wavelength Dependence of Solvation Dynamics in a gel. (PEO)₂₀-(PPO)₇₀-(PEO)₂₀ tri-block copolymer”

SubhadipGhosh, AniruddhaAdhikari, Ujjwal Mandal, ShantanuDey, and Kankan Bhattacharyya

***J. Phys. Chem. C* 111, 8775, (2007).**

9. “Femtosecond Solvation Dynamics in a neat Ionic Liquid and Ionic Liquid Microemulsion: Excitation Wavelength Dependence”

AniruddhaAdhikari, KalyanasisSahu, ShantanuDey, SubhadipGhosh, Ujjwal Mandal, and Kankan Bhattacharyya

***J. Phys. Chem. B* 111, 12809, (2007).**

10. “Ultrafast fluorescence resonance energy transfer in a bile salt aggregate: excitation wavelength dependence”

Ujjwal Mandal, SubhadipGhosh, Dibyendu Kumar Das, AniruddhaAdhikari, ShantanuDey, and Kankan Bhattacharyya

***J. Chem. Sci.* 120, 15, (2008).**

11. “Femtosecond Solvation Dynamics in Different Regions of a Bile Salt Aggregate: Excitation Wavelength Dependence”

AniruddhaAdhikari, ShantanuDey, Ujjwal Mandal, Dibyendu Kumar Das, SubhadipGhosh, and Kankan Bhattacharyya

***J. Phys. Chem. B* 112, 3575, (2008).**

12. “A Femtosecond Study of Excitation Wavelength Dependence of a Triblock Copolymer-Surfactant Supramolecular Assembly: (PEO)₂₀-(PPO)₇₀-(PEO)₂₀ and CTAC”

ShantanuDey, AniruddhaAdhikari, Ujjwal Mandal, SubhadipGhosh, and Kankan Bhattacharyya

***J. Phys. Chem. B* 112, 5020, (2008).**

13. “Solvation Dynamics in Ionic Liquid Swollen P123 Triblock Copolymer Micelle: A Femtosecond Excitation Wavelength Dependence Study”

AniruddhaAdhikari, ShantanuDey, Dibyendu Kumar Das, Ujjwal Mandal, SubhadipGhosh, and Kankan Bhattacharyya

***J. Phys. Chem. B* 112, 6350, (2008).**

14. “Study of diffusion of organic dyes in a triblock co-polymer micelle and gel by fluorescence correlation spectroscopy”

SubhadipGhosh, Ujjwal Mandal, Aniruddha Adhikari, and Kankan Bhattacharyya

***Chemistry.An Asian Journal* 4, 948, (2009).**

15. “Diffusion of Organic Dyes in Immobilized and Free Catanionic Vesicle”

ShantanuDey, Ujjwal Mandal, SupratikSenMojumdar, Amit Kumar Mandal and Kankan Bhattacharyya

J. Phys. Chem. B 114, 15506, (2010).

16. “Probing Deuterium Isotope Effect on Structure and Solvation Dynamics of Human Serum Albumin”

Dibyendu Kumar Das, Tridib Mondal, Ujjwal Mandal and Kankan Bhattacharyya ChemPhysChem 12, 814, (2011).

17. “High-resolution X-ray emission spectroscopy with transition-edge sensors: present performance and future potential”

J. Uhlig, W. B. Doriese, J. W. Fowler, D. S. Swetz, C. Jaye, c D. A. Fischer, C. D. Reintsema, D. A. Bennett, L. R. Vale, U. Mandal, G. C. O’Neil, L. Miaja-Avila, Y. I. Joe, A. El Nahhas, W. Fullagar, F. Parnefford Gustafsson, V. Sundstrom, D. Kurunthu, G. C. Hilton, D. R. Schmidt and J. N. Ullom J. Synchrotron Rad. 22, 766, (2015).

Book Chapter:

1. “Probing Dynamic Heterogeneity in Nano-confined Systems: Femtosecond Excitation Wavelength Dependence and FCS”

Shantanu Dey, Ujjwal Mandal, Aniruddha Adhikari, Subhadip Ghosh and Kankan Bhattacharyya

(**Book Chapter 7** Hydrogen Bonding and Transfer in the Excited-State) Edited by Ke-Li Han and Guang-Jiu Zhao, **John Wiley 2010.**

Conference Paper:

1. “Ultrafast X-ray Absorption Spectroscopy using Superconducting Microcalorimeter Sensors”

Joel Ullom, Marla Dowell, Joseph Fowler, Luis Miaja, Galen O’Neil, Kevin Silverman, Daniel Swetz, Dodderi Sagar, Zin Yoon, Ralph Jimenez, Jens Uhlig, Wilfred Fullagar, Dharmalingam Kurunthu, **Ujjwal Mandal** and Villy Sundstrom

CLEO: Applications and Technology; 06/2014
http://dx.doi.org/10.1364/CLEO_AT.2014.AW1P.3