Suman Das

Present Address
Mirzapur, Singur, Hooghly,
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605-35 Charles Street West
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Education:

- **Ph.D. Chemistry** 2016
  S. N. Bose National Centre for Basic Sciences (Jadavpur University), India
  Supervisor: Prof. Ranjit Biswas
  Thesis: Heterogeneity and its effect on simple chemical events in molten multi-component systems
- **M.Sc. Chemistry, C.P.I - 9.11** (out of 10) 2011
  Indian Institute of Technology, Guwahati, India
- **B.Sc. Chemistry, 67.6%** 2009
  Ramkrishna Mission Vidyamandira, Belur (University of Calcutta)

Research Experience:

- **Postdoctoral Fellow**: University of Toronto, Toronto, Canada 2016 - present
  Supervisor: Prof. Hue Sun Chan, Canada Research Chair 2001 - 2010
  http://biochemistry.utoronto.ca/person/hue-sun- chan/
  Research: Simulation studies of sequence dependent liquid-liquid phase separation of intrinsically disordered proteins (IDPs)
- **Doctoral Research**: S. N. Bose National Centre for Basic Sciences, India 2011 - 2016
  Supervisor: Prof. Ranjit Biswas, http://www.pccplab.yolasite.com/
  Research- Heterogeneity aspects in deep eutectic solvents (DESs) and ionic liquids (ILs), applied molecular dynamic simulations to explore microscopic interactions and dynamics present in DESs and ILs
- **M.Sc. Project**: Indian Institute of Technology, Guwahati, India 2010 - 2011
  Supervisor: Prof. Sandip Paul, http://www.iitg.ac.in/sandipp/People.html
  Research: Hydrogen bond properties and dynamics of liquid-vapour interface of water-DMSO mixtures: A molecular dynamics simulation study

Research Interest:

- Microscopic structure and dynamics in ionic liquids and deep eutectic solvents
- Hydrogen bond dynamics and jump mechanisms in ionic liquids and deep eutectic solvents

- Effect of polarizibility on the structure and dynamics of ionic liquids and deep eutectic solvents
- Liquid-liquid phase separation in intrinsically disordered proteins
- Water dynamics around intrinsically disordered proteins
- Solvent mediated interactions among intrinsically disordered proteins

Fellowships and Awards:

- Junior and Senior Research Fellow of Council for Scientific and Industrial Research (CSIR), New Delhi, India, December, 2010, **All India Rank – 63**
- Qualified Graduate Aptitude Test in Engineering (GATE) Fellowship, February, 2011, **All India Rank – 704**
- Qualified Joint Admission Test for M.Sc. Admission (IIT - JAM), May 2009, **All India Rank – 184**

Publications:

1. Anuradha Das, **Suman Das** and Ranjit Biswas*, Fast fluctuations in deep eutectic melts: Multi-probe fluorescence measurements and all-atom molecular dynamics simulation study, **Chem. Phys. Lett.** 2013, 581, 47-51.
2. Biswajit Guchhait, **Suman Das,** Snehasis Daschakraborty and Ranjit Biswas*, Interaction and dynamics of (alkylamide + electrolyte) deep eutectics: Dependence on alkyl chain-length, temperature, and anion identity, **J. Chem. Phys.** 2014, 140, 104514.
3. **Suman Das,** Ranjit Biswas* and Biswaroop Mukherjee*, Reorientational jump dynamics and its connections to hydrogen bond relaxation in molten acetamide: An all-atom molecular dynamics simulation study, **J. Phys. Chem. B** 2015, 119, 274-283.
4. Anuradha Das, **Suman Das** and Ranjit Biswas*, Density relaxation and particle motion characteristics in a non-ionic deep eutectic solvent (acetamide + urea): Time-resolved fluorescence measurements and all-atom molecular dynamics, **J. Chem. Phys.** 2015, 142, 034505.
5. **Suman Das,** Ranjit Biswas* and Biswaroop Mukherjee*, Orientational jumps in (acetamide + electrolyte) deep eutectics: Anion dependence, **J. Phys. Chem. B** 2015, 119, 11157-11168.
6. **Suman Das,** Ranjit Biswas* and Biswaroop Mukherjee*, Collective dynamic dipole moment and orientation fluctuations, cooperative hydrogen bond relaxations and their connections to dielectric relaxation in ionic acetamide deep eutectics: Microscopic insight from simulations, **J. Chem. Phys.** 2016, 145, 084504.
7. **Suman Das,** Biswaroop Mukherjee* and Ranjit Biswas*, Microstructures and their lifetimes in acetamide/electrolyte deep eutectics: Anion dependence, **J. Chem. Sci.** 2017, 129, 939-951.
8. **Suman Das,** Adam Eisen, Yi-Hsuan Lin and Hue Sun Chan*, A lattice model of charge-pattern-dependent polyampholyte phase separation, **J. Phys. Chem. B** 2018, 122, 5418-5431.
9. **Suman Das,** Biswaroop Mukherjee* and Ranjit Biswas*, Orientational dynamics in a room temperature ionic liquid: Are angular jumps predominant? **J. Chem. Phys.** 2018, 148, 193839.
10. Yi-Hsuan Lin, Jianhui Song, Gregory-Neal Gomes, **Suman Das,** Claudiu C. Gradinaru, Julie D. Forman-Kay and Hue Sun Chan*, Conformational heterogeneity and theory of sequence-specific functional phase separation of intrinsically disordered proteins, **Biophys. J.** 2018, 114, 31-Subg.
11. Kallol Mukherjee, **Suman Das,** Ejaj Tarif, Anjan Barman and Ranjit Biswas*, Dielectric relaxation in acetamide+urea deep eutectics and neat molten urea: Origin of time scales via temperature dependent measurements and computer simulations, **J. Chem. Phys.** 2018, 149, 124501.

12. **Suman Das,** Alan Amin, Yi-Hsuan Lin and Hue Sun Chan*, Coarse-grained residue-based models of disordered protein condensates: Utility and limitations of simple charge pattern parameters, **Phys. Chem. Chem. Phys.** 2018, 20 (45), 28558-28574.

Poster Presentation:

1. **Suman Das** and Ranjit Biswas*, Multi-component deep eutectics: A simulation study, Theoretical Chemistry Conference, Indian Institute of Technology, Guwahati, India, 2012.
2. **Suman Das** and Ranjit Biswas*, Multi-component deep eutectics: A simulation study, Bose Fest, S. N. Bose National Centre for Basic Sciences, Kolkata, India, 2012.
3. **Suman Das** and Ranjit Biswas*, Multi-component deep eutectics: A simulation study, Bose Fest, S. N. Bose National Centre for Basic Sciences, Kolkata, India, 2013.
4. **Suman Das** and Ranjit Biswas*, Multi-component deep eutectics: A simulation study, Symposium on Theoretical and Computational Chemistry, Trichy, India, 2013.
5. **Suman Das**, Biswaroop Mukherjee* and Ranjit Biswas*, Reorientational jump and heterogeneity in amide deep eutectics, Dynamics of Complex Chemical and Biological Systems, Indian Institute of Technology, Kanpur, India, 2014.
6. **Suman Das** and Ranjit Biswas*, Dynamic heterogeneity and multi-point correlations in amide deep eutectics, Theoretical Chemistry Symposium, National Chemical Laboratory, Pune, India, 2014.
7. **Suman Das**, Biswaroop Mukherjee* and Ranjit Biswas*, Reorientational jump dynamics and its connections to hydrogen bond relaxations in molten acetamide: An all-atom molecular dynamics simulation study, International Symposium on Advances in Spectroscopy and Ultrafast Dynamics, Indian Association for the Cultivation of Science, Kolkata, India, 2014.
8. **Suman Das**, Biswaroop Mukherjee* and Ranjit Biswas*, Angular jumps in acetamide+electrolyte deep eutectics: An atomistic simulation study, Asian Academic Seminar and School, Indian Association for the Cultivation of Science, Kolkata, India, 2015.
9. **Suman Das** and Ranjit Biswas*, Dynamic heterogeneity and multi-point correlations in amide deep eutectics, Joint EMLG/JMLG Annual Meeting, University of Rostock, Rostock, Germany, 2015.
10. **Suman Das** and Ranjit Biswas*, Dynamic heterogeneity and multi-point correlations in amide deep eutectics, Ultrafast Science, S. N. Bose National Centre for Basic Sciences, Kolkata, India, 2015.
11. **Suman Das**, Biswaroop Mukherjee* and Ranjit Biswas*, Large amplitude angular jumps in (BMIM+PF_6) ionic liquid, Recent Advances in Molecular Spectroscopy, University of Hyderabad, Hyderabad, India, 2016.
12. **Suman Das**, Biswaroop Mukherjee* and Ranjit Biswas*, Large amplitude angular jumps in (BMIM+PF_6) ionic liquid, Bose Fest, S. N. Bose National Centre for Basic Sciences, Kolkata, India, 2016.
13. **Suman Das**, Adam Eisen, Yi-Hsuan Lin and Hue Sun Chan*, Monte Carlo simulations of phase separation of intrinsically disordered Proteins: A preliminary report, Protein Folding Consortium, 2017, University of California, Berkeley, USA, 2017.
14. **Suman Das**, Adam Eisen, Yi-Hsuan Lin and Hue Sun Chan*, Monte Carlo simulations of phase separation of intrinsically disordered Proteins, Departmental Retreat, University of Toronto, Toronto, Canada, 2017.
15. **Suman Das**, Alan Amin, Yi-Hsuan Lin and Hue Sun Chan*, Liquid-liquid phase separation in intrinsically disordered proteins: Simulations from lattice and off-lattice models, Chemical Biophysics Symposium, University of Toronto, Toronto, Canada, 2018.
16. **Suman Das**, Alan Amin, Yi-Hsuan Lin and Hue Sun Chan*, Liquid-liquid phase separation in intrinsically disordered proteins: Simulations from lattice and off-lattice models, Departmental Retreat, University of Toronto, Toronto, Canada, 2018.

17. **Suman Das**, Alan Amin, Yi-Hsuan Lin and Hue Sun Chan*, Liquid-liquid phase separation in intrinsically disordered proteins: Simulations from lattice and off-lattice models, Biophysical Society Meetings. Baltimore, Maryland, USA, 2019.
18. **Suman Das**, Alan Amin, Yi-Hsuan Lin and Hue Sun Chan*, Liquid-liquid phase separation in intrinsically disordered proteins: Simulations from lattice and off-lattice models, Canadian Biophysical Society Meetings. Toronto, 2019.

Oral Presentation:

1. **Suman Das**, Biswaroop Mukherjee* and Ranjit Biswas*, Cluster size and lifetime distribution in (amide+electrolyte) deep eutectics: Insights from molecular dynamics simulation study, Bose Fest, S. N. Bose National Centre for Basic Sciences, Kolkata, India, 2014 (**Best Oral Presentation**).
2. **Suman Das,** Biswaroop Mukherjee* and Ranjit Biswas*, Orientational jumps in (acetamide+electrolyte) deep eutectics: Anion dependence, Bose Fest, S. N. Bose National Centre for Basic Sciences, Kolkata, India, 2015 (**Best Oral Presentation**).
3. **Suman Das,** Alan N. Amin, Yi-Hsuan Lin and Hue Sun Chan*, Coarse-grained simulations of disordered protein condensates: Effect of interaction potentials and charge pattern parameters, Chemical Biophysics Symposium, Toronto.

Programming Languages: Fortran, C, C++, Python

Simulations Softwares: DL_POLY, DL_Field, Gromacs, Hoomd-Blue, Lammps, VMD, Packmol, Gaussian, Hyperchem

Mentoring Experience:

- Alan Amin, Research Undergraduate Student 2017 - 2018
  Department of Biochemistry, University of Toronto
  Project: Coarse-grain simulation of model disordered proteins: Utility and limitations of simple charge pattern parameters
- Andrea Guljas, Rotation Student 2018
  Department of Biochemistry, University of Toronto
  Project: Coarse-grain simulation of intrinsically disordered germ-granule protein Ddx4: Effect of charge patterns

Membership: Biophysical Society, Canadian Biophysical Society.

References: Available upon request