




## Faculty Details proforma for DU Web-site

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cc: [director@ducc.du.ac.in](mailto:director@ducc.du.ac.in))

<b>Title</b>	<b>Prof.</b>	<b>First Name</b>	<b>Parbati</b>	<b>Last Name</b>	<b>Biswas</b>	<b>Photograph</b>
<b>Designation</b>	<b>Professor</b>					
<b>Address</b>	<b>Department of Chemistry University of Delhi, Delhi, India</b>					
<b>Phone No Office</b>	<b>011-27666646 (203)</b>					
<b>Residence</b>	<b>A4-202, Kingsbury, T.D.I. City, Kundli, Haryana.</b>					
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<b>Email</b>	<a href="mailto:pbiswas@chemistry.du.ac.in">pbiswas@chemistry.du.ac.in</a>					
<b>Web-Page</b>	<a href="http://people.du.ac.in/~pbiswas/">http://people.du.ac.in/~pbiswas/</a>					
<b>Educational Qualifications</b>						
<b>Degree</b>	<b>Institution</b>				<b>Year</b>	
<b>Ph.D.</b>	<b>Indian Institute of Science, Bangalore</b>				<b>1996</b>	
<b>M.Phil. / M.Tech.</b>						
<b>PG</b>	<b>Univ. of Calcutta, Calcutta</b>				<b>1989</b>	
<b>UG</b>	<b>St. Xavier's College, Univ. of Calcutta, Calcutta</b>				<b>1987</b>	
<b>Any other qualification</b>						
<b>Career Profile</b>						
<ol style="list-style-type: none"><li>1. Univ. of Delhi, Dept. of Chemistry, 2005-present.</li><li>2. Rensselaer Polytechnic Institute, New York, U. S. A. Postdoctoral Research Associate, 2003-2004.</li><li>3. University of Pennsylvania, Philadelphia, U. S. A. Postdoctoral Fellow. 2001-2003.</li><li>4. Universität Freiburg, Germany, Humboldt Fellow, 1998-2000.</li><li>5. University of Leeds, U. K. EPSRC Fellow, 1997-1998.</li></ol>						

<b>Administrative Assignments</b>
Convener, Physical Chemistry (2017-2018), Member of various committee, Dept. Research Committee, Syllabus and Course Revision Committee etc.
<b>Areas of Interest / Specialization</b>
Statistical Mechanics of Polymers and Biopolymers: Theory and Simulation Soft Condensed Matter
<b>Subjects Taught</b>
<p><b>M. Sc. Courses:</b></p> <ol style="list-style-type: none"> <li>1. Statistical Mechanics (Core Course)</li> <li>2. Irreversible Thermodynamics and Nonequilibrium Statistical Mechanics</li> <li>3. Advanced Statistical Mechanics</li> </ol> <p><b>M. Phil./Ph. D. Courses:</b></p> <ol style="list-style-type: none"> <li>1. Statistical Mechanics of Complex Systems</li> <li>2. Soft Condensed Matter</li> <li>3. Statistical Mechanics of Interacting Systems</li> </ol>
<b>Research Guidance</b>
<p>List against each head (If applicable)</p> <p><b>Ph. D. Students:</b></p> <ol style="list-style-type: none"> <li>1. Shilpa Gupta (UGC-SRF, 2015-present): Conformational Characterization of Macromolecules by Molecular Dynamics Simulation.</li> <li>2. Leena Aggarwal (CSIR-SRF, 2016-present): Statistical Theory of Mapping Local Water Densities around Biomolecules.</li> <li>3. Manisha Handa (CSIR-SRF, 2016-present): Dendritic polymers in semidilute solutions.</li> <li>4. Priya Dey (CSIR-SRF, 2017-present): Trapping in Stochastic Networks.</li> <li>5. Sumit Kumar (CSIR-JRF, 2020-present): Stress Relaxation in Entangled Dendrimer Melts.</li> </ol>

**Thesis Submitted:**

- 1. Shivangi Sharma: Biomolecular Dynamics in Complex Environments: A Generalized Langevin Equation Approach (2019).**
- 2. Vishal Singh: Stochastic Dynamics of Protein Misfolding and Aggregation (2020).**

**Former Ph. D. Students:**

- 1. Dr. Adesh Kumar (2013-2019): Role of Local, Nonlocal Interactions and Correlated Mutations in Misfolding Proteins.**
- 2. Dr. Gobind Ji Rai (2012-2017): Role of Excluded Volume on the Conformation and Rheology of Flexible Dendritic Polymers.**
- 3. Dr. Pooja Rani (2010-2015): *IN-SILICO* Study of Globular and Disordered Proteins through Sequence Analysis and Hydration Properties.**
- 4. Dr. Anupaul Baruah (2009-2014): A generalized approach to investigate various folding phenomena and intrinsic disorder in proteins by sequence design and mutation.**
- 5. Dr. Amit Kumar (2008-2013): A Generalized Theoretical Model to Evaluate the Conformational and Dynamic Properties of Semiflexible Dendrimers.**
- 6. Dr. Nidhi Rawat (2007-2012): Statistical Analysis of the Physico-chemical Properties of Proteins, Nucleic Acids and Their Complexes.**
- 7. Dr. Nicholus Bhattacharjee (2006-2011): Statistical Analysis and Molecular Dynamics Simulations of Protein Secondary Structures.**
- 8. Dr. Arnab Bhattacharjee (2006-2010): Statistical Theory of Designing**

**Evolutionary Fit Protein Sequences.**

- 9. Dr. Snehlata (2006-2009): Designing, Synthesis and Biological Screening of Peptidomimics as ACE Inhibitors. (Co-advised with Dr. Santosh Pasha, I.G.I.B)**

**M. Phil. Student:**

**L. Saya Devi (2006-2007).**

**Publications Profile**

- 1. L. Aggarwal and P. Biswas, 2020, Interaction volume is a measure of the aggregation propensity of Amyloid- $\beta$ , *J. Phys. Chem. Lett.*, DOI: 10.1021/acs.jpcclett.0c00922 (5-year Impact Factor: 8.501)**
- 2. S. Gupta and P. Biswas, 2020, Orientational relaxation of Poly(propylene imine) dendrimers at different pH, *J. Phys. Chem. B*, DOI: 10.1021/acs.jpccb.0c00536 (5-year Impact Factor: 3.528)**
- 3. L. Aggarwal and P. Biswas, 2020, Effect of Alzheimer's disease causative and protective mutations on the hydration environment of Amyloid- $\beta$ , *J. Phys. Chem. B*, 124, 2311 (5-year Impact Factor: 3.528)**
- 4. P. Biswas, 2019, Theoretical and computational advances in protein misfolding in *Advances in Protein Chemistry and Structural Biology*, Elsevier, 118, 1.**
- 5. Neha, P. Biswas and Rama Kant, 2019, Theory for the dynamics of polymer grafted nanoparticle in solution, *J. Phys. Chem. C*, 123, 30657 (5-year Impact Factor: 4.3)**
- 6. S. Sharma and P. Biswas, 2019, Unusual dynamics of hydration water around**

- motor proteins with long-ranged hydrodynamic fluctuations, *Physica A*, 534, 122045 (5-year Impact Factor: 2.5)
7. M. Handa and P. Biswas, 2019, Orientational relaxation of ring polymers in dilute solutions, *Soft Matter*, 15, 5896 (5-year Impact Factor: 4.289)
  8. A. Kumar and P. Biswas, 2019, Effect of correlated pair mutations in protein misfolding, *J. Phys. Chem. B*, 123, 5069 (5-year Impact Factor: 3.528)
  9. A. Kumar and P. Biswas, 2019, Effect of site-directed point mutations on protein misfolding: A simulation study, *Proteins: Struct. Funct. Bioinform.*, 87, 760 (5 year Impact Factor: 2.274)
  10. S. Gupta and P. Biswas, 2018, Effect of pH on size and internal structure of Poly (propylene imine) dendrimers: A molecular dynamics simulation study, *J. Phys. Chem. B*, 122, 9250 (5-year Impact Factor: 3.528)
  11. L. Aggarwal and P. Biswas, 2018, Hydration water distribution around intrinsically disordered proteins, *J. Phys. Chem. B*, 122, 4206 (5-year Impact Factor: 3.528)
  12. S. Basu and P. Biswas, 2018, Salt-bridge dynamics in intrinsically disordered proteins: A trade-off between electrostatic interactions and structural flexibility, *Biochim. Biophys. Acta, Proteins & Proteomics*, 1866, 624 (5-year Impact Factor: 2.879)
  13. V. Singh and P. Biswas, 2018, Estimating the mean first passage time of protein misfolding, *Phys. Chem. Chem. Phys.*, 20, 5692 (5-year Impact Factor: 4.219)
  14. S. Sharma and P. Biswas, 2018, Hydration water dynamics around a protein surface: a first passage time approach, *J. Phys. Cond. Matt.*, 30, 035101 (5-year

**Impact Factor: 2.507)**

15. G. J. Rai and P. Biswas, 2017, Topology driven structural transition of dendrimers with a dimensional cross-over, *Polymer*, 115, 118 (5-year Impact Factor: 3.740)
16. A. Kumar, A. Baruah and P. Biswas, 2017, Role of local and nonlocal interactions in folding and misfolding of globular proteins, *J. Chem. Phys.*, 146, 065102 (5-year Impact Factor: 2.907)
17. A. Baruah and P. Biswas, 2016, Globular-Disorder transition in proteins: A compromise between hydrophobic and electrostatic interactions? *Phys. Chem. Chem. Phys.*, 18, 23207. (5-year Impact Factor: 4.219)
18. G. J. Rai, A. Kumar and P. Biswas, 2016, Dynamics of Dendrimers with Excluded Volume: A Comparison with Experiments and Simulations, *J. Rheol.*, 60, 111 (5-year Impact Factor: 2.819)
19. P. Rani and P. Biswas, 2015, Diffusion of Hydration Water around Intrinsically Disordered Proteins, *J. Phys. Chem. B*, 119, 13262 (5-year Impact Factor: 3.528)
20. A. Baruah, P. Rani and P. Biswas, 2015, Conformational entropy of intrinsically disordered proteins from amino acid triads, *Sci. Rep.*, 5, 11740 (5-year Impact Factor: 4.847)
21. A. Baruah and P. Biswas, 2015, Designing pH induced fold switch in proteins, *J. Chem. Phys.*, 142, 185102 (5-year Impact Factor: 2.907)
22. G. J. Rai, A. Kumar and P. Biswas, 2015, Effect of excluded volume on the rheology and transport dynamics of randomly hyperbranched polymers, *J. Chem. Phys.*, 142, 174906 (5-year Impact Factor: 2.907)

23. P. Rani and P. Biswas, 2015, Local structure and dynamics of hydration water in intrinsically disordered proteins, *J. Phys. Chem. B*, 119, 10858 (5-year Impact Factor: 3.528)
24. P. Rani, A. Baruah and P. Biswas, 2014, Does lack of secondary structure imply intrinsic disorder in proteins? A sequence analysis, *Biochim. Biophys. Acta, Proteins & Proteomics*, 1844, 1827 (5-year Impact Factor: 2.879)
25. G. J. Rai, A. Kumar and P. Biswas, 2014, Intramolecular relaxation of flexible dendrimers with excluded volume, *J. Chem. Phys.*, 141, 34902 (5-year Impact Factor: 2.907)
26. P. Rani and P. Biswas, 2014, Shape dependence of the radial distribution function of hydration water around proteins, *J. Phys. Cond. Matt.*, 26, 335102 (5-year Impact Factor: 2.507)
27. A. Baruah and P. Biswas, 2014, The role of site-directed point mutations in protein misfolding, *Phys. Chem. Chem. Phys.*, 16, 13964. (5-year Impact Factor: 4.219)
28. N. Rawat and P. Biswas, 2014, Hydrogen bond dynamics in intrinsically disordered proteins, *J. Phys. Chem. B*, 118, 3018. (5-year Impact Factor: 3.528)
29. A. Baruah and P. Biswas, 2014, Designing sequences with varied flexibility and stability through pair mutations, *RSC Adv.*, 4, 8031. (5-year Impact Factor: 3.907)
30. A. Kumar and P. Biswas, 2013, Orientational relaxation in semiflexible dendrimers, *Phys. Chem. Chem. Phys.*, 15, 20294. (5-year Impact Factor: 4.219)
31. N. Bhattacharjee and P. Biswas, 2013, Helical ambivalency induced by point

- mutations, *BMC Struct. Biol.*, 13, 9. (5-year Impact Factor: 2.096)
32. A. Kumar, G. J. Rai and P. Biswas, 2013, Conformation and intramolecular relaxation dynamics of semiflexible randomly hyperbranched polymers, *J. Chem. Phys.*, 138, 104902. (5-year Impact Factor :2.907)
33. N. Bhattacharjee, P. Rani and P. Biswas, 2013, Capturing molten globule state of  $\alpha$ -lactalbumin through constant pH molecular dynamics simulations, *J. Chem. Phys.*, 138, 095101. (5-year Impact Factor :2.907)
34. A. Kumar and P. Biswas, 2013, Semiflexibility induced range of conformations in dendrimers, *Soft Matter (Communication)*, 9, 2375. (5-year Impact Factor :4.289)
35. S. Chaudhary, M. K. Seth, I. D. Vats, K. Kumar, P. Biswas, J. Karar, M. E. Hussain, M. A. Q. Pasha and S. Pasha, 2013, Sulphur containing angiotensin converting enzyme inhibitor-3-thienylalanine-orinthyl-proline activates endothelial function and expression of genes involved in renin angiotensin system, *J. Cardiovasc. Pharm.*, 61, 311. (5-year Impact Factor: 2.243)
36. A. Kumar and P. Biswas, 2012, Conformational transitions in semiflexible dendrimers induced by bond orientations, *J. Chem. Phys.*, 137, 124903. (5-year Impact Factor: 2.907)
37. N. Rawat and P. Biswas, 2012, Hydrophobic moments, shape, and packing in disordered proteins, *J. Phys. Chem. B*, 116, 6326. (5-year Impact Factor: 3.528)
38. A. Baruah, A. Bhattacharjee and P. Biswas, 2012, Role of conformational heterogeneity on protein misfolding, *Soft Matter*, 8, 4432. (5-year Impact Factor: 4.289)



39. N. Bhattacharjee and P. Biswas, 2012, Are ambivalent  $\alpha$ -helices entropically driven? *PEDS*, 25, 73. (5-year Impact Factor :2.339)
40. N. Bhattacharjee and P. Biswas, 2011, Local order and mobility of water molecules, *J. Phys. Chem. B*, 115, 12257. (5-year Impact Factor: 3.528)
41. N. Bhattacharjee and P. Biswas, 2011, Structure of hydration water in proteins: A comparison of molecular dynamics simulations and database analysis, *Biophys. Chem.*, 158, 73. (5-year Impact Factor: 2.121)
42. A. Kumar and P. Biswas, 2011, Intramolecular relaxation dynamics in semiflexible dendrimers, *J. Chem. Phys.*, 134, 214901. (5-year Impact Factor: 2.907)
43. N. Rawat and P. Biswas, 2011, Shape, flexibility and packing of proteins and nucleic acids in complexes, *Phys. Chem. Chem. Phys.*, 13, 9632. (5-year Impact Factor: 4.219)
44. P. Biswas and A. Bhattacharjee, 2011, Role of foldability and stability in designing real protein sequences, *Phys. Chem. Chem. Phys.*, 13, 9223. (5-year Impact Factor: 4.219)
45. A. Bhattacharjee and P. Biswas, 2011, Designing misfolded sequences by energy landscaping, *J. Phys. Chem. B*, 115, 113. (5-year Impact Factor: 3.528)
46. N. Bhattacharjee and P. Biswas, 2010, Statistical analysis and molecular dynamics simulations of ambivalent  $\alpha$ -helices, *BMC Bioinformatics*, 11, 519. (5-year Impact Factor: 3.452)
47. N. Bhattacharjee and P. Biswas, 2010, Position-specific propensities of amino acids in the  $\beta$ -strand, *BMC Struct. Biol.*, 10, 29. (5-year Impact Factor: 2.096)

48. A. Kumar and P. Biswas, 2010, Dynamics of semiflexible dendrimers in dilute solutions, *Macromolecules*, 43, 7378. (5-year Impact Factor: 5.654)
49. A. Bhattacharjee and P. Biswas, 2010, Neutrality and evolvability of designed protein sequences, *Phys. Rev. E*, 82, 011906. (5-year Impact Factor: 2.315)
50. A. Bhattacharjee and P. Biswas, 2009, Statistical theory of protein sequence designs by random mutation, *J. Phys. Chem. B*, 113, 5520. (5-year Impact Factor: 3.528)
51. A. Bhattacharjee and P. Biswas, 2009, Combinatorial design of protein sequences with applications to real and lattice proteins, *J. Chem. Phys.*, 131, 125101. (5-year Impact Factor: 2.907)
52. N. Bhattacharjee and P. Biswas, 2009, Structural patterns in  $\alpha$ -Helices and  $\beta$ -Sheets in globular proteins, *Prot. Pept. Lett.*, 16, 953. (5-year Impact Factor: 1.046)
53. N. Rawat and P. Biswas, 2009, Size, shape and flexibility of proteins and DNA, *J. Chem. Phys.*, 131, 165104. (5-year Impact Factor: 2.907)
54. A. Bhattacharjee and P. Biswas, 2009, Statistical theory of neutral protein evolution by random site mutations, *J. Chem. Sci.*, 121, 887. (5-year Impact Factor: 1.421)
55. Snehlata, I. D. Vats, M. Chopra, P. Biswas and S. Pasha, 2009, Effect of varying chain length between P1 and P1' position of of tripeptidomimics on activity of angiotensin converting enzyme inhibitors, *Bioorg. Med. Chem. Lett.* 19, 4364. (5-year Impact Factor: 2.286)
56. K. Hanif, Snehalata, M.C. Pavar, E. Arif, P. Biswas, M. Fahim, M. A. Pasha and

- S. Pasha, 2009, Effect of 3-thienylalamine-ornithine-proline, new Sulphur-containing angiotensin-converting enzyme inhibition on blood pressure and oxide stress in spontaneously hypertensive rats, *J. Cardiovasc. Pharm.* 53, 145. (5-year Impact Factor: 2.243)
57. S. Mukherjee, A. Saha, P. Biswas, C. Mandal and K. Ray, 2008, Structural analysis protein variants of factor IX to predict functional aberration haemophilia B, *Haemophilia*, 14, 1076. (5-year Impact Factor: 2.584)
58. A. Sharma, S. Chavali, A. Mahajan, P. Biswas and D. Bharadwaj, 2008, Multiple substitution at single site: interpreting the effect of Asn92 mutations in human coagulation factor IX, *Haemophilia*, 14, 396. (5-year Impact Factor: 2.584)
59. M. Vidyasagar et. Al, 2007, Biosuite: A comprehensive bioinformatics software package (a unique industry-academia collaboration), *Current Sci.*, 92, 29. (5-year Impact Factor: 0.944)
60. P. Biswas, J. Zou and J. G. Saven, 2005, Statistical theory for protein ensembles with designed energy landscapes, *J. Chem. Phys.*, 123, 154908. (5-year Impact Factor: 2.907)
61. P. Biswas, R. Kant and A. Blumen, 2001, Stretch dynamics of flexible dendritic polymers in solution, *J. Chem. Phys.*, 114, 2430. (5-year Impact Factor: 2.907)
62. P. Biswas, R. Kant and A. Blumen, 2000, Polymer dynamics and topology: Extension of stars and dendrimers in external fields, *Macromol. Theory Simul.*, 9, 56. (5-year Impact Factor: 1.559)
63. R. Kant, P. Biswas and A. Blumen, 2000, Hydrodynamic effects on the extension

- of stars and dendrimers in external fields, *Macromol. Theory Simul.*, 9, 608. (5-year Impact Factor: 1.559)
64. T. C. B. McLeish, P. Biswas et. al, 1999, Dynamics of entangled H-polymers: Theory, rheology and neutron-scattering, *Macromolecules*, 32, 6734. (5-year Impact Factor: 5.654)
65. P. Biswas, A. Paramekanti and B. J. Cherayil, 1996, Shapes of generalized random walks, *J. Chem. Phys.*, 104, 3360. (5-year Impact Factor: 2.907)
66. P. Biswas, A. Paramekanti and B. J. Cherayil, 1995, Polymers below the theta point: Renormalization group considerations, *J. Chem. Phys.*, 103, 7562. (5-year Impact Factor: 2.907)
67. P. Biswas and B. J. Cherayil, 1995, Dynamics of fractional Brownian walks, *J. Phys. Chem.*, 99, 816. (5-year Impact Factor: 3.528)
68. P. Biswas and B. J. Cherayil, 1994, Radial dimensions of starburst polymers, *J. Chem. Phys.*, 100, 3201. (5-year Impact Factor: 2.907)
69. P. Biswas and B. J. Cherayil, 1994, Chain dimensions near the critical point, *J. Chem. Phys.*, 100, 4665. (5-year Impact Factor: 2.907)
70. B. J. Cherayil and P. Biswas, 1993, Path integral description of polymers using fractional Brownian walks, *J. Chem. Phys.*, 99, 9230. (5-year Impact Factor: 2.907)

#### Conference Organization/ Presentations (in the last three years)

##### 1. Organization of a Conference:

Organized a Satellite Workshop on “Advances in Molecular Dynamics of Biomolecules” in SC&IS Jawaharlal Nehru University, New Delhi,

**December 3-4, 2013.**

**Source of Funding: Department of Biotechnology, Govt. of India  
Department of Electronics & Information Technology, Govt. of India.**

## **2. Participation as Paper/Poster Presenter:**

### **Poster presentations:**

- 1. M. Handa and P. Biswas, Poster, “Orientational and Intramolecular Relaxation of Ring Polymer in Dilute Solutions” presented in International Conference on Emerging Trends in Chemical Sciences at Aligarh Muslim University, Aligarh, Uttar Pradesh, 2020.**
- 2. S. Gupta and P. Biswas, Poster, “Orientational Relaxation of Poly(propylene imine) Dendrimers at Different pH” presented in NSAPST-2020 at Sardar Patel University, Vallabh Vidyanagar, Gujarat, 2020.**
- 3. M. Handa and P. Biswas, Poster, “Orientational Relaxation of Ring Polymers in Dilute Solutions” presented in 2<sup>nd</sup> National Conference on Emerging Trends and Future Challenges in Chemical Sciences at Kirori Mal College, University of Delhi, Delhi, 2020**
- 4. L. Aggarwal and P. Biswas, Poster, “Effect of Mutations on Hydration Environment of Amyloid- $\beta$ ” presented in ASM-2019 at IIT Delhi, 2019.**
- 5. V. Singh and P. Biswas, Poster, “Estimating the Mean First Passage Time of Protein Misfolding” presented in 16<sup>th</sup> Theoretical Chemistry Symposium-2019 at BITS Pilani, 2019.**
- 6. S. Gupta and P. Biswas, Poster, “Effect of pH on Size and Internal Structure of**

- Poly (propylene imine) Dendrimers: A Molecular Dynamics Simulation Study” presented in 16<sup>th</sup> Theoretical Chemistry Symposium-2019 at BITS Pilani, 2019.**
- 7. L. Aggarwal and P. Biswas, Poster, “Hydration Water Distribution Around Intrinsically Disordered Proteins”, presented in 16<sup>th</sup> Theoretical Chemistry Symposium-2019 at BITS Pilani, 2019.**
  - 8. S. Sharma and P. Biswas, “Hydration Water around the Protein Surface” presented at the ACS on Campus at University of Delhi, Delhi, 2018.**
  - 9. A. Kumar, A. Baruah and P. Biswas, “Role of Local and Nonlocal Interactions and Site directed point mutations in Folding and Misfolding of Globular Proteins” presented at the ACS on Campus at University of Delhi, Delhi, 2018.**
  - 10. S. Sharma and P. Biswas, “Hydration Water around the Protein Surface” presented in National Conference on “Breaking Barriers through Bioinformatics and Computational Biology”, IIT Delhi, 2017.**
  - 11. A. Kumar, A. Baruah and P. Biswas, “Role of Local and Nonlocal Interactions and Site directed point mutations in Folding and Misfolding of Globular Proteins” presented in National Conference on “Breaking Barriers through Bioinformatics and Computational Biology”, IIT Delhi, 2017.**
  - 12. S. Sharma and P. Biswas, “A First Passage Time Approach to Study the Water Dynamics Around a Protein Surface” presented at 15<sup>th</sup> Indian Theoretical Chemistry Symposium, University of Hyderabad, Hyderabad, 2016.**
  - 13. A. Kumar, A. Baruah and P. Biswas, “Role of Local and Nonlocal Interactions in Folding and Misfolding of Globular Proteins” presented at 15<sup>th</sup> Indian Theoretical Chemistry Symposium, University of Hyderabad, Hyderabad, 2016.**

14. G. J. Rai and P. Biswas, “Dynamics of Dendrimers with Excluded Volume: A Comparison with Experiments and Simulations” presented at DU-JAIST Indo-Japan Symposium on Chemistry of Functional Molecules/Materials, University of Delhi, Delhi, 2016.
15. S. Sharma and P. Biswas, “Effect of Colored Noise on Unbiased Chain Translocation Dynamics” presented at DU-JAIST Indo-Japan Symposium on Chemistry of Functional Molecules/Materials, University of Delhi, Delhi, 2016.
16. A. Kumar, A. Baruah and P. Biswas, “The Role of Local and Nonlocal Interactions in Protein Folding/Misfolding” presented at Symposium on Accelerating Biology 2016: Decoding the Deluge, CDAC, Pune, 2016.
17. P. Rani and P. Biswas, “Local Structure and Dynamics of Hydration Water around Intrinsically Disordered Proteins” presented at Symposium on Accelerating Biology 2016: Decoding the Deluge, CDAC, Pune, 2016.
18. P. Rani and P. Biswas, “Shape Dependence of the Radial Distribution Function of Hydration Water around Proteins” presented at National Conference on Interdisciplinary Approaches in Chemical Sciences, Jamia Millia Islamia, Delhi, 2015.
19. G. J. Rai and P. Biswas, “Dynamics of Dendritic Polymers with Excluded Volume” presented at National Conference on Interdisciplinary Approaches in Chemical Sciences, Jamia Milia Islamia, Delhi, 2015.
20. A. Baruah and P. Biswas, “The role of mutations and structural flexibility in protein misfolding” presented in CDAC, Pune, 2015.
21. A. Baruah and P. Biswas, “The role of mutations and structural flexibility in

- protein misfolding” presented at T.C.S., NCL, Pune, 2014.
22. G. J. Rai and P. Biswas, “Intramolecular relaxation of flexible dendrimers with excluded volume” presented at T.C.S., NCL, Pune, 2014.
23. A. Kumar and P. Biswas, “Conformation and intramolecular relaxation dynamics of semiflexible randomly hyperbranched polymers” presented at 50<sup>th</sup> Annual Convention of Chemists 2013, Panjab University, Chandigarh, December, 2013.
24. P. Rani and P. Biswas, “Capturing molten globule state of  $\alpha$ -lactalbumin through constant pH molecular dynamics simulations” presented at ICBSD, I. I. T. Madras, Chennai, November, 2013.
25. P. Rani and P. Biswas, “Conformational entropy of intrinsic disordered proteins” presented at T. C. S., I. I. T. Guwahati, Assam, 2012.
26. A. Baruah and P. Biswas, “How does conformational heterogeneity affect protein folding?” presented at T. C. S., I. I. T. Guwahati, Assam, 2012.
27. A. Kumar and P. Biswas, “Role of bond orientation in semiflexible dendrimers” presented at I. S. M., B. A. R. C. Mumbai, 2012.
28. A. Baruah and P. Biswas, “Effect of native state fluctuation on protein misfolding” presented at I-ISC, J. M. I. Delhi, 2012.
29. N. Rawat and P. Biswas, “Hydrophobic moments, shape and packing of disordered proteins” presented at I-ISC, J. M. I. Delhi, 2012.
30. N. Bhattacharjee and P. Biswas, “Structure and Mobility of Water Molecules around Ambivalent Helices” presented at J. N. U. Delhi, 2011.

**Research Projects (Major Grants/Research Collaboration)**



1. **Principal Investigator in the DST (SERB) project titled “Hydration Pattern of Misfolded proteins” (Project No.-EMR/2016/006619)**
2. **Principal Investigator in the DST (SERB) project titled “Role of non-local interactions on the fold-misfold transition of proteins” (Project No.-SB/S1/PC-023/2013)**
3. **Principal Investigator in the DST (SERC) project titled “Statistical theory of optimized potentials for folding proteins” (Project No.-SR/S1/PC-07/2006)**

#### **Awards and Distinctions**

1. **First Charusita Chakravarty Memorial Lecture Award, presented at 20<sup>th</sup> CRSI National Symposium in Chemistry, Gauhati University, Guwahati, Assam, 2017.**
2. **Professor S. K. Chatterjee award for outstanding woman scientist 2016, Indian Institute of Science**
3. **Alexander von Humboldt Fellowship (Germany)**
4. **EPSRC fellowship (U.K.)**

#### **Association With Professional Bodies**

**Member, American Chemical Society (ACS)**

#### **Other Activities**

##### **Invited Talk/Oral Presentation:**

1. **“Structural Transitions in Dendritic Polymers Induced by Semiflexibility? Excluded Volume and pH” presented at International conference on Smart Materials for Sustainable Technology (SMST-2020), Goa, February 2020.**
2. **"Hydration Pattern of Intrinsically Disordered Proteins" presented at APATCC 2019, Sydney, Australia, October 2019.**

3. **"Protein Misfolding: A Generalized Approach"** presented at **Chemical Frontiers Goa 2019, August 2019.**
4. **"Hydration Pattern of Intrinsically Disordered Proteins"** presented at **Conference on Advanced Simulation Methods: DFT, MD and Beyond (ASM-2019), IIT Delhi, March 2019.**
5. **"How do Proteins Misfold? Simple Models to Real Proteins"** presented at **Conference on Recent Advances in Dynamics at the Interface of Chemistry and Biology (DICB-2019), IISc Bangalore, February 2019.**
6. **"Conformational Transition in Dendritic Polymers"** presented at **International Conference on Polymer Science and Technology, SPSI-MACRO-2018, IISER Pune, December 2018.**
7. **"Dynamics of Dendrimers with Semiflexibility and Excluded Volume"** presented at **The Conference on Nonlinear System and Dynamics-2018, SCIS, JNU, New Delhi, October 2018.**
8. **"Exploring Intrinsic Disorder in Proteins"** presented in **National Symposium on Contributions of Women in Science in India, Kolkata, February 2018.**
9. **"Understanding Intrinsic Disorder in Proteins"** presented at **International Conference on Intrinsically Disorder Proteins: Forms, Functions and Diseases 2017, IISER Mohali, December 2017.**
10. **"Explaining Misfolding and intrinsic Disorder in proteins: Simple Models to Real Proteins"** **First Charusita Chakravarty Memorial Lecture presented at 20<sup>th</sup> CRSI National Symposium in Chemistry 2017, Gauhati University, February 2017.**

11. **"Understanding Intrinsic Disorder in Proteins"** presented at **Accelerating Biology 2017, C-DAC Pune, January 2017.**
12. **"Conformation and Dynamics of Dendritic Polymers with Semiflexibility and Excluded Volume"** presented at **15<sup>th</sup> Theoretical Chemistry Symposium, University of Hyderabad, December 2016.**
13. **"Conformation and Dynamics of Dendritic Polymers with Excluded Volume"** presented at **IIT Madras, September 2016.**
14. **"Designing Energy Landscapes in Misfolding Proteins"** presented at **I.P.C., IISc Bangalore, July 2016.**
15. **"Basic Principles of Polymer Physics: Concepts and Challenges"** presented at **Bhaskaracharya College of Applied Sciences, University of Delhi, March 2016.**
16. **"Conformation and dynamics of branched polymers with semiflexibility and excluded volume"** presented at **Compflu-2016, IISER-Pune, January 2016.**
17. **"A generalized model for the dynamics of dendritic polymers with excluded volume interactions"** presented at **conference on Physical and Biophysical Chemistry: Theory and Experiment, IIT Bombay, December 2015.**
18. **"A generalized approach to understand intrinsically disordered proteins"** presented at **IISER Mohali, August 2015.**
19. **"Intramolecular relaxation of dendrimers with semiflexibility & excluded volume"** presented at **INST Mohali, August 2014.**
20. **"Conformational dynamics of ambivalent helices"** Presented at **Accelerating Biology 2014 Computing Life, YASHADA, Pune, February 2014.**
21. **"Role of site directed point mutations in misfolding proteins"** Presented at

- International Conference on Biomolecular Simulations & Dynamics: Recent Advances & Future Perspectives. I. I. T. Madras, Chennai, November 2013.**
- 22. “How do proteins misfold?” Presented at International conference on Interdisciplinary Areas with Chemical Sciences. Panjab University, Chandigarh, October 2013.**
- 23. “Sequence and conformational heterogeneity in misfolding proteins” Presented at Current Trend in Biochemical and Biophysical Modelling. S. N. Bose Research Institute, Kolkata, October 2013.**
- 24. “Sequence and conformational heterogeneity in misfolding proteins” Presented at Biomolecules in Motion: Theory and Simulations. J. N. U, Delhi, January 2013.**
- 25. “Conformational and dynamical properties of semiflexible dendrimers” Presented at 11<sup>th</sup> Theoretical Chemistry Symposium, I. I. T. Guwahati, Assam, December 2012.**
- 26. “Conformation, entropy and hydration pattern of ambivalent helices” Presented at National Conference on New Trends in Bioinformatics. I. I. T. Delhi, July 2012.**
- 27. “How do proteins misfold?” Presented at Biomolecular Simulation: Algorithm and Application. J. N. U. Delhi, March 2011.**

Signature of Faculty Member