

Dr. Partha Pratim Gopmandal

Assistant Professor, Department of Mathematics

National Institute of Technology Durgapur, Durgapur-713209, W. B., INDIA

Email: parthap1218@gmail.com, partha.gopmandal@maths.nitdgp.ac.in

Mobile: +91-7250276690, +91-9434789046.

URL: <https://www.nitdgp.ac.in/faculty/8bfac629-aa34-4b07-8c04-fb0682e60a7f>

Google Scholar: <https://scholar.google.co.in/citations?user=RwysmhsAAAAJ&hl=en>

Educational Background

J. K. College Purulia (The University of Burdwan)	Mathematics	B. Sc. (H)	2004
The University of Burdwan	Mathematics	M. Sc.	2006
Indian Institute of Technology Kharagpur	Mathematics	Ph. D.	2013

Research Areas

- Computational Fluid Dynamics
- Micro/Nanofluidics Modeling
- General Convective-Diffusion-Electromigration processes (Electrophoresis, Electroosmosis, Sedimentation Potential, Streaming Potential, Isotachophoresis, Dielectrophoresis, Diffusiophoresis, Diffusioosmosis)
- Analytical and Numerical methods for ODE and PDE

Teaching and Research Experience:

- Dec 2018 to till date Assistant Professor, Dept. of Mathematics, NIT Durgapur, India
- Oct-2014 to Dec-2018 Assistant Professor, Dept. of Mathematics, NIT Patna, India
- Dec-2013 to Oct-2014 Post-Doctoral Research Associate; School of Mechanical and Materials Engineering, Washington State University, Pullman, USA
- Jan-2009 to May-2013 Research Fellow (CSIR Individual); Dept. of Mathematics, IIT Kharagpur, India (Thesis Supervisor-Prof. Somnath Bhattacharyya)

Externally Funded Projects (Completed/Ongoing/Submitted)

Completed (3)

- I. Research Grant from DST-SERB (File no- YSS/2015/000468), Amount-16.27 Lakh INR (Jan 2016-Jan 2019). Title of the project "Modulation of electroosmotic flow through nanochannel".
- II. Research Initiation Grant, funded by NIT Durgapur, Amount-5 Lakh INR, (April-2019 -April-2021). Title of the project: "Streaming potential through nanofluidic channel with effects of ion partitioning and ion size"
- III. Research Grant from DST-SERB (File no- MTR/2018/001021), Amount-6.60 Lakh INR, and (May 2019-May 2022). Title of the project "Development of hybrid numerical tools to study the electrokinetic transport of bio-colloids".

Submitted (1)

- I. Proposal is submitted for possible funding (Budget-72Lakhs INR), under the Scheme for Promotion of Academic and Research Collaboration (SPARC). Title of the Project "Multiscale Modelling and Simulation of Nanoparticles Transport in ionized continuum medium under External Gradients and Surface Reactions"

SPARC Team: Indian PI: Prof. Somnath Bhattacharyya (Dept. of Mathematics, IIT Kharagpur), **Indian Co-PI: Dr. Partha Pratim Gopmandal (Dept. of Mathematics, NIT Durgapur)**, Foreign PI: Prof. Prashanta Dutta (School of Mechanical Eng., Washington State University, USA), Foreign Co-PI: Prof. Yuehe Lin (School of Mechanical Eng., Washington State University, USA)

Conference/ Workshop/ GIAN Short Term Course /Lecture Series Organized:

- National conference on "Recent Developments in Numerical Techniques and its Applications (RDNTA-2016)" during 7th & 8th April, 2016.

- GIAN short term course on "Electrokinetics of Complex Soft (Bio) Colloids: from Fundamentals to Applications in Biophysics & Environmental Physical-Chemistry" during 9th & 13th April, 2018. (*Foreign Faculty-Prof. J.F.L. Duval, CNRS Research Director, Nancy, France*)
- "Mathematics Lecture Series" at Dept. of Mathematics, NIT Patna during 12-13th Feb., 2018. Invited Speakers: *Prof. Suman Chakraborty (Dept. of Mechanical Eng., IIT Kharagpur) and Prof. Malay Banerjee (Dept. of Mathematics, IIT Kanpur)*
- Invited Lecture at Dept. of Mathematics, NIT Durgapur, during 23-24th Sept. 2019. Invited Speaker: *Prof. Yasuhisa Adachi (Faculty of Life and Environmental Science, Tsukuba University, Japan)*
- Lecture Series on "Multiscale Fluid Dynamics" (started on November 2022 and continuing).
- "Five days-SERB Sponsored Workshop" on "Differential Equations: Fundamentals to Applications (DEFA-2023)" during 11 -15 December, 2023.

Ph. D/ Project Scholars

- Jhulan Acharya (Jan 2023 to till date): Supervisor
- Sourav Chowdhury (Oct 2020 to till date): Supervisor
- Susmita Samanta (Oct 2020 to till date): Supervisor
- Paramita Mahapatra (Jan 2019 to till date): Supervisor (Thesis submitted)
- Bharti, (Jul 2016 to 22/07/2021) (Ph. D Degree Awarded in December 2021): Supervisor (Jointly with Dr. R. K. Sinha)
- Saurabh Kumar Maurya (Ph. D Degree Awarded in December 2019): Supervisor
- Binod Kumar (Ph. D Degree Awarded in March 2021): Co-supervisor (Jointly with Dr. R. K. Sinha)
- Santanu Saha, (Nov 2016 to March 2018) Former Project fellow

List of Journal Articles (International)

([†] Represent the Corresponding Author; *Best publications are highlighted*)
(Citations - 539, h-index-15, i10 index-23, Source- Google Scholar)

1. S. Majhi, S. Bhattacharyya, Partha P. Gopmandal, Effect of surface charge dependent boundary slip on electrophoresis of a hydrophobic polarizable rigid colloid, (*Langmuir*), ACCEPTED, Year 2024, Publisher-American Chemical Society.
2. Bharti, S. Sarkar, H. Ohshima, Partha P. Gopmandal[†], Electrophoresis of hydrophobic and polarizable liquid droplets in hydrogel medium, (*Journal of Molecular Liquids*), Vol. 395, Year-2024, Pages-123810, Publisher-Elsevier.
3. S. K. Pal, P. Mandal, H. Ohshima, Partha P. Gopmandal[†], A meshless numerical study of conjugate mixed convection of non-Newtonian nanofluids in an enclosure using non-homogeneous model, (*Colloid and polymer Science*), DOI: <https://doi.org/10.1007/s00396-023-05200-3>, Year-2023, Publisher-Springer.
4. S. Chowdhury, P. Mahapatra, H. Ohshima, Partha P. Gopmandal[†], Dynamic Electrophoresis of a Hydrophobic and Dielectric Fluid Droplet, (*Langmuir*), Vol-34, Year-2023, Pages- 14139-14153), Publisher-American Chemical Society.
5. S. Samanta, P. Mahapatra, H. Ohshima, Partha P. Gopmandal[†], Diffusiophoresis of Weakly Charged Fluid Droplets in a General Electrolyte Solution: An Analytical Theory, (*Langmuir*), Vol-39, year-2023, Pages-12452-12466, Publisher-American Chemical Society.
6. S. Samanta, P. Mahapatra, H. Ohshima, Partha P. Gopmandal[†], Diffusiophoresis of hydrophobic spherical particles in a solution of general electrolyte, (*Physics of Fluids*), Vol-35, Year-2023, Pages- 032006-1-16, Publisher-American Institute of Physics.
7. S.K. Pal, Y.V.S.S Sanyasiraju, H. Ohshima, Partha P. Gopmandal[†], A meshless scheme on the electrokinetically driven flow of power-law fluid through nanochannel considering dual effects of heterogeneity in wall charge and surface wettability, (*Journal of Non-Newtonian Fluid Mechanics*), Vol- 310, Year-2022, Pages- 104943, Publisher-Elsevier.
8. S. Chowdhury, P. Mahapatra, H. Ohshima, Partha P. Gopmandal[†], Electrophoresis of a soft particle with a hydrophobic rigid core decorated with a soft-step and partially ion-penetrable polymer layer, (*Physics of Fluids*), Vol-34, Year-2022, Pages- 112019(1-15), Publisher-American Institute of Physics.

9. P. Mahapatra, H. Ohshima, **Partha P. Gopmandal**[†], Effect of hydrodynamic slip on the electrophoresis of hydrophobic spherical particles in a solution of general electrolytes, (*Colloid and polymer Science*), Vol-300, Year-2022, Pages-1311–1325, Publisher-Springer.
10. P. Mahapatra, H. Ohshima, **Partha P. Gopmandal**[†], Electrophoresis of Dielectric and Hydrophobic Spherical Fluid Droplets Possessing Uniform Surface Charge Density, (*Langmuir*), Vol-38, Year-2022, Pages 11421–11431, Publisher-American Chemical Society.
11. D. Kundu, S. Bhattacharyya, **Partha P. Gopmandal**[†], Ion partitioning and ion size effects on streaming field and energy conversion efficiency in a soft nanochannel, (*Colloid and Polymer Science*), Vol-300, Year-2022, Pages- 1049–1062, Publisher-Springer.
12. Bharti, S. Sarkar, H. Ohshima, **Partha P. Gopmandal**[†], Gel Electrophoresis of a Hydrophobic Liquid Droplet with an Equipotential Slip Surface, (*Langmuir*), Vol-38, Year-2022, Pages- 8943–8953, Publisher-American Chemical Society.
13. **Partha P. Gopmandal**, J. F. L. Duval, Electrostatics and electrophoresis of engineered nanoparticles and particulate environmental contaminants: Beyond zeta potential-based formulation, (*Current Opinion in Colloid & Interface Science*), Vol-60, Year-2022, Pages- :101605-1-19. Publisher-Elsevier
14. M. Sarkar, S. K. Maurya, **Partha P. Gopmandal**, S. Sarkar, Hydrodynamics of flow through a degraded channel bed, *Journal of Turbulence*, Vol-22, Year-2021, Pages- 814–842, Publisher: Taylor and Francis
15. P. Mahapatra H. Ohshima, **Partha P. Gopmandal**[†], Electrophoresis of Liquid-Layer Coated Particles: Impact of Ion Partitioning and Ion Steric Effects, (*Langmuir*), Vol-37, Pages- 11316-11329, 2021, Publisher-American Chemical Society.
16. S. K. Maurya, S. Sarkar, H.K. Mondal, H. Ohshima, **Partha P. Gopmandal**[†], Electrophoresis of soft particles with hydrophobic inner core grafted with pH-regulated and highly charged polyelectrolyte layer (*Electrophoresis*), Year:2021, DOI: <https://doi.org/10.1002/elps.202100147>, Publisher-Wiley-VCH.
17. S. K. Maurya, **Partha P. Gopmandal**[†], S. De, H. Ohshima and S. Sarkar, Electrokinetics of Concentrated Suspension of Soft Particles with pH-Regulated Volumetric Charges, (*Langmuir*), Vol-37, Pages- 703–712, 2021, Publisher-American Chemical Society.
18. Bharti, **Partha P. Gopmandal**[†], R. K. Sinha and H. Ohshima, Effect of core hydrophobicity on the electrophoresis of pH-regulated soft particles, (*Soft Matter*), Vol. 17 (11), Pages 3074-3084, Year 2021, Publisher- Royal Society of Chemistry.
19. Bharti, **Partha P. Gopmandal**[†], S. Bhattacharyya and H. Ohshima, A simplified model for gel electrophoresis of a hydrophobic rigid colloid, (*Soft Matter*), Vol.-17, 5700-5710, Year 2021, Publisher- Royal Society of Chemistry.
20. B. Kumar, S. De, **Partha P. Gopmandal**[†], R. K. Sinha and H. Ohshima, Electrophoresis of dielectric and immiscible-liquid-layer-encapsulated colloids in aqueous media. (*Physical Review E*), Vol-102, Pages- 042618, Year 2020, Publisher-American Physical Society.
21. S. S. Barman, S. Bhattacharyya, **Partha P. Gopmandal**[†] and H. Ohshima, Impact of charged polarizable core on mobility of a soft particle embedded in a hydrogel medium. (*Colloid and Polymer Science*) Vol. 29, pages-1729-1739, Year 2020, Publisher-Springer.
22. D. Kundu, S. Bhattacharyya, **Partha P. Gopmandal**[†] and H. Ohshima, Settling of a charged hydrophobic rigid colloid in aqueous media under generalized gravitational field. (*ELECTROPHORESIS*): Vol.42 (7-8), Pages-1010-1020, Year 2020, Publisher-Wiley-VCH.
23. **Partha P. Gopmandal**[†], Simanta De, S. Bhattacharyya, H. Ohshima, Impact of ion steric and ion partitioning effects on electrophoresis of soft particles. (*Physical Review E*) Vol-102, Pages- 032601, Year 2020, Publisher-American Physical Society.
24. P. Mahapatra, **Partha P. Gopmandal**[†], and J. F. L. Duval, Effects of dielectric gradients-mediated ions partitioning on the electrophoresis of composite soft particles: an analytical theory. (*Electrophoresis*), DOI: [10.1002/elps.202000123](https://doi.org/10.1002/elps.202000123), Year-2020, Publisher-Wiley-VCH.

25. B. Barman, D. Kumar, **Partha P. Gopmandal**[†], and H. Ohshima, Electrokinetic ion transport and fluid flow in a pH-regulated polymer-grafted nanochannel filled with power-law fluid, (*Soft Matter*), Vol-14, Pages- , 6862-6874, Year-2020, Publisher-Royal Society of Chemistry.
26. S. De, **Partha P. Gopmandal**[†], B. Kumar and R. K. Sinha, Effect of hydrophobic patch on the modulation of electroosmotic flow and ion selectivity through nanochannel, (*Applied Mathematical Modelling*), Vol. 87, Pages-488-500, 2020, Publisher-Elsevier.
27. Bharti, **Partha P. Gopmandal**[†], S. Bhattacharyya and H. Ohshima, Analytic Expression for Electrophoretic Mobility of Soft Particles with a Hydrophobic Inner Core at Different Electrostatic Conditions, (*Langmuir*), Vol. 36, Pages-3201-3211, 2020, Publisher-American Chemical Society.
28. Bharti, **Partha P. Gopmandal**[†], R. K. Sinha and H. Ohshima, Electrophoresis of pH-regulated zwitterionic soft particle: A semi analytical study, (*Colloid and Polymer Science*), Vol. 298, Pages-79-89, 2020, Publisher-Springer.
29. S. K. Maurya, **Partha P. Gopmandal**[†], H. Ohshima and J. F. L. Duval, Electrophoresis of Composite Soft Particles with Differentiated Core and Shell Permeabilities to Ions and Fluid Flow, (*Journal of Colloid and Interface Science*), Vol. -558, Pages- 280–290, Year 2020, Publisher-Elsevier.
30. Binod Kumar, **Partha P. Gopmandal**[†], R. K. Sinha and H. Ohshima, Electrophoresis of hydrophilic/hydrophobic rigid colloid with effects of relaxation and ion size, (*Electrophoresis*), Vol.-40, Issue-9, Pages 1282-1292, Year-2019, Publisher-Wiley-VCH.
31. S. Saha, **Partha P. Gopmandal**[†] and H. Ohshima, Electroosmotic flow and transport of ionic species through a slit soft nanochannel filled with general electrolytes, (*Meccanica*), Year-2019, <https://doi.org/10.1007/s11012-019-01059-3>, Publisher-Springer.
32. S. K. Maurya, **Partha P. Gopmandal**[†], S. Bhattacharyya and H. Ohshima, Ion partitioning effect on the electrophoresis of a soft particle with hydrophobic core (*Physical Review E*) Vol-98, Pages-023103, Year-2018, Publisher-American Physical Society.
33. S. K. Maurya, **Partha P. Gopmandal**[†] and H. Ohshima, Electrophoresis of concentrated suspension of soft particles with volumetrically charged inner core (*Colloid and Polymer Science*), Vol-296, Pages-721-732, Year-2018, Publisher-Springer.
34. Naren Bag, S. Bhattacharyya, **Partha P. Gopmandal**[†] and H. Ohshima, Electroosmotic flow reversal and ion selectivity in a soft nanochannel (*Colloid and Polymer Science*), Vol-296, Pages- 849-859, Year-2018, Publisher-Springer.
35. P. S. Majee, S. Bhattacharyya, **Partha P. Gopmandal** and H. Ohshima, On gel electrophoresis of dielectric charged particles with hydrophobic surface: a combined theoretical and numerical study, (*Electrophoresis*), Vol. 39, Pages- 794-806, Year-2018, Publisher-Wiley-VCH.
36. U. K. Ghoshal, S. Bhattacharyya, **Partha P. Gopmandal** and S. De, Nonlinear effects on electrophoresis of a soft particle and sustained solute release, (*Transport in Porous Media*) Vol-121, Pages- 121-133, Year-2017, Publisher-Springer.
37. U. K. Ghoshal, S. Bhattacharyya and **Partha P. Gopmandal**, A Numerical Study on Hydrodynamics of a Soft Particle with Hydrophobic Core, (*Recent Patents on Mechanical Engineering*) Vol-10 , Pages- 304-313, Year-2017, Publisher-Bentham Science.
38. S. Saha, **Partha P. Gopmandal**[†] and H. Ohshima, Steady/unsteady electroosmotic flow through nanochannel filled with electrolyte solution surrounded by an immiscible liquid, (*Colloid and Polymer Science*), Vol.-295, Page- 2287–2297, Year-2017, Publisher- Springer.
39. **Partha P. Gopmandal**[†] and H. Ohshima, Importance of pH-regulated charge density on the electrophoresis of soft particles, (*Chemical Physics*) Vol-483-484, Page-165-171, Year-2017, Publisher-Elsevier.
40. **Partha P. Gopmandal**[†] and H. Ohshima, Modulation of electroosmotic flow through electrolyte column surrounded by a dielectric oil layer, (*Colloid and Polymer Science*) Vol-295, Page-1141–115, Year-2017, Publisher-Springer.

41. **Partha P. Gopmandal**[†], S. Bhattacharyya and H. Ohshima, Effect of hydrophobic core on the electrophoresis of a diffuse soft particle, (*Proceedings of The Royal Society A-Mathematical Physical and Engineering Sciences*) Vol-473, Page-20160942., Year-2017, Publisher-The Royal Society.
42. **Partha P. Gopmandal**[†], S. Bhattacharyya and H. Ohshima, On the similarity between the electrophoresis of a liquid drop and a spherical hydrophobic particle, (*Colloid and Polymer Science*), (2017), Vol-295, Page 2077–2082, Year-2017, Publisher-Springer.
43. **Partha P. Gopmandal**[†], S. Bhattacharyya and H. Ohshima, Effect of core charge density on the electrophoresis of a soft particle coated with polyelectrolyte layer, (*Colloid and Polymer Science*) Vol-294, Page 727–733, Year-2016, Publisher-Springer.
44. S. De, S. Bhattacharyya and **Partha P. Gopmandal**, Importance of core electrostatic properties on the electrophoresis of a soft particle, (*Physical Review E*) Vol-94, Page 022661, Year-2016, Publisher-American Physical Society.
45. **Partha P. Gopmandal**[†], S. Bhattacharyya, M. Banerjee and H. Ohshima, Electrophoresis of diffuse soft particles with dielectric charged rigid core grafted with charge regulated inhomogeneous polymer segments (*Colloids and Surfaces A: Physicochemical and Engineering Aspects*), Vol-504, Page- 116-125, Year-2016, Publisher-Elsevier.
46. M. R. Hossan, **Partha P. Gopmandal**, R. Dillon and P. Dutta, A comprehensive numerical investigation of DC dielectrophoretic particle- particle interactions and assembly, (*Colloids and Surfaces A: Physicochemical and Engineering Aspects*), Vol-506, Page- 127-137, Year-2016, Publisher-Elsevier.
47. **Partha P. Gopmandal**[†], S. Bhattacharyya, M. Banerjee and H. Ohshima, Electrophoresis of soft particles with charged rigid core coated with pH-regulated polyelectrolyte layer, (*Colloid and Polymer Science*) Vol-295, Page 1845-1856, Year-2016, Publisher-Springer.
48. M. R. Hossan, **Partha P. Gopmandal**, R. Dillon and P. Dutta, Bipolar Janus particle assembly in microdevice, (*Electrophoresis*) Vol-36, Page- 722-730, Year-2015, Publisher-Wiley-VCH.
49. **Partha P. Gopmandal** and S. Bhattacharyya, Effects of convection on isotachophoresis of electrolytes, (*Journal of Fluids Engineering*), Vol-137, Page- 081202/1-12, Year-2015, Publisher-American Society of Mechanical Engineers.
50. **Partha P. Gopmandal** and S. Bhattacharyya, Nonlinear effects on electrokinetics of a highly charged porous sphere, (*Colloid and Polymer Science*) Vol-292, Page 905-914, Year-2014, Publisher-Springer.
51. **Partha P. Gopmandal**, S. Bhattacharyya and B. Barman, Effect of induced electric field on migration of charged porous particle, (*The European Physical Journal E*) Vol-3:104, Page 1-12, Year-2014, Publisher-Springer.
52. S. Bhattacharyya, S. De and **Partha P. Gopmandal**, Electrophoresis of colloidal particle embedded in electrolyte saturated porous media, (*Chemical Engineering Science*) Vol-118, Page184-191, Year-2014, Publisher-Elsevier.
53. S. Bhattacharyya, **Partha P. Gopmandal**, Tobias Baier and Steffen Hardt, Sample dispersion in isotachophoresis with Poiseuille counterflow. (*Physics of Fluids*) Vol-25, Page022001-15., Year-2013 Publisher-American Institute of Physics.
54. S. Bhattacharyya and **Partha P. Gopmandal**, Effects of electroosmosis and counterion penetration on electrophoresis of a positively charged spherical permeable particle. (*Soft Matter*) Vol-9, Page 1871-1884, Year-2013, Publisher-Royal Society of Chemistry.
55. **Partha P. Gopmandal** and S. Bhattacharyya, Electrokinetics of a charged permeable porous aggregate in an aqueous medium. (*Colloid and Surface A: Physicochemical and Engineering Aspects*) Vol-433, Page- 64-76, Year-2013, Publisher-Elsevier.
56. S. Bhattacharyya and **Partha P. Gopmandal**, Migration of charged sphere at an arbitrary velocity in an axial electric field. (*Colloid and Surface A: Physicochemical and Engineering Aspects*) Vol-390, Page- 86-94, Year-2011, Publisher-Elsevier.
57. **Partha P. Gopmandal** and S. Bhattacharyya, Thermal buoyancy-aided flow around a heated/cooled spherical particle. (*Heat Transfer Research*) Vol-42, Page- 689-710, Year-2011, Publisher-Begell House.

List of Published Papers in Conference Proceedings

1. S. Bhattacharyya and **Partha P. Gopmandal**, Numerical study on separation of analytes through isotachophoresis. *Communications in Computer and Information Science*, 305 (2012) 282-292.

2. **Partha P. Gopmandal** and S. Bhattacharyya, Double layer polarization and non-linear electroosmosis in and around a charged permeable aggregate. *World Academy of Science, Engineering and Technology*, 69 (2012) 500-504.
3. S. Bhattacharyya and **Partha P. Gopmandal**, Interaction of electroosmotic flow on isotachophoretic transport of ions. *World Academy of Science, Engineering and Technology*, 69 (2012) 1088-1094.
4. S. Bhattacharyya and **Partha P. Gopmandal**, Numerical Study on Isotachophoretic Separation of Ionic Samples in Microfluidics. *International Conference on Modeling and Simulation of Diffusive Processes and Applications, October 9-12, 2012, Banaras Hindu University, Varanasi, India.*
5. M. R. Hossan, **Partha. P. Gopmandal**, P. Dutta, R. Dillon, Dielectrophoretic Interactions and Chaining of Ellipsoidal Particles in a Microchannel, *ASME 2016 International Mechanical Engineering Congress and Exposition, Nov-11, 2016*
6. N. Bag, S. Bhattacharyya and **Partha P. Gopmandal**, Transport of Analytes under Mixed Electroosmotic and Pressure Driven Flow of Power Law Fluid, *Applied and Computational Mathematics 2017, Feb7-8, 2017.*

List of Book Chapters

1. Title of the Chapter-“**Numerical Study on Isotachophoretic Separation of Ionic Samples in Microfluidics**” by **Partha P. Gopmandal** and S. Bhattacharyya.; *Modeling and Simulation of Diffusive Processes Simulation Foundations, Methods and Applications* (Springer Cham Heidelberg New York Dordrecht London) 2014, pp 97-117.
2. Title of the Chapter-“**An Overview on Analytic Expressions for Electrophoretic Velocity of Rigid Colloids**” by **Partha P. Gopmandal**, S. K. Maurya and S. Bhattacharyya.; *Mathematical Modeling and Computational Tools: ICACM 2018, Kharagpur, India, November 23–25.*

Presentation at National and International Conferences/Workshop & Invited Lectures (other than job interview)

- **Partha P. Gopmandal**, Invited Lecture on “Gel electrophoresis of colloidal particles: Mathematical approach’ during 25-27 January 2024, in ‘7th International Conference on Complex Dynamical Systems and Applications (CDSA)’ organized by ISI Kolkata.
- **Partha P. Gopmandal**, Invited Lecture on “Electrohydrodynamics of colloidal particles with polymeric interface”, in a ‘workshop on recent trend in applied sciences’ during 04-05 January 2024 organized by PAMU, ISI Kolkata.
- **Partha P. Gopmandal**, Invited Lecture for the celebration of National Mathematics day in the Dept. of Applied Mathematics, Vidyasagar University, WB, on 22nd December, 2023. Title of the lecture: “Motion of spherical rigid colloids in continuum medium under external gradients”
- **Partha P. Gopmandal**, delivered four lectures in “SERB Sponsored Workshop on Differential Equations: Fundamentals to Applications (DEFA-2023)” during 11 -15 December, 2023 Organized by the Department of Mathematics, NIT Durgapur. The lectures are on the topics entitled “Classification of second order PDE and related properties” and “Introduction to Finite Difference Method”.
- **Partha P. Gopmandal**, delivered a series of Lecture on “Electrokinetic transport of colloidal suspension and separation of ionic species: from fundamentals to applications”, organized by Graduate school of Life and Environmental Sciences, University of Tsukuba, Japan, during Feb 26-March 08, 2023,
- **Partha P. Gopmandal**, Invited Lecture on “Impact of hydrodynamic slip length on the electrophoresis of colloids”, in an “Interdisciplinary Symposium on the development of bioresource engineering based on the analysis of colloid aggregation and electrokinetic phenomena’ organized by Tsukuba University, Japan, during March 9-10, 2023.
- **Partha P. Gopmandal**, Invited Lecture on “Electrokinetic transport of Colloidal nano/micro-(bio)particles”, at PAMU, ISI Kolkata on 7th February, 2023.
- **Partha P. Gopmandal**, Invited Lecture on “Electrophoretic motion of charged liquid droplets in hydrogel under DC electric field”, in an International conference on Modelling, Analysis and simulation of multiscale transport phenomena, organized by Dept. of Mathematics, IIT Kharagpur during 25-27th Aug, 2022.
- **Partha P. Gopmandal**, Invited Lecture on “Electrohydrodynamics of Composite Soft Particles: Fundamental and Applications”, in Tsukuba Global Science Week (TGSW-2020), organized by Tsukuba University, Japan (ONLINE) during Sept. 28-29, 2020.
- **Partha P. Gopmandal**, Invited Lecture on “Mathematical Tools for Boundary Value Problems and applications”, March-9-13, 2020, IIT Kharagpur, INDIA.
- **Partha P. Gopmandal**, Invited Lecture on “Effects of Ion Size and Ion partitioning on the Electrophoresis of Bio-colloids’ 23rd November, 2018, IIT Kharagpur, INDIA

- **Partha P. Gopmandal**, “Numerical study on Isotachophoretic transport of analytes”, June 25, 2013, IIT Ropar, INDIA
- **Partha P. Gopmandal**, S. Bhattacharyya, “Interaction of electroosmotic flow on isotachophoretic transport of ions” International Conference on Microelectronics and Nanotechnology (ICMN-2012), Sept. 19-20, 2012, Berlin, GERMANY.
- **Partha P. Gopmandal**, S. Bhattacharyya, “Numerical study on separation of analytes through isotachophoresis” International Conference on Eco-friendly Computing and Communication System (ICECCS-2012), Kochi, August 9-11, 2012. Rajagiri School of Engineering and Technology, Kerala, INDIA.
- **Partha P. Gopmandal**, S. Bhattacharyya, “Buoyancy-aided flow around a heated/cooled spherical particles” Recent Advances in Computational Sciences with Applications (AICTE Sponsored), November 22-27, 2010, IIT Kharagpur, INDIA.
- **Partha P. Gopmandal**, S. Bhattacharyya, “Migration of charged particle in aqueous solution” National meet of research scholars in mathematical sciences (NMRSMS), October 12-15, 2011, IIT Kharagpur, INDIA.

Course Instructed

As a faculty of Dept. of Mathematics, NIT Patna

- 1) Courses from UG (Engineering): Engineering Mathematics –I, II, III, Tools of Applied Mathematics, Transform Calculus
- 2) M. Tech and Ph. D course works: Computational Fluid Dynamics, Advanced Numerical Analysis
- 3) Courses from 5 Yr. Integrated M. Sc. in Mathematics: Complex analysis, Numerical analysis, Ordinary and Partial Differential Equations, Algebra-I, Fluid Dynamics, Computational Fluid Dynamics, Linear algebra

As a faculty of Dept. of Mathematics, NIT Durgapur

- 1) Courses from UG (Engineering): Engineering Mathematics -I, Mathematics-II, Mathematics-III, Advanced Numerical Analysis
- 2) Courses from 2 Yr. M. Sc. in Mathematics: Ordinary and Partial Differential Equations, Fluid Dynamics, Classical Mechanics, Calculus of Variations, Integral Transforms and Integral Equations.

N. B. Depending on the requirement of the Department, I can also teach other topics of Mathematics

Member

- Indian Society of Industrial and applied Mathematics (ISIAM)

Reviewer

- *Journal of Physical Chemistry C (American Chemical Society)*
- *Langmuir (American Chemical Society)*
- *ELECTROPHORESIS (Wiley)*
- *Journal of Molecular Liquids (Elsevier)*
- *Colloid and Polymer Science (Springer)*
- *Microfluidics and Nanofluidics (Springer)*
- *Colloid and Surface A, B (Elsevier)*
- *The European Physical Journal E (Springer)*
- *Sensors and Actuators A, B (Elsevier)*
- *Communications in Colloid and Interface Science (Elsevier)*
- *Journal of Colloid and Interface Science (JCIS) (Elsevier)*
- *JCIS Open*
- *Soft Matter (Royal Society of Chemistry)*
- *ZAMP*
- *Physics of Fluids (American Institute of Physics)*

Other Administrative Jobs

- Warden, Hall-3, NIT Durgapur, from January 2022 to till date.
- Coordinator: Departmental Academic Committee (Dept. of Mathematics, NIT Durgapur), From July 2019 to till date.
- Coordinator: Academic Audit Committee (Dept. of Mathematics, NIT Patna), From January 2017-December 2018.
- Assistant Warden: Brahmaputra (G10) Hostel, NIT Patna, From March 2018-December 2018.

References

- ❖ **Ph. D Supervisor & Collaborator:** Prof. Somnath Bhattacharyya (Dept. of Mathematics, IIT Kharagpur, INDIA), Email-somnath@maths.iitkgp.ac.in
- ❖ **Post Doc Supervisor & Collaborator:** Prof. Prashanta Dutta (School of Mechanical & Materials Eng., Washington State University, USA), Email- prashanta@wsu.edu
- ❖ **Collaborator:** Prof. Hiroyuki Ohshima (Faculty of Pharmaceutical Sciences, Tokyo University of Science, JAPAN), Email-ohshima@rs.noda.tus.ac.jp
- ❖ **Collaborator:** Prof. Jerome F. L. Duval (CNRS Research Director, Université de Lorraine, Laboratoire Interdisciplinaire des Environnements Continentaux (LIEC), FRANCE), Email-jerome.duval@univ-lorraine.fr

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Partha P. Gopmandal