

Dr. Partha Pratim Gopmandal

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Google Scholar: <https://scholar.google.co.in/citations?user=Rwysmh5AAAAJ&hl=en>

Academic / Professional record in reverse chronological order (starting with the current position and going back to first university degree).

From (month/year)	To (month/year)	Position	Institution	City, Country	Degrees/nature of work
03.2026	Till date	Associate Professor	National Institute of Technology Durgapur	Durgapur, India	Full time faculty member
12.2018	03.2026	Assistant Professor	National Institute of Technology Durgapur	Durgapur, India	Full time faculty member
10.2014	12.2018	Assistant Professor	National Institute of Technology Patna	Patna, India	Full time faculty member
12.2013	10.2014	Post Doctoral researcher	Washington State University Pullman	Pullman, USA	Full time researcher
01.2009	12.2013	Ph. D student	Indian Institute of Technology Kharagpur	Kharagpur, India	Full time researcher
12.2006	01.2009	No permanent position	Academic, India	India	Interim period prior to doctorate (temporary work in teaching and research)
06.2004	12.2006	Masters Student	The University of Burdwan	Bardhaman, India	Masters of Science in Mathematics (Applied group)
06.2001	06.2004	Bachelor Student	The University of Burdwan	Bardhaman, India	Bachelor of Science in Mathematics

Award: "Humboldt Research Fellowship for Experienced Researchers" by the Alexander von Humboldt Foundation.

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:

- March 2026 to till date Associate Professor, Dept. of Mathematics, NIT Durgapur, India
- Dec 2018 to March 2026 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)

Research Initiation Grant from NIT Durgapur (Completed)

- I. Research Initiation Grant, funded by NIT Durgapur, Period: April-2019-April-2021. Title of the project: "Streaming potential through nanofluidic channel with effects of ion partitioning and ion size"

Externally Funded Research Projects (Completed)

- I. Research Grant from DST-SERB (File no- YSS/2015/000468), Period: Jan 2016-Jan 2019. Title of the project "Modulation of electroosmotic flow through nanochannel".
- II. Research Grant from DST-SERB (File no- MTR/2018/001021), Period May 2019-Aug 2022. Title of the project "Development of hybrid numerical tools to study the electrokinetic transport of bio-colloids".

Externally Funded Research Projects (Ongoing)

- I. Research Grant from ANRF (File no- ANRF/ARGM/2025/002100/MTR), from April 2026-March 203. Title of the project "Mathematical Modelling and Analysis of Electrokinetic Energy Harvesting in Miniaturized Fluidic Devices".

Ph. D Students Supervision

COMPLETED: 06

Name of the Ph. D Student	Tenure of work	Ph. D Degree awarded in	I have acted as	Title of the Ph. D thesis	Present position of the student after completion of Ph. D
Sourav Chowdhury	October 2020 to September 2025	September 2025	Sole Supervisor	Electrophoresis of colloidal entities and electroosmotic dispersion of uncharged solutes	Postdoctoral Research Fellow in the Department of Chemical Engineering, IIT Bombay
Susmita Samanta	October 2020 to September 2025	September 2025	Sole Supervisor	Diffusiophoresis of fluid droplets and functionalized colloids in solution of general electrolytes	Postdoctoral Research Fellow in the Department of Mechanical Engineering, IIT Bombay
Paramita Mahapatra	January 2019 to March 2024	March 2024	Sole Supervisor	Electrophoresis of fluid droplets and functionalized nanoparticles: Analytical approach	Postdoctoral Research Fellow in the Department of Chemical Engineering, McGill University, Canada
Bharti	Jul 2016 to Jul 2021	December 2021	Supervisor (Jointly with Dr. R. K. Sinha)	Electrophoresis of Weakly Charged Colloidal Particles in Continuum Medium.	Postdoctoral Research Fellow in the Department of Mathematics, University of Oslo, Norway
Saurabh Kumar Maurya	Jan 2015 to Dec. 2019	December 2019	Sole Supervisor	Electrokinetics of Bio-particles: Semi-Analytical Approach.	Assistant Professor in the Department of Mathematics, Vellore Institute of Technology Bhopal, India
Binod Kumar,	Jan 2016 to March 2021	March 2021	Co-supervisor (Jointly with Dr. R. K. Sinha)	Electrophoresis of Colloids and Electroosmotic Flow through Narrow Confinements	Assistant Professor in the Department of Mathematics, Govt. Polytechnic, Barh, Bihar, India

ONGOING [name of the student (tenure): I am acting as]: 04

- Gargi Mondal (Jan 2026 to till date): Supervisor
- Biplab Barman (Aug 2025 to till date): Supervisor
- Baishakhi Pal (Aug 2024 to till date): Supervisor
- Jhulan Acharya (Jan 2023 to till date): Supervisor

Student worked in externally funded project

- Santanu Saha, Former project fellow (Nov 2016 to March 2018)

No. of Masters (M. Sc. in Mathematics) Students Supervision: 17 (Completed) and 01 (ongoing).

Sl. No.	Name of the PG Student	Roll Number	Title of the M. Sc. Thesis
1	Gyarsi	18MA4511	Numerical Methods for Electrokinetics of Charged Colloids
2	Pooja Rani	19MA4506	Numerical solution of partial differential equations
3	Shantanu Mandal	19MA4515	Numerical Study on Fluid Flow Problems
4	Jhulan Acharya	19MA4519	Mathematical modelling of electrostatic potential distribution near a charged particle
5	Amitesh Ray	20MA4506	Heat transfer through parallel plate channel under Poiseuille flow
6	Pavan Suthar	20MA4513	Numerical solution of elliptic PDE in various geometries
7	Devendra Kumar	20MA4521	Electrostatic Potential Distribution near a charged surface
8	Baisakhi Pal	21MA4519	A few perturbation Methods: from Fundamentals to Applications
9	Akshit Sharma	21MA4514	Electrostatic potential distribution near a charged surface immersed in an electrolyte solution
10	Dhiraj Kumar Yadav	22MA4520	Complex Analysis Perspective of Potential Flow Theory
11	Arnab Mukherjee	22MA4511	Numerical Treatment of Energy Equation In Confined Geometries
12	Bhanu Priya	23MA4505	Homotopy perturbation method: an efficient approach to solve Non-linear differential equations
13	Ajeet Kumar Anand	23MA4504	Application of implicit numerical methods to solve Partial Differential Equations
14	Poulami Dutta	23MA4501	Dispersion of solutes under pressure driven flow or electroosmotic flow
15	Aakash	24MA4502	Numerical Solutions of Partial Differential Equations in Regular and Irregular Geometries
16	Sanjana Kumari	24MA4523	Analytical Perturbation Techniques: Theory and Case Studies
17	Upasana	24MA4512	Convective Heat Transfer in Parallel Plate Channel Filled with Newtonian and Non-Newtonian Fluids

List of Published Articles (International Journals: All the articles are published in SCI journals)

([†] Represent the Corresponding Author; **Best publications are highlighted**)
(Citations - 1124, h-index-20, i10 index-46, Source- Google Scholar)

1. B Pal, P Dutta, S Chowdhury, Partha P. Gopmandal[†], Electroosmotic Dispersion of Uncharged Solutes through a Nanochannel, *Industrial & Engineering Chemistry Research*, (2026) 65 (27): 14632–14650. Publisher- American Chemical Society.
2. P Mahapatra, Partha P. Gopmandal[†], H Ohshima, JFL Duval, Electrophoresis of cell membrane-coated nanoparticles: an analytical theory, *Nanoscale*, (2026) 18 (33): 17870–17884. Publisher- Royal Society of Chemistry.
3. S Saha, SK Maurya, H Ohshima, Partha P. Gopmandal, Impact of slipping plane location and ion-partitioning on the diffusiophoresis of soft particles with hydrophobic inner core, *Soft Matter* 22 (4), 1020-1032, Publisher- Royal Society of Chemistry.
4. J Acharya, H Ohshima, Partha P. Gopmandal[†], Electrodifusiophoresis of Spherical Hydrophobic Colloids, *Langmuir* 41 (51), 34510-34521, Publisher- American Chemical Society.
5. A Mahata, SK Pal, S Chowdhury, Partha P. Gopmandal[†], Diffusiophoresis of polyelectrolyte-adsorbed soft particle with hydrophobic inner core, *Chemical Engineering Science*, 323 (2026), 123220, Publisher- Elsevier.
6. B Saha, S De, S Sarkar, Partha P. Gopmandal[†], Solute Dispersion in Soft Nanochannel under Streaming Potential-Mediated Pressure-Driven Flow, *Industrial & Engineering Chemistry Research* 64 (49), 23736-23757, Publisher- American Chemical Society.
7. S. Samanta, S. Chowdhury, Partha P. Gopmandal[†], Diffusiophoresis of diffuse porous particles, *Physics of Fluids*, Year 2025, Vol.37, Pages 112018, Publisher- American Institute of Physics.
8. P. Goswami, K. Choudhury, Simanta De, Partha P. Gopmandal, Streaming potential and associated electrokinetic effects of power-law fluid in a soft nanochannel with pH-regulated polyelectrolyte layers, *Physics of Fluids*, Year 2025, Vol.37(8), Pages 082030, Publisher- American Institute of Physics.
9. S. Chowdhury, S. Samanta, H. Ohshima, Partha P. Gopmandal[†], Electrokinetics of core-shell structured spherical soft (nano) particles, *Journal of Molecular Liquids*, Year 2025, Vol. 434, Pages 128038, Publisher- Elsevier.
10. J. Acharya, S. Samanta, H. Ohshima, Partha P. Gopmandal[†], Electrokinetics of concentrated suspension of fluid droplets under applied electric field or electrolyte concentration gradient, *Physics of Fluids*, Year 2025, Vol. 37(7), Pages 072044, Publisher- American Institute of Physics.
11. K. Choudhury, P. Goswami, S. De, Partha P. Gopmandal, Electrophoresis of core-shell structured cylindrical (nano) particles, *Physics of Fluids*, Year 2025, Vol. 37(7), Pages 072007, Publisher- American Institute of Physics.
12. A. Mahata, S. K. Pal, H. Ohshima, Partha P. Gopmandal[†], Electrophoresis of polyelectrolyte-adsorbed soft particle with hydrophobic inner core, *Electrophoresis*, Year 2025, Vol. 46, Pages 797-809, Publisher: Wiley
13. S.K. Maurya, S. Saha, Partha P. Gopmandal, Comparative Study on the Electrophoresis of Soft and Semisoft Nanoparticles, *Electrophoresis*, Year 2025, Vol. 46, Pages 752-761, Publisher: Wiley.
14. A. Samanta, Partha P. Gopmandal, Sankar Sarkar, Spatiotemporal prediction of bluff-body hydrodynamics using the graph neural network, *Physics of Fluids*, Year 2025, Vol.37, Pages 116602, Publisher- American Institute of Physics.
15. N. Bag, K. Singh, S. Sarkar, H. Ohshima, Partha P. Gopmandal[†], Electrophoresis of soft particles in a non-Newtonian power-law fluidic microenvironment, *Physics of Fluids*, Year 2025, Vol. 37, Pages-022044, American Institute of Physics.
16. S. Samanta, Partha P. Gopmandal[†], J. F. L. Duval, Diffusiophoresis of core-shell structured (nano) particles in solution of general electrolytes, *Journal of Molecular Liquids*, Year 2025, Volume 423, Pages-127099, Publisher- Elsevier.
17. S. Chowdhury, S. K. Pal, Partha P. Gopmandal[†], Dynamic electroosmotic flow and solute dispersion through a nanochannel filled with an electrolyte surrounded by a layer of a dielectric and immiscible liquid, *Soft Matter*, Year 2025, Volume 21 (06), 1085-1112. Publisher- Royal Society of Chemistry.
18. B. Saha, S. Chowdhury, S. Sarkar, Partha P. Gopmandal[†], Electroosmotic flow modulation and dispersion of uncharged solutes in soft nanochannel, *Soft Matter*, Year 2024, Volume 20 (32), 6458-6489. Publisher- Royal Society of Chemistry.
19. M. Sarkar, A. Radice, Partha P. Gopmandal, S. Sarkar, Quadrant analysis of turbulence over a degraded channel-bed of bimodal sediment, with a definition framework for averaging methods, *Environmental Fluid Mechanics* (DOI: <https://doi.org/10.1007/s10652-024-10010-4>), Year 2024, Publisher: Springer.

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20. A. Mahata, P. Mahapatra, H. Ohshima, Partha P. Gopmandal[†], Electrophoresis of polyelectrolyte-adsorbed soft particle with hydrophobic inner core. (*Electrophoresis*), Year-2024, DOI: <https://doi.org/10.1002/elps.202400143>, Publisher: Wiley Online.
 21. S. K. Pal, P. Mahapatra, H. Ohshima, Partha P. Gopmandal[†], Electroosmotic flow modulation and enhanced mixing through soft nanochannel with patterned wall charge and hydrodynamic slippage, (*Industrial & Engineering Chemistry Research*), Year-2024, Volume-63 (29), Pages-12977-12998, Publisher- American Chemical Society.
 22. S. Majhi, S. Bhattacharyya, Partha P. Gopmandal, Impact of laterally mobile surface charge on diffusiophoresis of hydrophobic rigid colloids, (*Journal of Fluid Mechanics*), Year-2024, Volume 997, Pages- A8, doi:10.1017/jfm.2024.778, Publisher- Cambridge University Press.
 23. P. Mahapatra, S.K. Pal, H. Ohshima, Partha P. Gopmandal[†], Electrohydrodynamics of diffuse porous colloids (Soft Matter), Vol. 20, Year-2024, Pages-2840-2862, Publisher-Royal Society of Chemistry.
 24. P. Goswami, S. De, Partha P. Gopmandal[†], Streaming Potential and Associated Electrokinetic Effects through a Channel Filled with Electrolyte Solution Surrounded by a Layer of Immiscible and Dielectric Liquid, (*Langmuir*), Vol. 40, Year 2024, Pages-11695-11712, Publisher-American Chemical Society.
 25. S. Saha, Y. Adachi, S. Maurya, H. Ohshima, Partha P. Gopmandal, Electrophoresis of soft particles with partially penetrable polymer layer: impact of location of slip plane and hydrodynamic slip length, (*Colloid and Polymer Science*), DOI: <https://doi.org/10.1007/s00396-024-05239-w>, Year-2024, Publisher-Springer.
 26. S. Majhi, S. Bhattacharyya, Partha P. Gopmandal, Effect of surface charge dependent boundary slip on electrophoresis of a hydrophobic polarizable rigid colloid, (*Langmuir*), Vol. 40, Year 2024, Pages-3725-3737, Publisher-American Chemical Society.
 27. 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.
 28. 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*), Vol. 302, Year-2023, Pages-517-538, Publisher-Springer.
 29. 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.
 30. 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.
 31. 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.
 32. 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.
 33. 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.
 34. 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.
 35. 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.

36. 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.
37. 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.
38. **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
39. 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
40. 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.
41. 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.
42. 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.
43. 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.
44. 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.
45. 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.
46. 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. 298, pages-1729-1739, Year 2020, Publisher-Springer.
47. 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.
48. **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.
49. 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.
50. 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-16, Pages- , 6862-6874, Year-2020, Publisher-Royal Society of Chemistry.
51. 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.

52. 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.
53. 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.
54. 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.
55. 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.
56. 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, Volume 54, pages 2131–2149, (2019), Publisher-Springer.
57. 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.
58. 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.
59. 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.
60. 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.
61. 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-2018, Publisher-Springer.
62. 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.
63. 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.
64. **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.
65. **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-1141–1151, Year-2017, Publisher-Springer.
66. **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.
67. **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.

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68. **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.
 69. 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.
 70. **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.
 71. 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.
 72. **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.
 73. 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.
 74. **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.
 75. **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.
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 79. 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.
 80. **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.
 81. 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.
 82. **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)

1. **Partha P. Gopmandal**, Invited Lecture (online) on “Electrodiffusiophoresis of spherical hydrophobic colloids” in “RAAM 2026: Mini Symposium on Microfluidics” organized by IIT Hyderabad; during July 6-8, 2026.
2. **Partha P. Gopmandal**, Invited Lecture on “Electrokinetic Transport of Colloidal Particles: From Fundamentals to Applications” in the Department of Mathematics, Visva-Bharati University, Shantiniketan, on 10th April, 2026.
3. **Partha P. Gopmandal**, Invited Lecture on “Diffusiophoretic transport of engineered nanoparticles and particulate environmental contaminants” in the International Conference on Applied Mathematics and Computational Fluid Dynamics (ICAMCFD 2026)” organized by MNNIT Allahabad, Prayagraj, India, during January 30, 2026, to February 1, 2026.
4. **Partha P. Gopmandal**, Invited Lecture on “Electroosmotic dispersion of uncharged solutes in engineered nanochannels”. In the “International Conference on Computational Mathematics and Applications (ICCM-2025)” Organized by National Institute of Technology Silchar, Assam; during January 16-18, 2025.
5. **Partha P. Gopmandal**, Invited Lecture on “Dispersion of charged solutes narrow confinement’ during 25-27 January 2024, in "Workshop on Multiscale Fluid Dynamics: Engineering Aspects" during 22-24 January, 2025 in the Physics and Applied Mathematics Unit of ISI Kolkata.
6. **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.
7. **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.
8. **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”
9. **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”.
10. **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,
11. **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.
12. **Partha P. Gopmandal**, Invited Lecture on “Electrokinetic transport of Colloidal nano/micro-(bio)particles”, at PAMU, ISI Kolkata on 7th February, 2023.
13. **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.

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14. **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.
 15. **Partha P. Gopmandal**, Invited Lecture on “Mathematical Tools for Boundary Value Problems and applications”, March 9-13, 2020, IIT Kharagpur, INDIA.
 16. **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
 17. **Partha P. Gopmandal**, “Numerical study on Isotachophoretic transport of analytes”, June 25, 2013, IIT Ropar, INDIA
 18. **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.
 19. **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.
 20. **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.
 21. **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.
- 2) Courses from 2 Yr. M. Sc. in Mathematics: Ordinary and Partial Differential Equations, Fluid Dynamics, Integral Transforms and Integral Equations. General Mechanics and Calculus of Variations

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

Conference/ Workshop/ GIAN Short Term Course /Lecture Series Organized as a Coordinator:

- 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 national Workshop” on “Differential Equations: Fundamentals to Applications (DEFA-2023)” during 11 -15 December, 2023.



Member

- Indian Society of Industrial and applied Mathematics (ISIAM)

Reviewer

- *Journal of Physical Chemistry C* (American Chemical Society)
- *Langmuir* (American Chemical Society)
- *ELECTROPHORESIS* (Willey)
- *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)
- *Journal of Fluid Mechanics* (Cambridge online)
- *Proc. Of Royal Soc. A* (Royal Soc.)
- etc

Other Administrative Jobs

- Warden, Hall-3, NIT Durgapur, from January 2022 to June 2024.
- Coordinator: Departmental Academic Committee (Dept. of Mathematics, NIT Durgapur), From July 2019 to July 2023.
- 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

- ❖ **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
- ❖ **Post Doc Supervisor & Collaborator:** Prof. Prashanta Dutta (School of Mechanical & Materials Eng., Washington State University, USA), Email- prashanta@wsu.edu
- ❖ **Ph. D Supervisor & Collaborator:** Prof. Somnath Bhattacharyya (Dept. of Mathematics, IIT Kharagpur, INDIA), Email-somnath@maths.iitkgp.ac.in

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