

---

<b>Education</b>	<p>CORNELL UNIVERSITY, College of Engineering, Ithaca, NY PHD - Theoretical and Applied Mechanics: January 2007 <b>Minor:</b> Mathematics, <b>Advisor:</b> Prof. James T. Jenkins <b>Thesis:</b> Studies of Axisymmetric Lipid Bilayer Vesicles: Parameter Estimation, Micropipette Aspiration, and Phase Transition.</p> <p>INDIAN INSTITUTE OF SCIENCE, Bangalore, India M. SC (ENGG). - Mechanical Engineering: June 2002 <b>Advisor:</b> Prof. Anindya Chatterjee <b>Thesis:</b> Dynamics and Bifurcations of Some Nonlinear Systems: Analytical and Numerical Studies.</p> <p>JADAVPUR UNIVERSITY, Kolkata, India B. E. - Mechanical Engineering: July 1999</p>
<b>Academic Distinctions</b>	<p>Graduate School Fellowship, Cornell University, 2002–2003. Best Master's Thesis of the Year, Indian Institute of Science, 2004. National Talent Search Scholarship, West Bengal, India, 1993-1999.</p>
<b>Work Experience</b>	<p>June 2023 - Present      PROFESSOR, Indian Institute of Technology, Palakkad, India.</p> <p>Dec. 2018 - June 2023    ASSOCIATE PROFESSOR, Indian Institute of Technology, Palakkad, India.</p> <p>Dec. 2016 - Dec. 2018    ASSOCIATE PROFESSOR, Indian Institute of Technology, Kharagpur, India.</p> <p>Jun. 2014 - Dec. 2016    ASSOCIATE PROFESSOR, Indian Institute of Technology, Kanpur, India.</p> <p>Jan. 2015 - Jul. 2015    ASSOCIATE PROFESSOR (visiting), Indian Institute of Technology, Delhi, India.</p> <p>Nov. 2009 - Jun. 2014    ASSISTANT PROFESSOR, Indian Institute of Technology, Kanpur, India.</p> <p>Oct. 2008 - Oct. 2009    SENIOR RESEARCH ENGINEER, Goodyear Tire &amp; Rubber Company. Worked on tire manufacturing and performance modeling to improve tire uniformity. Released one research report and submitted an invention disclosure.</p> <p>Jan. 2007 - Sep. 2008    POSTDOCTORAL SCHOLAR, Department of Mathematics, Penn State University. Worked on the adhesion of lipid bilayer vesicles (under the supervision of Prof. Qiang Du).</p> <p>Oct. - Dec. 2005        VISITING SCHOLAR, Department of Chemistry, University of Pennsylvania. Conducted experimental studies on lipid bilayer vesicles. (under the supervision of Prof. Tobias Baumgart).</p> <p>Aug. 1999 - Jul. 2000    GRADUATE TRAINEE ENGINEER, Larsen &amp; Toubro Limited, India. Involved in designing equipments for a project for building a Milk Processing Plant.</p>
<b>Teaching Experience</b>	<p><b>UG Courses:</b> Mechanics, Dynamics, Engineering Drawing, Engineering Thermodynamics, Design of Machine Elements, Theory of Mechanisms and Machines, Biomechanics, Calculus, Matrices. (Recipient of top five feedback in first year courses at IIT Kharagpur)</p> <p><b>PG Courses:</b> Introduction to Continuum Mechanics, Introduction to Solid Mechanics, Theory of Elasticity, Theory of Plasticity, Mathematics for Engineers, Approximate Methods in Engineering Mathematics, Principles of Dynamics, Mechanics of Biological Membranes.</p> <p><b>Tutorial:</b> Dynamics, Mechanics of Solids, Engineering Mechanics, Engineering Drawing Design of Machine Elements, Mechanisms, Calculus, Ordinary and Partial Differential Equations, Computer Programming.</p>
<b>Sponsored Research</b>	<p><i>Motion and Interactions of Domains in Fluid Lipid Membranes</i>, SERB, DST, 2012-2015, INR 25.66 lakhs.</p> <p><i>Membrane curvature sensing and generation by proteins in lipid bilayer membrane</i>, DBT, 2015-2018, INR 67.35 lakhs. Other members: Prof. P. B. Sunil Kumar, IIT Madras (Co-PI), Dr. S. Matheswaran (Co-PI).</p> <p><i>Contact mechanics of soft and thin adhesive structures</i>, DST, INR 46.44 lakhs, 2018-2021. Other member: Prof. Ishan Sharma(Co-PI).</p> <p><i>Study of the interaction between synthetic sequence-defined macromolecules and lipid-membrane towards developing antibacterial and anticancer drug</i>, MoE-STARS, INR 99.68 lakhs, 2020-2023. Other member: Dr. Mintu Porel.</p>

- Professional Activities**
- Dean (Academics), IIT Palakkad (October 2020 – January 2023)
- Chairman, Library Affairs Committee, IIT Palakkad (January 2021 – January 2023)
- Vice President, Institute Innovation Council, IIT Palakkad (2021 – September 2023)
- Member, Board of Governors, IIT Palakkad (July 2022 – Present)
- NISP Nodal Coordinator, IIT Palakkad (June 2020 – Present)
- Chairperson, Skill Development Program Committee, IIT Palakkad, 2019
- Faculty-in-Charge, Career Development Cell, IIT Palakkad (June 2019 – August 2021)
- Faculty-in-Charge, International Relations, IIT Palakkad (November 2021 – September 2022)
- Member, Institute Disciplinary Committee, IIT Palakkad, (January 2019 – January 2023)
- Served as external examiner and Doctoral Committee member of several Ph. D. theses.
- Co-opted member of the UG curriculum committee of Indrasheel University.
- Co-Chair, Session on Surfactants and Membranes in CompFlu2019, December 5-7, 2019, IISER, Bhopal, India.
- Organizing Committee Member, *TEQIP School on Mechanics and Applied Mathematics for Engineers*, February 19-25, 2015, IIT Kanpur.
- Organizing Committee Member, *Pravartana: Workshop on Mechanics and Applied Mathematics*, for four successive years 2013-2016, 2019, IIT Kanpur.
- Organizer and International Coordinators Board Member of KITPC 2012 Program, *Membrane Biophysics: Theory and Experiment*, May 7-June 1, 2012, Beijing, China.
- Organizer of a symposium in SIAM conference on Life Science (LS10), *Mechanics and Biophysics of Lipid Bilayer Membranes*, July 12, 2010, Pittsburgh, USA.
- Served as a reviewer for *Nature Communications*, *Nature Physics*, *Journal of Fluid Mechanics*, *Biophysical Journal*, *Journal of Chemical Physics*, *Langmuir*, *Applied Physics Letters*, *Biomechanics and Modeling in Mechanobiology*, *Physical Review Letters*, *Physical Review E*, *PLoS ONE*, *Biological Chemistry*, *Philosophical Magazine & Philosophical Magazine Letters*, *Proceedings of the Royal Society of London A*, *Nonlinear Dynamics*.
- Convener of Departmental Undergraduate Committee, Departmental Coordinator for the Computer Center, Member of BTech Project Evaluation Committee, Member of Departmental Postgraduate Committee, Mechanical Engineering, IIT Kanpur, 2010-2012.
- Member of Vision 2020 Team, IIT Kanpur, 2010.
- Organizer of the Inhouse Symposium, Mechanical Engineering Dept, IISc Bangalore, 2002.
- Publications**
39. Kishor, E., Ajul, E., Chanda, S. and Das, S. L.: **Estimation of spatially varying thermal contact conductance of non-conformal bolted joint.** *Heat and Mass Transfer*, 2023 <https://doi.org/10.1007/s00231-023-03436-x>
  38. Has, C. and Das, S. L.: **The Functionality of membrane-inserting proteins and peptides: curvature sensing, generation, and pore formation.** *Journal of Membrane Biology* **256**, 343, 2023
  37. Islam, M. U., Jenkins, J. T. and Das, S. L.: **Granular flow through a vertical axisymmetric pipe.** *Physical Review Fluids Letters*, **8**, L072301, 2023
  36. Krishnan S, Bhuvana, T. Sharma, I. and Das, S. L.: **Indentation of geometrically exact adhesive beams.** *International Journal of Solids and Structures*, **279**, 112348, 2023
  35. Nayak, A. K., Gou, Z., Das, S. L., Barakat, A. I. and Misbah, C.: **Mathematical model of intracellular calcium in presence of receptor: a homeostatic model for endothelial cells.** *Biomechanics and Modeling in Mechanobiology*, **22**, 217, 2023
  34. Islam, M. U., Jenkins, J. T. and Das, S. L.: **Extended kinetic theory for granular flow in a vertical chute.** *Journal of Fluid Mechanics*, **950**, A13, 2022
  33. Krishnan S, Sharma, I. and Das, S. L.: **Indentation of geometrically exact beams.** *International Journal of Solids and Structures*, **254-255**, 111905, 2022
  32. Has, C., Sivadas, P., and Das, S. L.: **Insights into membrane curvature sensing and membrane remodeling by intrinsically disordered proteins and protein regions.** *Journal of Membrane Biology*, **255**, 237, 2022

31. Kumar, A., Das, S. L., and Wahi, P.: **On the stability of thin-walled circular cylindrical shells under static and periodic radial loading.** *Journal of Sound and Vibration*, **527**, 116872, 2022
30. Vyas, P., Sunil Kumar, P. B and Das, S. L.: **Sorting of proteins with shape and curvature anisotropy on a lipid bilayer tube.** *Soft Matter*, **18**, 1653, 2022
29. Has, C. and Das, S. L. :**Recent developments in membrane curvature sensing and induction by proteins.** *Biochimica et Biophysica Acta (BBA) - General Subjects* **1865(10)**, 129971, 2021
28. Sachin Krishnan, T. V., Das, S. L. and Sunil Kumar, P. B:**Models for membrane curvature sensing of curvature generating proteins.** *Pramana - Journal of Physics* **94 (47)**, 1, 2020
27. Sachin Krishnan, T. V., Das, S. L. and Sunil Kumar, P. B: **Transition from curvature sensing to generation in a vesicle driven by protein binding strength and membrane tension.** *Soft Matter*, **15**, 2071, 2019
26. Mahata, P. and Das, S. L.: **Generation of wavy structure on lipid membrane by peripheral proteins: A linear elastic analysis.** *FEBS Letters*, **591**, 1333, 2017
25. Kumar, A., Das, S. L., and Wahi, P.: **Effect of radial loads on the natural frequencies of thin-walled circular cylindrical shells,.** *International Journal of Mechanical Sciences*, **122**, 37, 2017
24. Laxminarsimha Rao V., Roy S., and Das, S. L.: **Diffusion mediated coagulation and fragmentation based study of domain formation in lipid bilayer membrane.** *Physica B*, **505**, 74, 2017
23. Mohanty, D. P., Laxminarsimha Rao V., Das, S. L., and Ghatak, A.: **Polygonal deformation of a metallic foil subjected to impact by an axisymmetric indenter.** *Journal of Adhesion Science and Technology*, **31**, 1647, 2017
22. Rizvi, Md., S., Pal A., and Das, S. L.: **Structure-induced nonlinear viscoelasticity of non-woven fibrous matrices.** *Biomechanics and Modeling in Mechanobiology*, **15**, 1641, 2016
21. Kumar, A., Das, S. L., and Wahi, P.: **Instabilities of thin circular cylindrical shells under radial loading.** *International Journal of Mechanical Sciences*, **104**, 174, 2015
20. Laxminarsimha Rao V. and Das, S. L.: **Drag force on a liquid domain moving inside a membrane sheet surrounded by aqueous medium.** *Journal of Fluid Mechanics*, **779**, 468, 2015
19. Božič, B., Das, S. L., and Svetina, S: **Sorting of integral membrane proteins by curvature-dependent protein- lipid bilayer interaction.** *Soft Matter*, **11**, 2479, 2015
18. Mahata, P. and Das, S. L.: **Two-dimensional convex-molecule fluid model for surface adsorption of proteins: Effect of soft interaction on adsorption equilibria.** *Physical Review E*, **90**, 062713, 2014
17. Das, S. L., Mandal, T., and Gupta, S. S.: **Inextensional vibration of zig-zag single walled carbon nanotubes using nonlocal elasticity theories.** *International Journal of Solids and Structures* **50**, 2792, 2013
16. Rizvi, Md., S. and Das, S. L.: **Role of membrane addition in animal cell cytokinesis.** *Journal of Theoretical Biology* **315**, 139, 2012
15. Singh, P., Mahata, P., Baumgart, T., and Das, S. L.: **Curvature sorting of proteins on a cylindrical lipid membrane tether connected to a lipid reservoir.** *Physical Review E* **85**, 051906, 2012
14. Zhu, C., Das, S. L., and Baumgart, T.: **Nonlinear sorting, curvature generation, and crowding of Endophilin N-BAR on tubular membranes.** *Biophysical Journal* **102**, 1837, 2012
13. Baumgart, T., Capraro, B. C., Zhu, C., and Das, S. L.: **Thermodynamics and mechanics of membrane curvature generation and sensing by proteins and lipids.** *Annual Reviews in Physical Chemistry* **22**, 483, 2011
12. Das, S.: **Influence of the bending rigidity and the line tension on the mechanical stability of micropipette aspirated vesicles.** *Physical Review E* **82**, 021908, 2010 (Also appearing in the August 15, 2010 issue of Virtual Journal of Biological Physics Research)
11. Zhao, Y., Das, S., and Du, Q.: **Adhesion of multi-component vesicle membranes.** *Physical Review E* **81**, 041919, 2010 (Also appearing in the May 1, 2010 issue of Virtual Journal of Biological Physics Research)
10. Zhang, J., Das, S. L., and Du, Q.: **A phase field model of vesicle substrate adhesion.** *Journal of Computational Physics* **228**, 7837, 2009
9. Das, S. L., Jenkins, J. T., and Baumgart, T.: **Neck geometry and shape transitions in vesicles with co-existing fluid phases: Role of Gaussian curvature stiffness versus spontaneous curvature.** *Europhysics Letters*, **86**, 48003, 2009

8. Das, S. L., Tian, A., and Baumgart, T.: **Mechanical stability of micropipette aspirated giant vesicles with fluid phase coexistence**, *Journal of Physical Chemistry B*, **112**, 11625–11630, 2008
  7. Das, S. L. and Du, Q.: **Adhesion of vesicles to curved substrates**, *Physical Review E*, **77**, 011907, 2008 (Also appearing in the January 15, 2008 issue of Virtual Journal of Biological Physics Research)
  6. Das, S. L., and Jenkins, J. T.: **A higher-order boundary layer analysis for lipid vesicles with two fluid domains**, *Journal of Fluid Mechanics*, **597**, 429–448, 2008
  5. Baumgart, T., Das, S. L., Webb, W. W., and Jenkins, J. T.: **Membrane elasticity in giant vesicles with fluid phase coexistence**, *Biophysical Journal*, **89**, 1067–1080, 2005
  4. Das, S. L. and Chatterjee, A.: **Second order multiple scales for oscillators with large delay**, *Nonlinear Dynamics*, **39**, 375–394, 2005
  3. Das, S. L. and Chatterjee, A.: **Multiple scales via Galerkin projections: approximate asymptotics for strongly nonlinear oscillators**, *Nonlinear Dynamics*, **32**, 161–186, 2003
  2. Das, S. L. and Chatterjee, A.: **Multiple scales without center manifold reductions for delay differential equations near Hopf bifurcations**, *Nonlinear Dynamics*, **30**, 323–335, 2002
  1. Das, S. L. and Chatterjee, A.: **An alternative stability analysis technique for the simplest walking machine**, *Nonlinear Dynamics*, **28**, 273–284, 2002
- Conference proceedings**
- Kishor, E., Ajul, E., Chanda, S., Das, S.L.: **Qualitative comparison of thermal contact conductance of bolted joint**, *17th International Heat Transfer Conference*, 2023, Cape Town, South Africa.
- Kumar, A., Das, S.L., Wahi, P.: **Effect of radial loading on the beam mode vibration of circular cylindrical shells**, *Indian Conference on Applied Mechanics*, 2015, New Delhi, India.
- Kumar, A., Das, S. and Wahi, P.: **Effect of radial loads and boundary conditions on the natural frequencies of a thin walled circular cylindrical shell**, *20th International Conference on Sound and Vibration*, 2013, Bangkok, Thailand.
- Kumar, A., Das, S. and Wahi, P.: **Dynamic buckling of thin-walled circular cylindrical shells subjected to fluctuating radial loads**, *SMiRT 21*, 2011, New Delhi, India.
- Buskohl, P., Das, S. L., Jenkins, J. T.: **Micropipette aspiration of lipid vesicles: A 2D approach**, *IASS-IACM 6th International Conference on Shell and Spatial Structures*, 2008, Ithaca, USA.
- Das, S. L., Zhang J., and Du Q.: **Adhesion of lipid vesicles on patterned substrates**, *Biophysical Journal*, **94**, 1183, *Meeting Abstract, 52nd Annual Meeting*, 2008, Long Beach, USA.
- Das, S. L. and Jenkins, J. T.: **An analysis of micropipette aspiration of one-phase and two-phase vesicles**, *Biophysical Journal*, **584A-584A**, *Meeting Abstract, 51st Annual Meeting*, 2007, Baltimore, USA.
- Das, S. L. and Jenkins, J. T.: **Collisional flows of identical, smooth, nearly elastic spheres in a vertical chute**, *Powders and Grains*, 2005, Stuttgart, Germany.
- Das, S. L. and Chatterjee, A.: **Stability analysis of the simplest walking machine**, *National Conference on Mechanisms and Machines*, 2001, Kharagpur, India.
- Seminars**
- 2023 July Multiscale modelling using exascale computing: Membrane protein interactions, IISc Bangalore, India.  
Talk: Delivered lectures and conducted hands on sessions on Membrane Biophysics
- 2023 May Liphy, CNRS and Univ. Grenoble at Alpes, Grenoble, France.  
Talk: Lipid Membrane and Macromolecule Interaction and Rapid Flow of Granular Matter
- 2023 May Workshop on Discrete Simulation and Continuum Modeling of Granular Matter, Masseria Salamina, Puglia, Italy.  
Talk: Dry gravity driven flow through vertical pipe and chute
- 2022 Sep. Biomembranes 2022, IISc Bangalore, India.  
Invited Talk: Interaction Between Natural and/or Synthetic Macromolecules and Liposomal Membranes
- 2020 Dec. IIT Bombay, India, CompFlu2020 (online).  
Invited Talk: Sorting of Proteins with Shape and Curvature Anisotropy
- 2020 Aug. Institute of Smart Structures and Systems Public Lecture (online), IISc Bangalore, India.  
Invited Talk: How proteins interact with cell membranes? A biophysical study

- 2018 Dec. IUTAM Symposium on Dynamics of Complex Fluids and Interfaces, IIT Kanpur, India.  
Invited Talk: Sorting of proteins with shape and curvature anisotropy on a lipid bilayer tube
- 2018 Mar. Government Engineering College, Purulia, West Bengal, India.  
Invited Talk: Mechanics in Engineering
- 2018 Feb. San Francisco, California 62nd Annual Biophysical Society Meeting.  
Poster presentation: Interplay of membrane curvature sensing and generation mediated by peripheral membrane proteins. (Presented by T. V. Sachin Krishnan)
- 2017 Dec IIT Madras, India, CompFlu2017  
Invited Talk: Drag Force on a Liquid Domain Moving in a Two Dimensional Liquid Sheet
- 2017 Sep IIT Palakkad, India  
Seminar: Two Problems Interfacing Mechanics and Biology: Fibrous Composites and Domain Diffusion
- 2017 Jan IISc Bangalore, India Biosystems Science and Engineering Symposium  
Invited Talk: Mechanics of Non-woven Fibrous Matrices and Their Interactions With Cells
- 2016 Sep JNCASR Bangalore, India  
Invited Talk: Mechanics of Non-woven Fibrous Matrices and Their Interactions With Cells
- 2016 Sep Chemical Engineering, IISc Bangalore, India  
Department Seminar: Biological Membrane Structure and Function A Mechanics Perspective
- 2016 Jan IISER Pune, India CompFlu 2016  
Invited Talk: Drag Force on a Liquid Domain Moving in a Two Dimensional Liquid Sheet
- 2014 Oct. Jülich, Germany Proteins & Nanoparticles Membranes 2014 - SoftComp Topical Workshop  
Copresenter: Curvature sorting of integral membrane proteins by curvature-dependent protein- lipid bilayer interaction (Presented by Svetina S.)
- 2014 Jan. Pondicherry, India Soft Matter - Young Investigators Meet  
Short Talk: Curvature Sorting of Proteins in a Cylindrical Membrane
- 2012 May KITPC, Beijing, China Program on Membrane Biophysics: Theory and Experiment  
Short Talk: Role of Membrane Addition in Animal Cell Cytokinesis
- 2012 May KITPC, Beijing, China Program on Membrane Biophysics: Theory and Experiment  
Short Talk: Curvature Sorting of Proteins in a Cylindrical Membrane
- 2010 Mar. NEHU Shillong, India NPMAS-ISSS Workshop on Microsystems Technology  
Invited speaker: Structure and Mechanics of Biological Membranes
- 2008 Sep. IIT Chennai, India  
Special Seminar: Lipid Bilayer Vesicles: Parameter Estimation, Micropipette Aspiration, and Adhesion.
- 2008 Sep. IISc Bangalore, India  
Invited Seminar: Lipid Bilayer Vesicles: Parameter Estimation, Micropipette Aspiration, and Adhesion.
- 2008 Aug. IIT Kanpur, India  
Invited Seminar: Lipid Bilayer Vesicles: Parameter Estimation, Micropipette Aspiration, and Adhesion.
- 2008 Aug. Jadavpur University, India  
Special Seminar: Lipid Bilayer Vesicles: Parameter Estimation, Micropipette Aspiration, and Adhesion.
- 2008 June University Park, PA Workshop on Multi-Scale Modeling of Immune Responses.  
Invited talk: Adhesion of vesicles to curved substrates: Implications to virus entry and nano-particle uptake.
- 2008 May UT Arlington, TX 7th AIMS International Conference on Dynamical Systems, Differential Equations and Applications.  
Invited talk: A boundary layer analysis for two-phase lipid bilayer vesicle and vesicle adhesion.
- 2008 Feb. Goodyear Tire & Rubber Company, Akron, OH  
Invited talk: Lipid Bilayer Vesicles: Parameter Estimation, Micropipette Aspiration, and Adhesion.

- 2008 Feb. Long Beach, California 52nd Annual Biophysical Society Meeting.  
Poster presentation: Adhesion of lipid vesicles on patterned substrates.
- 2007 Jul.-Aug. UIUC, Urbana, IL CCM Summer Course on Cell Mechano-sensitivity.
- 2007 June Waterville, Maine Gordon Research Conference on Nonlinear Dynamics.  
Poster presentation: Micropipette aspiration of giant vesicles with fluid phase coexistence.
- 2007 Mar. Baltimore, Maryland 51st Annual Biophysical Society Meeting.  
Poster presentation: An analysis of micropipette aspiration of one-phase and two-phase vesicles.
- 2006 Dec. Bethesda, Maryland NICHD, NIH.  
Invited seminar talk: Mechanics of lipid bilayer vesicles.
- 2006 July Raleigh, North Carolina SIAM Conference on the Life Sciences.  
Minisymposium talk: Boundary layer analysis of the shape of two-phase lipid bilayer vesicles.
- 2005 July Stuttgart, Germany Powders and Grains.  
Poster presentation: Collisional flows through a vertical chute.
- 2005 Jan. Paris, France Trimester on Granular materials.
- 2004 June Waterville, Maine Gordon Research Conference on Granular & Granular-Fluid Flow.  
Poster presentation: Collisional flows through a vertical chute.
- 2003 Oct. Bristol, UK Geophysical Granular & Particle-Laden Flows.  
Poster presentation: Collisional flows through a vertical chute.
- 2001 Dec. IIT Kharagpur, India National Conference on Mechanisms and Machines.  
Contributed talk: Stability analysis of the simplest walking machine.