

ACADEMIC HONORS

- INSPIRE Faculty Fellowship in Physical Science, July, 2021 by Department of Science and Technology.
- Overseas Postdoctoral Fellowship in Nanoscience and Nanotechnology, 2017 by Department of Science and Technology.
- SHELL INDIA Computational Talent Prize (SICTP) 2016.
- Travel award to attend a conference in University of Vienna by Department of Biotechnology, 2014.
- Senior Research Fellowship Awarded by IISc in July 2012.
- Qualified GATE, 2010.
- Qualified CSIR-NET, December 2009.
- Qualified JEST, 2010.
- Dhaule Devi Medal for Honors in Matric Examination 2002.

PUBLICATIONS

1. H. Joshi, A. Dwaraknath and P. K. Maiti. "Structure, Stability and Elasticity of DNA Nanotubes". *Physical Chemistry Chemical Physics*, 2015, 17(2), 1424-1434.
2. H. Joshi, A. Kaushik, N. C. Seeman and P. K. Maiti. "Nanoscale Structure and Elasticity of Pillared DNA Nanotubes". *ACS Nano*, 2016, 10(8), 7780-7791.
3. H. Joshi, D. Bhatia, Y. Krishnan and P. K. Maiti. "Probing the Structure and *in Silico* Stability of Cargo Loaded DNA Icosahedron using MD Simulations". *Nanoscale*, 2017, 9, 4467-4477
4. D. Bhatia, S. Arumugam, M. Nasilowski, H. Joshi, C. Wunder, V. Chambon, V. Prakash, C. Grazon, B. Nadal, P. K. Maiti et al. "Quantum dot-loaded Monofunctionalized DNA Icosahedra for Single Particle Tracking of Endocytic Pathways". *Nature Nanotechnology*, 2016, 11(12), 1112-1119.
5. H. Joshi and P. K. Maiti. "Structure and Electrical Properties of DNA Nanotubes Embedded in Lipid Bilayer Membranes". *Nucleic Acid Research*, 2018, 46(5), 2234-2242 (**Cover image**).
6. P. M. Arnott, H. Joshi, A. Aksimentiev, and S. Howorka. "Dynamic Interactions between Lipid-Tethered DNA and Phospholipid Membranes". *Langmuir* 34(49), 15084-15092, 2018 (**Cover image**)

7. Y. Yang, A. Alford, V. Kozlovskaya, S. Zhao, H. Joshi, E. Kim, S. Qian, V. Urban, D. Cropek, A. Aksimentiev et al. "Controlling Structure of Temperature-Responsive Polymersomes Assembled from ABA Triblock Copolymers". *ACS Applied Polymer materials*, 2019, 1(4), 722-736.
8. R. Balasubramanian, S. Pal, H. Joshi, B. Chakraborty, A. Naik, M. Varma, P. K. Maiti. "DNA Detection Using Programmed Bilayer Nanopores", *Journal of Physical Chemistry-C*, 2019, 123(18), 11908-11916.
9. S. Naskar, M. Gosika, H. Joshi and P. K. Maiti. "Tuning the Stability of DNA Nanotubes with Salt". *Journal of Physical Chemistry-C*, 2019,123(14), 9461-9470.
10. S. Naskar, H. Joshi, B. Chakraborty, N. C. Seeman and P. K. Maiti. "Atomic Structures of RNA Nanotubes and comparison with DNA nanotubes". *Nanoscale*, 2019, 11 (31), 14863-14878.
11. A. Ohmann, K. Göpfrich, H. Joshi, R. F. Thompson, N. A. Ranson, A. Aksimentiev, U. F. Keyser. "Controlling aggregation of cholesterol-modified DNA nanostructures." *Nucleic Acid Research* 2019, 47 (21), 11441-11451.
12. W. Song, H. Joshi, R. Chowdhury, J. S. Najem, Y. Shen, C. Lang, C. B. Henderson, Y. Tu, M. Farrell et al. "Artificial Water Channels Enable Fast and Selective Water Permeation Through Water-wire Networks." *Nature Nanotechnology* 2020, 15, 73-79.
13. P. Tripathi, L. Shuai, H. Joshi, H. Yamazaki, W. H Fowle, A. Aksimentiev, H. Fenniri, M. Wanunu. "Rosette Nanotube Porins as Ion Selective Transporters and Single-Molecule Sensors." *Journal of the American Chemical Society*, 2020, 142 (4), 1680-1685.
14. A. Roy*, H. Joshi*, R. Ye, J. Shen, F. Chen, A. Aksimentiev, and H. Zeng. "Polyhydrazide-Based Organic Nanotubes as Efficient and Selective Artificial Iodide Channels." *Angewandte Chemie International Edition*, 2020, 59(12), 4806-4813.
15. D. Sobota, H. Joshi, A. Ohmann, A. Aksimentiev, U. F. Keyser. "Controlling interleaflet lipid transfer with a minimalistic DNA-based synthetic enzyme". *Nano Letters*, 2020, 20(6):4306-4311.
16. A. Choudhary, H. Joshi, H-Y Chou, K. Sarthak, J. Wilson, C. Maffeo, and A. Aksimentiev. "High-Fidelity Capture, Threading and Infinite-Depth Sequencing of Single DNA Molecules with a Double-Nanopore System". *ACS Nano*, 14(11), 15566-15576, 2020 .

17. D. Winogradoff, P-Y. Li, H. Joshi, L. Quednau, C. Maffeo, and A. Aksimentiev. “Chiral Systems Made from DNA”. *Advanced Sciences*, 8 (5), 200311, 2021.
18. K. Hübner, H. Joshi, A. Aksimentiev, F. D. Stefan, P. Tinnefeld and G. P. Acuna. “Determining the in-plane orientation and binding mode of single fluorescent dyes in DNA origami structures”. *ACS Nano*, 15(3), 5109–5117, 2021.
19. D. Morzy*, R. Rubio-Sánchez*, H. Joshi*, A. Aksimentiev, L. D. Michele and U. F. Keyser. “Cations Regulate Membrane Attachment and Functionality of DNA Nanostructures”. *Journal of the American Chemical Society*, 2021. DOI:10.1021/jacs.1c00166.
20. S. F. Jones, H. Joshi, S. Wang, S. Terry, J. Burns, A. Aksimentiev, U. Eggert and S. Howorka. “Understanding the fundamental interaction of hydrophobic DNA duplexes with artificial and biological membranes”. *Journal of the American Chemical Society*, 2021. DOI:10.1021/jacs.0c13235.
21. A. Roy, J. Shen, H. Joshi, W. Song, Y-M Tu, R. Ye, N. Li, C. Ren, M. Kumar, A. Aksimentiev, and H. Zeng. “Foldamer-Based Ultrapermearable and Highly Selective Artificial Aquaporins that Exclude Protons”. *Nature Nanotechnology* 2021.
22. D. Qiao*, H. Joshi*, H. Zhu, F. Wang, Y. Xu, J. Gao, F. Huang, A. Aksimentiev and J. Feng. “Synthetic macrocycle nanopore for potassium-selective transmembrane transport”. Just Accepted in *Journal of the American Chemical Society*, 2021.

MANUSCRIPTS
UNDER REVIEW

- S. E. Ochmann, H. Joshi, E. Büber, H. G. Franquelim, P. Stegemann, B. Saccá, U. F. Keyser, A. Aksimentiev, and P. Tinnefeld. “DNA Origami Voltage Sensors for Transmembrane Potentials with Single-Molecule Sensitivity”. Under review in *Nano Letters*, 2021.
- D. Morzy*, H. Joshi*, S. E. Sandler, A. Aksimentiev, and U. F. Keyser. “Membrane activity of a DNA-based ion channel depends on the stability of its double-stranded structure”. Submitted to *Nano Letters*, 2021.

WORKSHOP AND
TUTORIAL

- Taught a course “Microscopic mechanics of DNA” in the Physics of Living Cell summer school at the University of Illinois at Urbana-Champaign, July 23rd to 30, 2019.
- Organized a “Hands-on Workshop on Structural DNA Nanotechnology” at the Beckman Institute, University of Illinois Urbana-Champaign as a part of

the Aksimentiev lab, Sep 24-26, 2018.

- Online Tutorial: *Molecular Dynamics Simulations of Self-Assembled DNA Nanostructures*. H. Joshi, C. Maffeo and A. Aksimentiev, 2018.

MENTORING

- Alla Radwan, Summer intern at UIUC, 2019.

SCIENTIFIC TALKS

- JNU New Delhi. April 16, 2019.
- DNA Physics 2017, BITS Pilani, March 10, 2017.
- International Institute of Information Technology, Hyderabad, India. December 20, 2016.
- LCBC, EPFL, Lausanne Switzerland. September 22, 2016.
- Institut Curie Paris, France. September 19, 2016.

POSTERS IN CONFERENCES

- “HiPC 2016: 23rd IEEE International Conference on High Performance Computing, Data and Analytics”, Hyderabad, India, from December 19-22, 2016.
- “DNA22: The 22nd International Conference on DNA Computing and Molecular Programming” Ludwig-Maximilians-Universität (LMU). Munich, Germany, from September 4-8, 2016.
- “DNA-based self-assembly: theory, simulation and experiments” at Danube Center for Atomistic Modelling, Vienna, Austria from December 2-5 December, 2013.
- “International Conference on BioMolecular Forms and Functions”, Indian Institute of Science, Bangalore, India, 8-11 January, 2013.
- “International Conference On Nucleic Acids in Disease and Disorder”, IIT Delhi, New Delhi India, December 7-9, 2011.

TEACHING EXPERIENCE

- Teaching assistant for the course “Thermal and Modern Physics UP 204” taught by Prof. H. R. Krishnamurthy during August to December 2012 at Indian Institute of Science, Bangalore, India.
- Teaching assistant for the course “Material Physics PH116” taught by Prof. Chandan Das Gupta during January to April 2013 at Indian Institute of Science, Bangalore, India.

- Teaching assistant for the course “Molecular Simulation PH322” taught by Prof. Prabal K. Maiti during January to April 2014 at Indian Institute of Science, Bangalore, India.
- Teaching assistant for the course “Quantum Mechanics PH203” taught by Prof. Diptiman Sen during August to December 2014 at Indian Institute of Science, Bangalore, India.

SOFTWARE AND PROGRAMMING

- Molecular dynamics and Monte Carlo simulations, AMBER, NAMD, LAMMPS, VMD, GROMACS, GAUSSIAN, MATLAB, caDNAno.
- Python, Unix Shell Scripting, Tcl, Fortran, C, NAB, Keynote, LaTeX

REFERENCES

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