Curriculum Vitae

Personal details



Name: Bharat Kumar

Designation: **Controller of Examinations**, CUK **&**
Professor, Department of Physics, CUK.

Address: Department of Physics, School of Physical Sciences,
Central University of Karnataka,
Kadaganchi, Kalaburagi – 585 367.

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Education

- PhD. in Physical Sciences (2004-2010), **Raman Research Institute**, Bangalore, India (affiliated to Jawaharlal Nehru University, New Delhi, India).
- Master of Science (Physics) [specialization in Materials Science] (2004), Gulbarga University, Kalaburagi, India (First Class).
- Bachelor of Science [Physics, Chemistry & Mathematics] (2002), Laxmi Venkatesh Desai College, Raichur, affiliated to Gulbarga University, India (First Class).
- Higher Secondary (XII) Pre-university College Board (1999), Laxmi Venkatesh Desai College, Raichur, India (First Class).

Areas of Research Interests: Soft Condensed Matter, Biophysics

Research Experience

From August 2025: Professor, School of Physical Sciences, Central University of Karnataka.

From August 2022 – August 2025: Associate Professor, School of Physical Sciences, Central University of Karnataka.

From January 2014 – August 2022: Assistant Professor, School of Physical Sciences, Central University of Karnataka.

August 2013 - January 2014: DST-INSPIRE Faculty, Department of Chemical Engineering, Indian Institute of Technology Kanpur.

August 2010 – July 2013: Post-doctoral Research Associate, Department of Physics and Astronomy, University of South Carolina, Columbia, SC, USA.

Research credentials:

Number of research publications in the SCI/WoS journals: **24**

Number of research publications in the SCI journals in the last **five** years: **10**

h-index: **8**

i – 10 index: **6**

Sponsored Projects

Period	Sponsoring Organization	Title of Project	PI/Co-PI	Grant	Status
Five years	Department of Science and Technology, Govt. of India	Electrical interactions between antimicrobial peptides and supported lipid bilayers	PI	₹ 35 Lakh	Completed
Three Years	Department of Science and Technology, Govt. of India	Electrical properties of amyloid peptides and their interaction with biomembranes	PI	₹ 45.1 Lakh	Completed
One year	VGST, Govt. of Karnataka	Effect of anticancer drug Combretastatin and related molecules on the electrical potential of the lipid films	PI	₹ 2.98 Lakh	Ongoing
Five years	ANRF – PAIR	Vesicles and self-assembled structures as whispering gallery mode resonators for studying protein misfolding and detection of carcinoembryonic antigen and other biomarkers	Co-PI	68 Lakh (Total sanctioned amount ₹ 12.1 Cr	Ongoing
Three years	ANRF – ARG	Fabrication and Self-assembly of Soft Patchy Particles	Co-PI	₹ 95.1744 Lakhs	Sanctioned

PhD Awarded:

Sl. No.	Name	Thesis Title	Date of award
1	Imranpasha	Studies on interaction between few bio-molecules and ultra-thin films of lipids	June 2021
2	Raghavendra	Self-assembly of γ-oryzanol, amyloid peptide and azobenzene polymer at interface: Effect of electrical and hydrophobic interactions	November 2021
3	Nithya M.	Studies on nisin interactions with ultra-thin films of lipids	January 2026

No. of PhD students currently working under my supervision**: Three**

List of Publications (reverse chronological order)

24. "Effect of uniformly charged lipid film on the hydrodynamic radius of charged proteins" Mahesha S. Sakhi S. Hegde, Soumit S. Mandal and **Bharat Kumar**; *International Journal of Modern Physics B*, (Accepted 2026).

23. "Effect of DPPC on the Kinetics of Photo- and Thermal Isomerization of $\boldsymbol{\gamma}$–Oryzanol" Shekanna H. and **Bharat Kumar;** *International Journal of Chemical Kinetics*, **58 (issue 12),** 1046:1051, (2026); https://doi.org/10.1002/kin.70095 I.F.: 1.7

22. "Sterol-induced raft-like domains in a model lipid monolayer", S. Siva Nasarayya Chari and **Bharat Kumar;** *Eur. Phys. J. E*, **48**, 1 – 11 (2025). https://doi.org/10.1140/epje/s10189-025-00531-1 I. F.: 2.2

21. "A study on the thermo-photoisomerization of a liquid crystalline dimer of cyanoazobenzene and naphthalene" Mahima Rabari, A. K. Prajapati, S. Mahesha, M. K. Akshaya and **Bharat Kumar*;** *Soft Matter,* **21**, 1395-1400 (2025). https://doi.org/10.1039/D4SM01172D I. F.: 2.8

20. "Effect of stigmasterol-based mesogen and phytosphingosine on the Langmuir monolayer of DPPC" S. Mahesha, Gayathri Madhavankutty, M. Neelanjana, S. Vanishree Bhat, Sandeep Kumar, and **Bharat Kumar***; *Eur. Phys. J. Spec. Top.*, **233,** 2997 – 3008 (2024) https://doi.org/10.1140/epjs/s11734-024-01155-w I. F: 2.3

19. "Diffusion mediated rigidity-gradient hydrogel substrate for cellular mechanosensing", Indrajit Bhattacharjee, Sukanya Sudhiram, M. Nithya, **Bharat Kumar**, and Bibhu Ranjan Sarangi; *Eur. Phys. J. Spec. Top.*, **233,** 3123 – 3132 (2024) https://link.springer.com/article/10.1140/epjs/s11734-024-01125-2 I. F.: 2.3

18. "Kinetics of Nisin-Induced Pore Formation in Giant Unilamellar Vesicles"
Nithya M, Olivia Vincent, Bibhu Ranjan Sarangi and **Bharat Kumar***; *Langmuir*, **39**, 11231-11237 (2023) https://doi.org/10.1021/acs.langmuir.3c00515 I. F.: 3.9

17. "Effect of γ - Oryzanol on the the LE-LC phase coexistence region of DPPC Langmuir monolayer" Raghavendra, **Bharat Kumar*** and Siva Chari; *J Membrane Biol* **256**, 413–422 (2023) https://doi.org/10.1007/s00232-023-00288-8 **I. F.: 2.9**

16. "Magnetic Surfaces for Photo-Isomerization of Azobenzene Based Polymer Probed Using Magneto Optical Method" Riddhi Sengupta, Raghavendra, R.G.Pooja, Satyam Kumar Gupta, **Bharat Kumar** and Rajeev Shesha Joshi; *Topics in Catalysis*, **68**, 1491 – 1497 (2022) https://doi.org/10.1007/s11244-022-01594-6. I.F.: 3

15. "Effect of local electric field on trans to cis photo-isomerization of azobenzene containing polymer" S.N. Yogitha, **Bharat Kumar***, Raghavendra, Imranpasha, Satyam Kumar Gupta; *Materials Science & Engineering B* **267**, 115094 (2021). DOI: https://doi.org/10.1016/j.mseb.2021.115094 I.F.: 4.6

14. "Effect of iron-iron oxide particles on the rate of isomerization of azobenzene moieties in polymeric liquid crystals at air-water interface", Raghavendra, Satyam Kumar Gupta, **Bharat Kumar***; *Colloid and Polymer Science* **299**, 603-609 (2021). DOI: https://doi.org/10.1007/s00396-020-04776-4 I.F.: 2.3

13. "Studies on kinetics of isomerization of gamma oryzanol at air-water interface" Raghavendra and **Bharat Kumar***; *Thin Solid Films* **732**, 138764 (2021). DOI: https://doi.org/10.1016/j.tsf.2021.138764 I.F: 2

12. "Transition in nanoscale electrical conductivity in the Langmuir-Blodgett film of a novel liquid crystalline oligomer" **Bharat Kumar***, K. A. Suresh, Hari Krishna Bisoyi and Sandeep Kumar; *Nano Express*, **1**, 010006 (2020). **DOI:** https://doi.org/10.1088/2632-959X/ab79ff

11. "Interaction of β – N – oxalyl – L – α, β – diaminopropionic acid (ODAP) with Langmuir monolayers of DPPC, DPPG and cholesterol" Imranpasha, **Bharat Kumar***, and S. L. N. Rao, *AIP Conference Proceedings* **2265**, 030041 (2020). DOI: https://doi.org/10.1063/5.0016881

10. "Kinetics of interaction between antimicrobial peptide nisin and Langmuir monolayers of DPPC and DPPG molecules" Imranpasha and **Bharat Kumar***; *Phys. Rev. E*, **100**, 032404 (2019). https://doi.org/10.1103/PhysRevE.100.032404

9. "Charge transport in liquid crystalline triphenylene polymer monolayer at air-solid interface" H. N. Gayathri, **Bharat Kumar**, K. A. Suresh, H. K. Bisoyi and Sandeep Kumar; *Phys. Chem. Chem. Phys.*, **18,** 12101-12107 (2016).

8. "Nanoscale dielectric measurements from electrostatic force microscopy" **Bharat Kumar*** and Scott R. Crittenden; *Mod. Phys. Lett. B*, **28**, 1430011 (2014).

7. "Synthesis and Characterization of Novel Azobenzene-based Mesogens and their organization at Air-Water and Air-solid Interfaces" Santanu Kumar Pal, Monika Gupta, Nishtha Agarwal, Ashima Arora, Sandeep Kumar, **Bharat Kumar,** and Goutam Sheet; *RSC Advances* **4**, 41371 (2014).

6. "Stern potential and Debye length measurements in dilute ionic solutions with electrostatic force microscopy" **Bharat Kumar*** and Scott R. Crittenden; *Nanotechnology* **24**, 435701 (2013).

5. "Spreading and retraction dynamics of a dye doped smectic liquid crystal domain at the air–water interface" Viswanath P., Suresh K. A. and **Bharat Kumar**; *Soft Matter* **8**, 11180 (2012).

4. "Dielectric constants by multi-frequency non-contact atomic force microscopy" **Bharat Kumar**, Joseph C. Bonvallet and Scott R. Crittenden; *Nanotechnology* **23**, 025707 (2012).

3. "Stress-strain relation in the collapse of Langmuir monolayer of a dimer of disc shaped moiety" **Bharat Kumar**, K A Suresh, S. K. Gupta and Sandeep Kumar; *J. Chem. Phys.* **133**, 044701 (2010).

2. "Kinetics of *trans – cis* isomerization in the azobenzene dimers at air-water interface" **Bharat Kumar** and K. A. Suresh; *Phys. Rev. E* **80**, 021601 (2009).

1. "Novel mesogenic azobenzene dimer at air-water and air-solid interfaces" **Bharat Kumar**, A K Prajapati, M C Varia and K A Suresh; *Langmuir* **25**, 839 (2009).

Awards and Recognitions:

1. (In 2022) National award: Bronze medal for the year 2019 awarded by Indian Liquid Crystal Society for the research contributions in the areas of Soft Matter Physics.
2. (In 2020) International Travel grant from DST to participate in the APS March meeting 2020 organized at Denver, Colorado, USA.
3. (In 2012) I was awarded DST-INSPIRE faculty fellowship by department of science and technology (DST, Govt. of India) to carry out research on electrical interactions between antimicrobial peptides and supported lipid bilayer membranes.
4. (In 2010) Post-doctoral fellowship awarded by University of South Carolina, Columbia SC, USA. The project is funded by Army Research Office, USA.
5. (In 2006) Best oral presentation award in international conference on Liquid crystals organized by University of Mumbai at Mumbai.
6. (In 2004) Qualified Joint Entrance Screening Test (JEST-2004) and GATE-2004.
7. (In 2003) I was awarded summer research fellowship by ***Jawaharlal Nehru Centre for Advanced Scientific research***. The fellowship was renewed in summer 2004.
8. (In 2002) University scholarship awarded by Gulbarga University, Gulbarga for securing highest marks in B.Sc. Physics subject.
9. (In 2002) First Rank in college in B.Sc. Programme.

Academic Administration Experience:

1. Controller of Examination since February 2026.
2. Dean of School of Physical Sciences from July 2023 to July 2026.
3. Head of Department of Physics since June 2023 to June 2023.
4. Coordinator of Department of Physics, Central University of Karnataka, from January 2015 to June 2020.
5. Member and convener of Board of Studies for the Department of Physics, Central University of Karnataka.
6. Assistant Controller of Examination (from April 2022 to July 2023).

Refresher courses conducted:

1. Conducted two week refresher course on “Experimental Physics” during 2015. The course was completely funded by the by Indian Academy of Science, Bengaluru.