Curriculum Vitae

Personal details

Name: Bharat Kumar

Designation: Associate Professor, Central University of Karnataka

Address: School of Physical Sciences,
Central University of Karnataka,
Kadaganchi, Gulbarga.

Email: bharat@cuk.ac.in

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 2022: 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.

Sponsored Projects

Period	Sponsoring Organization	Title of Project	Grant	Status
Five years	Department of Science and Technology, Govt. of India	Electrical interactions between antimicrobial peptides and supported lipid bilayers	Rs. 35 Lakh	Completed
Three Years	Department of Science and Technology, Govt. of India	Electrical properties of amyloid peptides and their interaction with biomembranes	Rs. 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	Rs. 2.98 Lakh	Ongoing

List of Publications (reverse chronological order)

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

17. "Effect of γ - Oryzanol on the the LE-LC phase coexistence region of DPPC Langmuir monolayer" Raghavendra, **Bharat Kumar** and Siva Chari; *Journal of Membrane Biology* https://doi.org/10.1007/s00232-023-00288-8 (2023).

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*, https://doi.org/10.1007/s11244-022-01594-6 (2022)

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

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

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

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).

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

No. of PhD students currently working under my supervision: 3

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. Dean of School of Physical Sciences since July 2023.
2. Head of Department of Physics since June 2023.
3. Coordinator of Department of Physics, Central University of Karnataka, from January 2015 to June 2020.

4. Member and convener of Board of Studies for the Department of Physics, Central University of Karnataka.
5. 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.