

FACULTY PROFILE

Dr. SOUMYA S BULLA

Assistant Professor

Department of Studies in Physics

Qualification : M.Sc. Physics, Ph.D. KSET, GATE

Areas of Specialization : General Physics

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Vision

To use my research and teaching experience in enabling the students to effectively use the skills acquired to help, identify and vehemently pursue any objectives in a practical manner. Take up the social responsibility towards the educational uplift of the students and professional growth as institutional commitment.

Educational Qualifications

Sl. No.	Degree	Specialization/ Subjects	University	Year of Award/ Passing
1	PhD.	Polymer Physics	Dr. R.F. Bhajantri Karnatak University, Dharwad	2022
2	M.Phil.	--	--	--
3	NET/SLET	Physical Sciences	Karnataka State Eligibility Test Center (KSET), University of Mysore	30-Nov-2014
4	PG	Physics	School of Physical Sciences. Central University of Karnataka	2014
5	UG	Physics, Chemistry and Mathematics	S.G. Degree College, Koppal. Gulbarga University	May-2012

Professional Details (Academic/Research Experience)

Sl. No.	Designation	Institution/University	UG/PG	From	To
1.	Assistant Professor	Department of Studies in Physics, Davangere University, Davangere.	PG	05-2019	Present
2.	Research Scholar	Department of Physics Karnatak University, Dharwad	Ph.D.	05-2017	05-2019
3.	Guest Faculty	Department of Physics, PG Center, Shree GaviSiddeshwara College, Koppal.	PG	08-2015	05-2017
4.	Guest Faculty	Government first grade college Koppal	UG	07-2016	04-2017

Areas of Research Interest:

Polymer electrolytes (PEs), which are comprised of the polar polymer complexed with ionic salts, with wide range of applications such as solid-state batteries, solar cells, super - capacitors, opto-electronic devices, smart windows, and sensors.

Academic Responsibilities:

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| 1. | Member of Board of Studies (2019–22), Board of Examination (2021–22, 2026-27), Department of Studies in Physics, Davangere. |
| 2. | IQAC Assistant Coordinator (2019–25), Davangere University. |
| 3. | Women’s Hostel Warden (2019–22). |
| 4. | Member of Local Inspection Committee, Davangere University (2021-22; 2024-25). |
| 5. | Head of UG Examination vigilance Squad (2022-23). |
| 6. | Member of UG Examination Custodian 2023-24). |
| 7. | Member of Stock Verification (2020–21, 2023-24). |
| 8. | Internal Complaints Committee Member, Davangere University (2020–present). |
| 9. | Program officer NSS, Davangere University (2023-25). |
| 10. | Member of Science and technology forum, Davangere University (2022-24). |
| 11. | Secretary of Alumni association, Davangere University (2021-2026). |

Copyrights and patents

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| 1. | Received Indian Copyright, from Copyright office, Govt. of India (Intellectual Property Right) for the Scientific artistic work entitled “ Evolution of batteries, types, applications, and performance metrics” (Certificate Number: LD-20260180480) |
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Awards and Recognitions:

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| 1. | Felicitated with as Best Faculty in Physics in the Karnataka Educational Awards 2023 |
| 2. | Best Paper Award , International Conference on Frontiers in Materials Science and Technology (ICFMST – 2024), SRM TRP Engineering College, Tiruchirappalli, 5 and 6th December 2024. For the research paper titled “One-step preparation of a cotton-based, solid-state electrolyte separator using Adsorption Palletisation Technique with enhanced ionic conductivity for primary battery application.” |

Research Publications:

a) International Journals

1.	Ashwini, A. B., R. F. Bhajantri, C. J. Vijaykumar, Soumya S. Bulla , Chetan Chavan, and Vipin Cyriac. "Alumina Nanoparticles-Driven Effect of Optical and Ionic Properties in PVA-MgCl ₂ Polymer Electrolytes." Journal of The Electrochemical Society 173, no. 12 (2026): 120517.
2.	C. J. Vijaykumar, Soumya S. Bulla , Chetan Chavan, H.P. Nagaswarupa, R.F. Bhajantri, B. Pushpa, Ramachandra Naik. "Comprehensive review of solid-state batteries: Theoretical conceptualization to sustainable energy storage technologies" Journal of Energy Storage 151 (2026): 120431
3.	Pushpa M., Pushpa B., Soumya S. Bulla , Chetan Chavan and N. R. Mallika Banu. "Silver Nanoparticles for the Energy Future: Synthesis, Smart Properties and Disruptive Applications." Journal of The Electrochemical Society 172 (2025): 090530
4.	C J Vijaykumar, Soumya S Bulla , Chetan Chavan, Rajashekhar F Bhajantri, K Sakthipandi. "One-step fabrication of sodium-ion conducting cotton-based solid-state electrolyte for primary battery applications." Solid State Ionics 427 (2025): 116897
5.	Kanakaraj T. M, Rajashekhar F.Bhajantri, Chetan Chavan, Soumya Bulla , Mallikarjun Anandalli, Malatesh S. Pujar, and Mangesh S. Jadhav. "Synthesis and Characterization of Fe ₃ O ₄ -oleate/Poly (vinyl alcohol) Nanocomposites for Electrical Applications." Indian Journal of Pure & Applied Physics (IJPAP) 61, no. 8 (2023): 659-670.
6.	Kanakaraj T. M, Rajashekhar F.Bhajantri, Chetan Chavan, Vipin Cyriac, and Soumya S. Bulla . "Investigation on the structural and ion transport properties of magnesium salt doped HPMC-PVA based polymer blend for energy storage applications." Journal of Non-Crystalline Solids 609 (2023): 122276.
7.	Chetan Chavan, Rajashekhar F. Bhajantri, Vipin Cyriac, Ismayil, Soumya S. Bulla , and K. Sakthipandi. "Investigations on anomalous behavior of ionic conductivity in NaPF ₆ salt loaded hydroxyethyl cellulose biodegradable polymer electrolyte for energy storage applications." Polymers for Advanced Technologies 34, no. 5 (2023): 1698-1715.
8.	Soumya S. Bulla , R. F. Bhajantri, Chetan Chavan, K. Sakthipandi. "Biosynthesized Silver Nanoparticles Encapsulated in a Poly (vinyl alcohol) Matrix: Dielectric and Structural Properties." ChemistrySelect 7, no. 47 (2022): e202201771.
9.	Chavan, Chetan, R. F. Bhajantri, Soumya Bulla , H. B. Ravikumar, M. Raghavendra, K. Sakthipandi, K. Yogesh Kumar, and B. P. Prasanna. "Ion dynamics and positron annihilation studies on polymer ceramic composite electrolyte system (PVA/NaClO ₄ /Y ₂ O ₃): Application in electrochemical devices." Ceramics International 48, no. 12 (2022): 17864-17884.
10.	Chavan, Chetan, Rajashekhar F. Bhajantri, Vipin Cyriac, Soumya Bulla , H. B. Ravikumar, M. Raghavendra, and K. Sakthipandi. "Exploration of free volume behavior and ionic conductivity of PVA: x (x= 0, Y ₂ O ₃ , ZrO ₂ , YSZ) ion-oxide conducting polymer ceramic composites." Journal of Non-Crystalline Solids 590 (2022): 121696.
11.	Soumya S Bulla , Rajashekhar F Bhajantri, Chetan Chavan "Insight into the impact of neutron irradiation on optical parameters of polymethylmethacrylate (PMMA) loaded with Methyl red (MR)" (Accepted in Journal of Science - Karnatak University Dharwad)
12.	Bulla, S.S. , Bhajantri, R.F., Chavan, C. et al. "Synthesis and characterization of polythiophene/zinc oxide nanocomposites for chemiresistor organic vapor-sensing application". J Polym Res 28, 251 (2021). https://doi.org/10.1007/s10965-021-02618-7
13.	Bulla, S.S. , Bhajantri, R.F. & Chavan, C. "Optical and Structural Properties of Biosynthesized Silver Nanoparticle Encapsulated PVA (Ag-PVA) Films". J Inorg Organomet Polym 31, 2368-2380 (2021). https://doi.org/10.1007/s10904-021-01909-2
14.	Chavan, Chetan ; Bhajantri, Rajashekhar F; Bulla, Soumya S ; K, SAKTHIPANDI, "Indigenously Designed and Fabricated Mechanical Milling set-up to Synthesis Nanoparticles: A Cost-effective Method" Indian Journal of Pure and Applied Physics 59(September 2021):603-611
15.	Chavan, Chetan, Rajashekhar Fakeerappa Bhajantri, Soumya Siddalingappa Bulla , and Kathiresan Sakthipandi. "Designed and fabricated a low-cost E-Spun experimental tool for polymer processing." Indian Journal of Engineering and Materials Sciences (IJEMS) 28, no. 4 (2021): 343-349.
16.	Soumya S. Bulla , Rajashekara F. Bhajantri, Chetan Chavan, Shivaprasad Chalawadi, Mallikarjun Anandahalli, and Satyappa Kalliguddi , "Optical properties of neutron irradiated PMMA doped methyl red", AIP Conference Proceedings 2244, 090004 (2020) https://doi.org/10.1063/5.0009329

17.	Chavan Chetan, Rajshekar F. Bhajantri, Bulla Soumya , Chalawadi Shivaprasad, Anandahalli Maliakarjun, and Kalliguddi Satyappa , “Effect of calcination temperature on synthesized ZnO nanoparticles”, AIP Conference Proceedings 2244, 070015 (2020) https://doi.org/10.1063/5.0009107
18.	Soumya S.B , Arshad Ayub.H, Ambresh P.A and Pushpanjali. G. M, “Some Aspects on Electromagnetic Scalar and Vector Potentials in 2D Space: A Review Paper”, IJEE Volume 5 • Number 1 • January-June 2013 pp. 69-72

c) International Conference

1.	Vijaykumar, C. J., Soumya S Bulla , Chetan Chavan, & R. F. Bhajanthri, (2024, April). Investigations on Impact of YSZ Nanoparticles on Morphology & Electrical conductivity of PEDOT: PSS. In IOP Conference Series: Materials Science and Engineering (Vol. 1300, No. 1, p. 012023). IOP Publishing.
2.	Chetan Chavan, Rajashekhar F. Bhajantri, Soumya Bulla , Shivaprasad Chalawadi, Maliakarjun Anandahalli, and Kalliguddi Satyappa. "Effect of calcination temperature on synthesized ZnO nanoparticles." In AIP Conference Proceedings, vol. 2244, no. 1, p. 070015. AIP Publishing LLC, 2020.
3.	Soumya S. Bulla , Rajashekhar F. Bhajantri, Chetan Chavan, Shivaprasad Chalawadi, Mallikarjun Anandahalli, and Satyappa Kalliguddi. "Optical properties of neutron irradiated PMMA doped methyl red." in AIP Conference Proceedings, vol. 2244, no. 1, p. 090004. AIP Publishing LLC, 2020.
4.	Poster presentation on "Study of AC and DC conductivity of prepared UV irradiated PVE-PEG-Bi2O3-ZnSe nanocomposite" at ICASMA, organized by RIT Bangalore.
5.	Participated in Virtual international conference on Advanced materials organized by IVCAM, BKASC, Chikkodi.
6.	Presented paper at “International Conference on Physics of Materials and Nanotechnology ICPN-2019”, organized by Mangalore University.09-2019
7.	Presented paper at 2nd International Conference on Innovations in electronics & Communication and Engineering (ICIECE -2013) Arshad Ayub.H, Soumya S.B and Ambresh P.A, “Some Study on Multipole Expansion in Electromagnetism”, , pp. 993-997, Aug. 09-10, 2013, Guru Nanak Institution (GNI), Ibrahimpatnam, Hyderabad, AndhraPradesh

d) National Conference

1.	“Study of Optical Properties of Methyl Red Doped PMMA: Before and After Neutron Irradiation” One-day National level conference on Advances in Nano-Electronics and Material Science Organized by P. C. Jabin Science College, Hubballi (12-Mar-2019).(Oral Presentation)
2.	Presented paper by Soumya S.B, ArshadAyub.H, Ambresh P.A and Pushpanjali. G. M, “Some Aspects on Electromagnetic Scalar and Vector Potentials in 2D Space: A Review Paper”, Two days National Conference on Recent Trends in Management & Technology, Bhemmanna Khandre Institute of Technology, Bhalki, April 5-6, 2013. (ISBN: 978-81-921740-2-0).

Book Chapters:

1.	C.J. Vijayakumar, Soumya S. Bulla, Chetan Chavan, B. Pushpa. ”Green Synthesis of Silver-Based Nanomaterials and Nanocomposites, and Sustainable Breakthrough in the battery application: A Review.” 2024 Book Chapter Details: Multifunctional Inorganic Nanomaterials for Energy Applications edited by H.P. Nagaswarupa, Mika E.T. Sillanpää, H.C. Ananda Murthy, Ramachandra Naik
2.	M. Pushpa, B. Pushpa, Soumya S. Bulla, and Chetan Chavan. “Inorganic Nanomaterials: A Review of Synthesis, Properties and Recent Breakthroughs in Battery and Fuel Cell Technology.” 2024 Book Chapter Details: Multifunctional Inorganic Nanomaterials for Energy Applications edited by H.P. Nagaswarupa, Mika E.T. Sillanpää, H.C. Ananda Murthy, Ramachandra Naik

Conference/ Workshops/Trainings participated /organized:

International/National Conferences:

2. (02-2018) Attended one day workshop on "Society, Research & Development" held at Karnatak University, Dharwad.
3. (03-2018) Attended National Seminar on "Frontier methods & Techniques for Probing Molecules & Materials" held at Karnatak University, Dharwad.
4. (09-2019) Presented paper at "International Conference on Physics of Materials and Nanotechnology ICPN-2019", organized by Mangalore University.
5. (08-2019) Participated in Short term course on "Material Processing and Characterization" CSIR-National Physical Laboratory, New Delhi.
6. (07-2020) Attended International Virtual conference on Advanced materials organized by BK College Chikodi.
7. ಸ್ವದೇಶಿ ವಿಜ್ಞಾನ ಆಂದೋಲನ-ಕರ್ನಾಟಕ, ಬೆಂಗಳೂರು ಮತ್ತು ದಾವಣಗೆರೆ ವಿಶ್ವವಿದ್ಯಾಲಯ, ದಾವಣಗೆರೆ ಇವರ ಸಂಯುಕ್ತ ಆಶ್ರಯದಲ್ಲಿ ಆಯೋಜಿಸಿರುವ 15 ನೇ ಕನ್ನಡ ವಿಜ್ಞಾನ ಸಮ್ಮೇಳನ ಜರುಗಿದ ದಿನಾಂಕ 15-16 ನೇ ಸೆಪ್ಟೆಂಬರ್ 2019.
8. Attended National Seminar on "Frontier methods & Techniques for Probing Molecules & Materials" held at Karnatak University, Dharwad.03-2018
9. Attended KSTA National Conference on "Impact of Science & Technology on Society & Economy" held at VSKU, Bellary.03-2017
10. Attended two days National level seminar on "Emerging Trends in Material Science", held at SG College Koppal. 03-2012.

Workshops/Seminars/Symposium Attended:

1. Participated in one day workshop on **Electrochemical Energy Storage and Conversion** organized by DoS in Chemistry Davangere university, on 12/03/2026
2. Organising committee member for special lecture on **Mathematical modelling using differential equations** organised by DoS in Physics Davangere University on 31/12/2025.
3. Organising program coordinator for One day workshop on **Solid Waste Management** organized on 11/06/2024 by NSS PG UNIT, Davangere university.
4. Organising program convener for **Yuva Samvad India @2047** organized on 23/07/2024 by NSS PG UNIT, Davangere university.
5. Organising program convener for **blood donation camp** organized on 04/12/2024 by NSS PG UNIT, Davangere university.
6. Organising committee member for special lecture on **Sir. C. V. Raman: His discovery, application and his legacy** organised by DoS in Physics Davangere University on 28/08/2024.
7. Organising program co-convener for **National space day celebration and poster presentation competition organized on 23/08/2024, DoS in Physics, Davangere university.**
8. Organising committee member of One day national conference on **Nanostructured based functional materials organized on 8/09/2023, DoS in Physics, Davangere university.**
9. Organising program on Inauguration of NSS activities and Constitutional Awareness Day, organized on 02/03/2024 Davangere university.
10. Organising committee member of **Youth festival** organised by NSS DU Davangere on 15-19/06/2024.
11. Organising committee member – National webinar on 'Biological effects of ionizing radiation, and Biological bases of radiation protection, held online on 12th and 17th June, 2020.
12. Organising committee member – 'National webinar on **Raman Effect and its applications**' held online on 25-06-2020.
13. Organising committee member – Short term course on **Basic Electronics** held online from 6th to 12th July, 2020.
14. Organising committee member – One Day workshop on **PEO's, PO's and CO's in Outcome based education** held on 15-12-2020.

15. Organising committee member – Celebration of **National Science Day** – 2021 and Inauguration of Physics Forum held on 23-03-2021
16. Attended five days workshop on “**Material Processing and Characterization-2019**” organized by National Physics Laboratory, New Delhi. 08-2019
17. Attended one day workshop on “**Society, Research & Development**” held at Karnatak University, Dharwad. 02-2018.

Training Programme / Orientation Programme / FDP / Refresher Course:

1. (04 November -18 November 2024) two-week online refresher course on “Materials for Energy and Sustainability” and obtained A grade under MM-TTP of UGC, organized by MMTTC, center for Science and Society, IISER, Bhopal.
2. (23 May – 21 June, 2023) 4-Week Faculty Induction/Orientation Programme for “Faculty in Universities/Colleges/Institutes of Higher Education” obtained Grade A+. Conducted by Teaching Learning Centre Ramanujan College, University of Delhi in collaboration with Army Institute of Education (AIE)
3. (May 08, 2023 to May 12, 2023) One Week Faculty Development Programme on computational modelling of materials” (Online Mode) Organized by the department of Physics Madanapalle Institute of Technology and science.
4. (03-2021) Short Term Training Program on Electrochemical Impedance Spectroscopy: Fundamentals and Applications organized by Department of Metallurgical and Materials Engineering, NIT Raipur during 26th Feb. -02nd March 2021.
5. (01-2021) Short term training program on Advances in Corrosion Engineering and Electrochemical Characterization Techniques organized by Department of Metallurgical and Materials Engineering, NIT Raipur during 02nd -06th Jan 2021
6. Participated in Short term training on “**Learning Physics Through Simple Experiments**” conducted by CCE, IIT Kanpur
7. Participated in Short term course on “**Material Processing and Characterization**” CSIR-National Physical Laboratory, New Delhi.
8. Online Course on “Physics of Semiconductors” (15 Aug 2017 to 20 Nov 2017) organized by Indian Institute of Technology Kanpur, Centre for Development of Technical Education IIT, Kanpur.
9. Computer Teacher Training Course.

Invited Talk

1. Special lecture on quantum Science: unveiling the invisible universe organized by department of Physics, Kottureshwara college, Kotturu on 20/12/2025.
2. Resource person NssSouth Zone preparade republic day parade camp 2024 organised by regional directorate of NSS Bengaluru and Davangere university from 05/11/2024 – 14/11/2024.
3. Judge for the event cooking without fire competition organised by department of studies in Food technology, Davangere university on 04/02/2023
4. Technical talk on X-Ray Diffraction in five days webinar titled bioanalytical techniques held on 4-8/12/2020 organised by GMIT, Davangere.
5. Technical talk on X-Ray Diffraction in five days webinar titled bioanalytical techniques held on 29/12/2020 to 2/01/2021 organised by GMIT, Davangere.

Professional Bodies

1. Member of Science and Technology Forum, Davangere University.
2. Member of DUTA, Davangere University
3. Member of Karnataka Association for the Advancement of Science
4. Member of Karnataka Physics Association

Personal Details

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Contact details	Department of Studies in Physics, Davangere University, Shivagangotri, Davangere 577002	C/O DANAPPA SHETTAR BYALI ONI, FORT ROAD NEAR GADIYAR KAMBA, KOPPAL-583 231
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