Dr. AKHELA UMAPATHI

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Education

	Degree	**Year**	**Institute**	**Specialization**
1	Bachelor of Engineering	2007-2011	Siddaganga Institute of Technology, Tumakuru, India	Biotechnology
2	Masters by research (MRes)	2014-2015	Newcastle University, Newcastle upon Tyne, United Kingdom	Nanomedicine
3	Doctor of Philosophy (PhD)	2016-2021	Amity University Rajasthan, Jaipur, Rajasthan, India	Nanobiotechnology

Professional Experience

	Date (from-to)	**Designation**	**Organization**
1	06/04/2024 to Till date	Assistant Professor	Siddaganga Institute of Technology, Dr. Sree Sree Shivakumara Swamiji Road, Tumakuru, Karnataka-572103
2	16/05/2022 to 5/04/2024	Assistant Professor	Acharya Institute of Technology, Acharya Dr Sarvepalli Radhakrishnan Rd, Soladevanahalli, Bengaluru, Karnataka-560107
3	10/03/2022 to 10/05/2022	Research Associate	Sri Sri Center for Advanced Research, Ved Vignan Maha Vidya Peeth Art of Living International Center, 21st Km, Kanakapura Main Rd, Udayapura, Bengaluru, Karnataka-560082

Positions held

1. Department Research co-ordinator
2. Department Placement co-ordinator
3. Department Academic syllabus co-ordinator
4. Department Proctor/mentor
5. Department Project Evaluation Committee co-ordinator
6. Department Seminar Evaluation Committee co-ordinator

Affiliations of Professional organizations

- Life Member at Material Research Society of India

Awards and Honors

- **2017:** Selected as One of the nine finalist at the Nanosparx competition at the Bangalore India Nano conference, Bangalore, Karnataka, India
- **2017:** Runner-up at the International Conference on NanoTechnology in Energy, Nano-Bio interface and Sustainable Environment at Amity University Rajasthan, Jaipur, Rajasthan, India
- **2009:** Won the "Best Project Award" at Siddaganga Institute of Technology, Tumkur, Karnataka, India

Courses Taught

Undergraduate Courses

1. Cell Biology and Cell Culturing Techniques
2. Bioinformatics
3. Molecular Biology and Genetic Engineering Techniques
4. Stoichiometry
5. Fermentation Process
6. Biology for Engineers
7. Environmental Sciences
8. Microbiology Laboratory
9. BT for Sustainable Environment
10. Research Methodology & IPR
11. Scientific Foundations of Health
12. Innovative and Design Thinking

Research Guidance

Guideship- Yet to be approved by VTU, Belagavi

Research Areas

- Synthesis of metallic nanomaterials with biomedical activities and controlled toxicity
- Investigation of the drug-like characteristics of the metallic nanomaterials
- Nanozyme like properties to explore the treatment for various diseases

Sponsored Projects

Ongoing Projects:

Title: Network Centre for Research in Glioblastoma Stem Cell-Targeted T Cell Immunotherapy Using Non-Genetically Engineered Mesenchymal Stromal Cells-DBT

Total Amount: Rs. 3,34,56,663/- Sanctioned to SIT- 1,75,10,014/-

Duration: 3 years (March-2023- ongoing)

Role: Co-Principal Investigator

Completed Projects:

1. Title: Optimization of Topical Formulation for Treatment of Early Stage Melanoma
   Funding Agency: KSCST
   Amount: Rs.7000/-
   Duration: 6 months (April-2024 to Oct-2024)
   Role: Supervisor

Publications

Editorial Review-

- Mamta Kumawat, **Akhela Umapathi**, Eric Lichtfouse, and Hemant Kumar Daima. Nanozymes to fight the Covid-19 and future pandemics. Environmental Chemistry Letters, 2021. https://doi.org/10.1007/s10311-021-01252-5. Impact factor- 15.1

Journals

- **Akhela Umapathi**, Harishkumar Madhyastha, PN Navya, Mandeep Singh, Radha Madhyastha, Suresh Kumar Bhargava, and Hemant Kumar Daima. Surface chemistry driven selective anticancer potential of functional silver nanoparticles toward lung cancer cells. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2022, 652:129809. https://doi.org/10.1016/j.colsurfa.2022.129809. Impact factor- 5.518
- Mamta Kumawat, Harishkumar Madhyastha, **Akhela Umapathi**, Mandeep Singh, Neerish Revaprasadu, and Hemant Kumar Daima. Surface engineered peroxidase-mimicking gold nanoparticles to subside pro-inflammatory genes. Langmuir, 2022. https://doi.org/10.1021/acs.langmuir.1c03088. Impact factor- 3.882
- **Akhela Umapathi**, PN Navya, Harishkumar Madhyastha, Mandeep Singh, Radha Madhyastha, Masugi Maruyama, and Hemant Kumar Daima. Curcumin and isonicotinic acid hydrazide functionalized gold nanoparticles for selective anticancer action. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2020, 607: 125484. https://doi.org/10.1016/j.colsurfa.2020.125484. Impact factor- 5.518
- Harishkumar Madhyastha, Radha Madhyastha, Abhishek Thakur, Sakai Kentaro, Abhimanyu Dev, Sneha Singh, Hemanth Kumar, Orlando Acevedo, Yuichi Nakajima, Hemant Kumar Daima, **Akhela Umapathi**, and Masugi Maruyama. c-Phycocyanin primed silver nano conjugates: Studies on red blood cell stress resilience mechanism. Colloids and Surfaces B: Biointerfaces, 2020, 194, 111211. https://doi.org/10.1016/j.colsurfb.2020.111211. Impact factor- 5.999
- **Akhela Umapathi**, PN Navya, HarishKumar Madhyastha, D. Jain, SP Srinivas, VM Rotello, and Hemant Kumar Daima. Highly efficient and selective antimicrobial isonicotinylhydrazide-coated polyoxometalate-functionalized silver nanoparticles. Colloids and Surfaces B: Biointerfaces, 2019, 184, 110522. https://doi.org/10.1016/j.colsurfb.2019.110522. Impact factor- 5.999

- Ragini Singh, **Akhela Umapathi**, Gaurang Patel, Chayan Patra, Uzma Malik, Suresh K Bhargava, Hemant Kumar Daima. Nanozyme-based pollutant sensing and environmental treatment: Trends, challenges, and perspectives. Science of Total Environment, 2022, 854, 158771. https://doi.org/10.1016/j.scitotenv.2022.158771. IF- 10.75
- Ragini Singh, Joel Saiji, Ayush Sharma, **Akhela Umapathi**, and Hemant Kumar Daima. Smart nanomaterials for cancer diagnostics and therapy. Nanoconvergence, 2022, 9, 21. https://doi.org/10.1186/s40580-022-00313-x. IF- 8.526.
- **Akhela Umapathi**, Mamta Kumawat, and Hemant Kumar Daima. Engineered nanomaterials for biomedical applications and their toxicity: a review. Environmental chemistry letters, 2021, 24:1- 24, https://doi.org/10.1007/s10311-021-01307-7. Impact factor- 13.615
- A Kaphle, PN Navya, **Akhela Umapathi**, and Hemant Kumar Daima. Nanomaterials for agriculture, food and environment: applications, toxicity and regulation. Environmental Chemistry Letters, 2018, 16: 43-58. https://doi.org/10.1007/s10311-017-0662-y. Impact factor- 13.615
- Ragini Singh, **Akhela Umapathi**, Hemant Kumar Daima, and Suresh Bhargava. Nanozyme-based pollutant sensing and environmental engineering. Nano microletters, 2022

Conference Proceedings

- Joel Saiji, **Akhela Umapathi**, SR Manohara, PN Navya, Mamta Kumawat, Divya Prakash, and Hemant Kumar Daima. Polyvinyl alcohol scaffold incorporated with silver nanoparticles and titanium dioxide: Electrical, dielectric, dye degradation, and antimicrobial properties. Advances in mechanical engineering, lecture notes in mechanical engineering, 2021, 367- 379. https://doi.org/10.1007/978-981-16-0942-8_36.

Book Chapters

- Mamta Kumawat, Anamika Saini, Neerish Revaprasadu, **Akhela Umapathi**, and Hemant Kumar Daima. Nanotoxicity to nanomedicine: applications of engineered nanomaterials, regulatory challenges, and opportunities. Royal Society of Chemistry, 2022. Book published by Royal Society of Chemistry. https://doi.org/10.1039/9781839167218-00249
- **Akhela Umapathi**, A Kaphle, PN Navya, Sourabh Monnappa Kuppanda Jafri, Nikhath Firdose, Devendra Jain, Sangly Pranesh Srinivas, Harishkumar Madhyastha, Radha Madhyastha, and Hemant Kumar Daima. Chapter-3: Impact of physiochemical properties and surface chemistry on nanomaterials toxicity. Nanotoxicology: Toxicity evaluation, Risk assessment and Management, 35. Book published by CRC Press, Taylor and Francis. https://doi.org/10.1201/b21545-3.
- A Kaphle, PN Navya, **Akhela Umapathi**, Maulick Chopra, and Hemant Kumar Daima. Chapter-8: Nanomaterial impact, toxicity and regulation in agriculture, food and environment. Nanoscience in Food and Agriculture 5, volume 26 of Sustainable

Agriculture Reviews Nano, 2017, 205-242. Book published by Springer Nature. https://doi.org/ 10.1007/978-3-319-58496-6, eBook ISBN: 978-3- 319-58496-6.

Editor/ Reviewer of Journal

- Vegetos, Plasmonics, Scientific reports, Molecular Biology Reports, Journal of Nanobiotechnology, World Journal of Microbiology and Biotechnology, Bionanoscience, Biological Trace Element Research, Discover Materials, Discover Pharmaceutical Sciences- **Springer Nature**
- **PLOS One**

Patents

- Akhela Umapathi and Hemant Kumar Daima. Successively surface modified gold nanoparticles with curcumin and isonicotinylhydrazide to control severe hepatotoxicity. Application number – 201811008349 (ongoing)

Invited Lectures, talks and workshops

- **2023**: Invited Speaker at Indo-Japan International conference on Future-Health Strategy by Trans-disciplinary approach & National Level Pre- conference at KS Hegde Medical Academy, NITTE, Mangalore from 13th-15th Febraury, 2023
- **2017: Speaker** at Kanoria PG Mahila Mahavidyalaya in Jaipur, Rajasthan, India
- **2017:** Invited Talk at Siddaganga Institute of Technology, Department of Biotechnology on the topics "Biomaterials: Latest trends"
- **2016: Speaker**, International Conference on Biomedical Engineering in Ophthalmology at Dayanand Sagar Engineering college, Bangalore, Karnataka, India

Workshops attended

- **2024**- Workshop on Mass Spectrometry Based Metabolomics and Data Analysis from 26th -28th September 2024
- **2024**- Workshop "Harnessing Nature's diversity: Integrating Phytochemicals,
- Cell culture and Bioinformatics" sponsored by Indian Council of Medical Resaerch (ICMR) at Dr. Prabhakar Kore Basic Science Research Center (BSRC), K.L.E. Academy of Higher Education and Research (KAHER), Belgavi. 01/07/2024-6/7/2024
- **2023**- Attended 5-day hands-on workshop on "Biosavvy: Workshop on Molecular Techniques and Bioinformatics" organized by Department of Biotechnology, Acharya Institute of Technology, Bengaluru from 4th-8th December
- **2023**-Attended 5-day FDP on "Writing, Defense and Implementation of Grant Proposals" organized by Acharya Institute of Technology, Bengaluru from 8th -12th August
- **2023**- Two day webinar on "Fermentation: Interplay of microbes, immunity and nutrition" organized by North-Eastern Hill University between 3th-4th February
- **2017**: Oral presentation at International Conference on Nanomaterials and Nanotechnology at Vinod Bhave Research Institute in Allahabad, Uttar Pradesh, India

- **2019**: Oral presentation at 70th meeting of Physiology society of Japan in Miyazaki, Japan
- **2017**: Oral presentation at International Conference on Nanomaterials and Nanotechnology at Vinod Bhave Research Institute in Allahabad, Uttar Pradesh, India

Internship/Hands-on training

- Nanoparticles fabrication and surface engineering
- Kinetics study using UV-Vis Spectroscopic techniques
- Enzyme-like, antioxidants and hemolytic assays
- Molecular Biology Techniques-SDS-PAGE, Western Blotting