

Dr. SANDEEP CHOUDHARY, PhD
Assistant Professor, Department of Biomedical Engineering
School of Engineering and Technology
Central University of Rajasthan, Ajmer, Rajasthan, India
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Education

Ph.D. IIT, Indore, India 07/2017-11/2021
Thesis Title: Optical Instrumentation for Fluorescent Biosensors

- A cost-effective color sensor-based device is developed for detecting fluorescence response of biosensors for food sample monitoring and health care diagnostic.

MTech. IIT, Kharagpur, India 07/2015-06/2017
(Biomedical Engineering)
Thesis Title: Studies on design & development of a microsecond repetitive pulse generator for electrochemotherapy

BTech. SGSITS, Indore, India 2010-2014
(Biomedical Engineering)
Major Project: Design and implementation of digital stethoscope

Professional Work Experience

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| Assistant Professor | Central University of Rajasthan, India | 11/2022-Present |
| Assistant Professor | SGSITS, Indore, India | 09/2022-11/2022 |
| Research Associate | IIT Indore, India | 12/2021 – 09/2022 |
| Working on the development of polarized angular light scattering (Raman scattering) and microfluidic technology for bovine sperm sexing. | | |
| Teaching Assistant | IIT Indore, India | 07/2017 – 11/2021 |
| Working as a TA for Biosciences subject, my responsibilities consisted of taking tutorials, doubt sessions, and discussions regarding the subject. | | |

Awards and Owners

- Got MP Young Scientist Award in the 37th edition by M.P. Council of Science and Technology (March 2022)
- Qualified UGC-NET (Assistant Professor) in December-2019.
- Secured All India Rank of 700 (GATE score- 537) in GATE-2015 in Instrumentation Engineering.

Patents

Choudhary, S., Vyas, T., Joshi, A.*, "Portable Biosensing System And Method For Milk Spoilage And Adulteration Detection" Indian Institute of Technology, Indore, Patent no. 563869 Granted on 26/03/2025. Application no. 202121023242 dated 25/05/2021.

Project

Title: Utilizing Point-of-Use Embedded Systems for the Detection of Fluorides, Calcium, and Heavy Metals in Healthcare-Related Disease Diagnostics

Funding: ANRF-ARG, **Amount:** 55 Lakhs

Duration: 3 years, (2026-2028)

Publications (Peer Reviewed)

1. **Choudhary, S.,** Vyas T. & Joshi, A. (2025). Point-of-care enzymatic biosensors based on fluorescent thin films for determination of glucose, urea, and pH. *Clinica Chimica Acta*, 120560. (IF 2.9)
2. Nag MK, Sadhu AK, Kumar C, **Choudhary S.** (2025). Efficient automated quantification of midline shift in intracerebral hemorrhage using a binarized deep learning model on non-contrast head CT. *Neuroradiology*, 1-11. (IF 4.6)
3. Nag, M. K., Sadhu, A. K., Das, S., Kumar, C., & Choudhary, S. (2025). 3D CoAt U SegNet-enhanced deep learning framework for accurate segmentation of acute ischemic stroke lesions from non-contrast CT scans. *Physical and Engineering Sciences in Medicine*, 1-11. (IF 2.7)
4. Vyas, T., Jaiswal, S., **Choudhary, S.,** Kodgire, P., & Joshi, A. (2024). Recombinant Organophosphorus acid anhydrolase (OPAA) enzyme-carbon quantum dot (CQDs)-immobilized thin film biosensors for the specific detection of Ethyl Paraoxon and Methyl Parathion in water resources. *Environmental Research*, 243, 117855. (IF 7.7)
5. Vyas, T., Kumar, H., Choudhary, S., & Joshi, A. (2024). Thin film-based chemical sensors of Carbon Quantum Dots (CQDs)-Dithizone for the specific detection of Lead ions in water resources. *Environmental Science: Water Research & Technology*. (IF 3.1)
6. Vyas, T., Mehta, A., **Choudhary, S.,** Gogoi, M., & Joshi, A. (2023). Evaluation of Phthalic acid Tri-ethylene diamine (TED) and Folic acid-based carbon quantum dots for detection of heavy metals in water resources using fiber-optic instrumentation. *Environmental Technology*, 1-35. (IF 2.2)
7. Vyas, T., **Choudhary S.,** Sharan R. S., Joshi A. (2023). Fiber-Optic Detection of Aluminium and Copper in Real Water Samples using Enzyme-Carbon Quantum Dot (CQD) based Thin Film Biosensors. *ACS ES&T Engineering*. (IF 7.5)

8. **Choudhary, S.,** & Joshi, A. (2022). Development of an embedded system for real-time milk spoilage monitoring and adulteration detection. *International Dairy Journal*, 127, 105207. (IF 3.1)
9. **Choudhary, S.,** Joshi, B., & Joshi, A. (2021). Translation of carbon dot biosensors into an embedded optical setup for spoilage and adulteration detection. *ACS Food Science & Technology*, 1(6), 1068-1076. (IF 2.6)
10. Pandey, G., **Choudhary, S.,** Chaudhari, R., & Joshi, A. (2020). Ultrasonic atomizer-based development of pH sensor for real-time analysis. *Scientific reports*, 10(1), 1-11. (IF 3.8)
11. Pandey, G., Chaudhari, R., Joshi, B., **Choudhary, S.,** Kaur, J., & Joshi, A. (2019). Fluorescent Biocompatible platinum-porphyrin-doped polymeric hybrid particles for oxygen and glucose biosensing. *Scientific reports*, 9(1), 1-12. (IF 3.8)
12. **Choudhary, S.,** Joshi, B., Pandey, G., & Joshi, A. (2019). Application of single and dual fluorophore-based pH sensors for determination of milk quality and shelf life using a fibre optic spectrophotometer. *Sensors and Actuators B: Chemical*, 298, 126925. (IF 8.0)

Book Chapters

1. Chauhan S.[#], Patel P.[#], Mathur P, **Choudhary, S.***(2023). Biosensors: Role and application in green technologies. In *Microbial Approaches for Sustainable Green Technologies* (pp. 107-136). *CRC Press*.
2. **Choudhary, S.[#],** Vyas, T.[#], Kumar, N., & Joshi, A. (2023). Point-of-Care Biosensors for Glucose Sensing. In *Nanobiosensors for point-of-care medical diagnostics* (pp. 107-136). Singapore: Springer Nature Singapore.
3. **Choudhary, S.,** Pandey, G., Mukherjee, R., & Joshi, A. (2019). Biomedical instrumentation: focus on point-of-care devices. In *Biomedical Engineering and its Applications in Healthcare* (pp. 297-326). Springer, Singapore.
4. **Choudhary, S.[#],** Kaur, J.[#], Chaudhari, R., Jayant, R. D., & Joshi, A. (2019). Enzyme-based biosensors. In *Bioelectronics and Medical Devices* (pp. 211-240). Woodhead Publishing.

International Conference Papers

- **Choudhary, S., & Vyas, T.** (2021). Fluorescence-based sensing assay for point of care detection of healthcare parameters in food samples. *SPAST Abstracts*, 1(01).

International Conference presentations/Invited Talk/Session Chair

- Delivered a Lecture on ‘Biosensors’ in an International conference on *Biomaterials and Health care* as an Invited Speaker at Rishikesh, Uttarakhand (In association with IIT Roorkee) (13-15 April 2023).
- Presented poster in International Conference on Emerging Areas in Biosciences and Biomedical Technologies (eBBT-2) at IIT Indore. (February 7-9, 2020).
- Presented poster in Symposium on "Emerging Areas in Biosciences and Biomedical Technologies (eBBT)" at IIT Indore. (January 5-6, 2018).

Mentoring Experience

- Mentor more than ten MSc, MTech., and BTech. students for dissertation, internships, and projects during 2017 to 2021 at IIT Indore.
- Mentor eight BTech Students for dissertation (major project) at Central University of Rajasthan during 2023-25.

Referees

- Dr. Abhijeet Joshi
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