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

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. Nag, M. K., Sadhu, A. K., Kumar, C., & **Choudhary, S.** (2026). MTU-Net: Task-conditioned multi-task learning for joint hematoma classification and segmentation in non-contrast CT. *Biomedical Signal Processing and Control*, *120*, 109948. (IF 4.9)
2. **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 Chima Acta, 120560. (IF 2.9)
3. 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)
4. 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)
5. 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)
6. 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)
7. 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)

8. 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)
9. **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)
10. **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)
11. 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)
12. 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)
13. **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).
- Nag, M. K., Paul, A., Bhattacharya, S., **Choudhary, S.,** & Kumar, C. (2025, April). Multi-class Classification of Eye Disease Using Fundus Images. In *International Conference on Biomedical Engineering Science and Technology* (pp. 492-502). Cham: Springer Nature Switzerland.

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
  Associate Professor
  Department of Biosciences & Biomedical Engineering,
  Indian Institute of Technology, Indore
  P.O. Simrol M.P. - 453552

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- Prof. Amit Kumar
  Department of Biosciences & Biomedical Engineering,
  Indian Institute of Technology (IIT) Indore,
  P.O Simrol, Khandwa Road Indore, M.P.- 453552
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