

Dr. RAJASEKHAR RAVULA

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Educational Background (Chemical Engineering)

- Jan 2017 – Aug 2023 **Doctor of Philosophy**, Indian Institute of Technology Guwahati (*IITG*), India.
Specialization: Heavy metals detection, POCT Digital Sensors, Environmental Engineering.
Thesis title: Optical Sensors for On-site Detection of Arsenic (III & V) and other Pollutants (Fe(II), Pb(II), Cr(VI), and F⁻)
- Jul 2014 – May 2016 **Master of Technology**, Indian Institute of Technology Guwahati (*IITG*), India.
Chemical Engineering in specialization of Materials Science and Technology.
- Sept 2007 – Aug 2011 **Bachelor of Technology**, Andhra University College of Engineering (A), *Andhra University*, Visakhapatnam, India.
Discipline: *Chemical Engineering*.
- Jun 2005 – Mar 2007 **Intermediate HSC**, Smt. D. Indira Junior College, Tenali, Guntur, Andhra Pradesh, India.
- Jun 2004 – Mar 2004 **SSC**, Z. P. H. School Pedapudi, Guntur, Andhra Pradesh, India.

Experience (Industry, Research & Teaching)

- Sept 2023– till Date **Assistant Professor**, Department of Chemical Engineering, K.K. Wagh Institute of Engineering Education and Research, Nashik.
- Jan 2023 – Sept 2023 **SRF**, Department of Chemical Engineering/ Center for the Nano Technology, IITG
- Jan 2017 – Dec 2022 **Doctoral Research, IITG.**
Research interests: Arsenic detection, Heavy metals, onsite detection, POCT kit, Digital sensors,
- Apr 2012- Jul 2014 **Executive-Production**, M/S AVRA Laboratories Pvt. Ltd. Hyderabad, Telangana/ Visakhapatnam, Andhra Pradesh, India. worked as a shift in-charge, operated the distillation column, and handled the "Environment, Health, and Safety" (EHS) Plant.
- Jun 2010 **Industrial Project** at M/s Nagarjuna Agri Chem. Ltd. Srikakulam, Andhra Pradesh, India.

Technical Skills

Jul 2017 – May 2022	Technical operator for simultaneous Atomic absorption spectrometry (AAS), UV-Vis Spectrophotometer, Fourier-transform infrared spectroscopy (FTIR), Fluorescence Spectroscopy, Centre for the Environment, IITG.
Jan 2016 - May 2016	Teaching Assistant, Fluid Mechanics Lab , IIT Guwahati Prof. Tapas K. Mandal
Jul 2015 – Dec 2015	Teaching Assistant, Heat Transfer Lab , IIT Guwahati Prof. Animes Kr. Golder
Jul 2014- Dec 2014	Teaching Assistant, Mass Transfer Lab , IIT Guwahati Prof. Majumder Subrata K
Operated equipment (Jan 2017- Nov 2022)	Regularly analyzed samples by AAS, FTIR, UV-Vis, FESEM_EDX and particle size analyzer.
Major equipment	Expertise in analyzing and deciphering various samples using XRD, FESEM, FETEM, EDX, Raman spectroscopy, Atomic absorption spectroscopy, Atomic force microscopy, TGA, DSC, FTIR, UV-Vis, lyophilizer, and particle size analyzer . These instruments were used for my research in IITG.

Soft skills

Software	<ul style="list-style-type: none">✓ Well experienced in using OriginPro 8.5 for plotting graphs.✓ Well experienced in using ImageJ for plotting graphs✓ Good knowledge in MATLAB software coding.✓ Sound knowledge in MS-Office package.
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Awards & Honour

Scholarships	Recipient of Ministry of Human Resource & Development (MHRD) scholarship for pursuing Ph.D. (2017 – 2022)
Academic record	Qualified in Graduate Aptitude Test in Engineering (GATE) – 2013, 2014

Research output

Patents	Filed + under preparation : 01 + 01
SCI indexed journal	Published: 05.
Conference proceeding	Published: 02.
Conference	05
Workshops and Symposiums	08
Submitted sequence	02

Publications

List of Patents

1. **Ravula Rajasekhar**,; Tapas K. Mandal.; A highly sensitive hybrid digital sensor for room temperature Arsenic detection (**Patent Application No: 202331006616**).
2. **Ravula Rajasekhar**,; Tapas K. Mandal.; A Photoresistor-based Arsenic-specific Digital Sensor for Rapid and Affordable Colorimetric Detection at the Point-of-Care (Patent under preparation).

Research articles

Form thesis:

1. **Ravula Rajasekhar**, Krishna Pada Bhabak, and Tapas K. Mandal. "User-friendly point of care test device for detection of arsenic in potable water: Prototype, design, and artifact." *Asia-Pacific Journal of Chemical Engineering* 17.5 (2022): e2815. **Impact factor:1.8**
2. **Ravula Rajasekhar**, Dalia Dasgupta Mandal, and Tapas K. Mandal. "A highly sensitive hybrid digital sensor for room temperature arsenic detection." *Journal of Environmental Chemical Engineering* (2023): 110381. **Impact factor: 7.96**
3. **Rajasekhar, Ravula**, and Tapas K. Mandal. "A photoresistor-based portable digital sensor for rapid colorimetric detection of Arsenic." *Microchemical Journal* (2023): 109574. **Impact factor: 5.3**
4. **Ravula Rajasekhar**,; Tapas K. Mandal.; E-Eye for detection of heavy metals. (*Manuscripts under preparation*)

Form Non-thesis:

5. Sinha Rupam, Nirmal Roy, **Ravula Rajasekhar**, Aabhas Karnawat, and Tapas K. Mandal. "N-doped carbon dot from cigarette-tobacco: Picric acid sensing in real water sample and synthesis of CD-MWCNT nano-composite for UV-photodetection." *Journal of Environmental Chemical Engineering* 9, no. 1 (2021): 104971. **Impact factor: 7.96**
6. Sinha, Rupam, Anil P. Bidkar, **Ravula Rajasekhar**, Siddhartha S. Ghosh, and Tapas K. Mandal. "A facile synthesis of nontoxic luminescent carbon dots for detection of chromium and iron in real water sample and bio-imaging." *The Canadian Journal of Chemical Engineering* 98, no. 1 (2020): 194-204. **Impact factor:2.1**

Conferences and Proceedings

Conference Proceedings

1. **Ravula Rajasekhar**, Thirukumaran Kandasamy, Siddhartha S. Ghosh, Tapas Kumar Mandal, Design and development of a prototype of POCT device for estimation of protein concentration in a biological sample. **CUCHE Alumni Symposium**, December 2022, Calcutta University Chemical Engineering Alumni Association (**CUCHEAA**).
2. Rupam Sinha, **Ravula Rajasekhar**, Tapas Mandal, Carbon dots photoluminescence technique to detect total Chromium in industrial wastewater, **The International Nanotech & Nanoscience Conference and Exhibition Nanotech Paris, France** – June 26th – 28th, 2019. (DOI: <https://doi.org/10.26799/cp-nanotechfrance2019>)

International and National Conferences

1. **Ravula Rajasekhar**,; Tapas K. Mandal. Transportation analysis of liquids in microfluidic devices, "Recent Innovations in Chemical Engineering (RICE – 2021)", 8th - 9th February 2021, NIT Bhopal.

2. **Ravula Rajasekhar.**; Krishna Pada Bhabak.; Tapas K. Mandal.; Green Synthesis Iron Oxide Nanoparticles its Application in Remediation of Contaminated Water. Workshop cum Symposium. 12th-13th February 2020, Center for the Environment, IIT Guwahati.
3. **Ravula Rajasekhar.**; Krishna Pada Bhabak.; Tapas K. Mandal. Current Status of Arsenic Detection Via Gutzeit Method. RECYCLE 2020, 13th -14th February 2020, IIT Guwahati.
4. **Ravula Rajasekhar.**; Krishna Pada Bhabak.; Tapas K. Mandal. Development of a green synthesis technique of iron oxide nanoparticles for efficient separation of arsenate from water, WATER 2020, 23rd-25th January 2020, IIT Guwahati.
5. **Ravula Rajasekhar.**; Krishna Pada Bhabak.; Tapas K. Mandal. Development of an eco-friendly field test kit for detection of Arsenic in contaminated water, CHEMCON 2019, 15th - 19th December 2019, IIT Delhi.

Workshops and Symposiums

1. Attended Webinar Lecture Series on “**Recent Trends in Wastewater Treatment with Membrane for Sustainable**” Development organized by Department of Chemical Engineering, Assam Engineering College Jalukbari, Guwahati Assam held during 8th to 11th December, 2020.
2. Participated in the 3-Day Online **FDP** on “Environmental Pollution – Sustainable Technologies for its Control (EP-STC)” organized by Chemistry Division of Department of Basic Sciences and Humanities, GMR Institute of Technology, Rajam during 19th - 21st October, 2020.
3. Participated in **TEQIP-III** sponsored one-day National Webinar on’ RECENT PRACTICES IN ENVIRONMENTAL ENGINEERING (RPEE-2020)’ Organized by Department of Civil Engineering, Government College of Engineering Kalahandi Bhawanipatna in collaboration with Government College of Engineering jalgaon, Maharashtra on 18th October, 2020.
4. Attended **AICTE** Sponsored **STTP-II** on “Industrial Pollution & Control Strategies” organized by Department of Chemical Engineering, Anurag Group of Institutions, Ghatkesar (M), Medchal (D), Telangana held during 5th -10th October 2020.
5. I have participated as VOLUNTEER in the **CHEMCON-2015** (Indian Chemical Engineering Congress-2015) held during 27-30th December 2015 at Department of Chemical Engineering, Indian Institute of Technology Guwahati, Guwahati, Assam.
6. I have participated as VOLUNTEER in the **CHEMCON-2009** (Indian Chemical Engineering Congress-2009) held during 27-30th December 2009 at Department of Chemical Engineering, College of Engineering (A), Andhra University, Visakhapatnam, Andhra Pradesh.
7. I have actively participated as volunteer in **RIPPLES-2008**, National Symposium of Chemical Engineering Students, 4-5th January 2008, conducted by Department of Chemical Engineering, AU College of Engineering, Visakhapatnam, Andhra Pradesh.
8. Participated in the 6-Day **FDP** on “**Exploring Perspectives of AI & ML in Mechanical Engineering**” organized by Department of Mechanical Engineering, K. K. Wagh Institute of Engineering Education & Research, Nashik, Maharashtra, during 27th November – 2nd December 2023.