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Current Location: Gainesville, Florida, USA



Chaitanya Bathina

Career Objective:

To pursue a highly challenging and creative career where I could apply my existing knowledge and skills in Electrical Engineering, Nanotechnology, and Mechanical Engineering, acquire new skills and contribute effectively to the growth of humanity as well as myself.

Academic Qualifications:

YEAR	QUALIFICATION	UNIVERSITY/ Board	Percentage/ CGPA
2022	PhD	Department of Mechanical Engineering, Indian Institute of Technology, Patna	7.8/10
2015	M. Tech (Green Energy Technology)	Center for Green Energy Technology, Pondicherry University	8.8/10
2013	B. Tech (Electrical& Electronics Engineering)	University college of Engg & Tech, Acharya Nagarjuna University	75/100
2009	12 th Grade	The Board of Intermediate Education, Andhra Pradesh	90.3
2007	10 th Grade	The Board of Secondary Education, Andhra Pradesh	88.8

Research Experience:

- ✓ **October 2023–Present:** **Postdoctoral Research associate**, Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville, Florida, United States of America
Project Title: Design and fabrication of superhydrophobic membranes for thermal management of electronics
Responsibilities:
 - Develop and plan new research directions focusing on design and development of superhydrophobic metal membranes for two phase heat sinks.
- ✓ **August 2022–September 2023:** **Postdoctoral Researcher**, Department of Mechanical and Aerospace Engineering, United Arab Emirates University, Abu Dhabi, United Arab Emirates.
Project Title: 4D-Printing of the Biomimetic Morphing Hydrogel for Solar-Based Water Purification.
Responsibilities:
 - Develop and plan new research directions focusing on the fundamental synthesis of hydrogels -their structure-property relationships and morphing for water desalination.
 - Synthesis of eco-friendly hydrogels using 2-D nanomaterials such as Mxenes, Graphene Oxide (GO), and Borophene, among others for solar-powered water desalination.
 - Acquiring and managing research grants from various organizations, including planning, and executing research directions, organizing the budget, helping in hiring, and ensuring reporting milestones through high-quality publications.
 - Advise graduate and undergraduate students in developing original research plans and execution as directed by the research supervisor.

- ✓ **August 2015–May 2021: Senior research fellow and Graduate research assistant**, Department of Mechanical Engineering, Indian Institute of Technology Patna, Patna, India.

Project Title: Fabricating Eco-friendly, PFCs free superhydrophobic surfaces and exploiting bio-energy potential for sustainable atmospheric water harvesting.

Responsibilities:

- Responsible for multiple successfully funded grants from “The Department of Science and Technology,” “The Science and Education Research Board,” India, and our industry partner New Leaf Dynamic Technologies, India.
 - Research in the fabrication of robust fatty acids-based copper superhydrophobic surfaces via electrodeposition for self-cleaning, anti-icing, and moisture condensation applications.
 - Exploring the possibilities and challenges of biomass-powered atmospheric water harvesting for potable water in India and around the world via techno-economic analysis
 - Helping and sharing knowledge with other lab mates in designing biomass gasification systems, different nanostructures preparation, experimentation, and writing manuscripts and grants as directed by the research supervisor.
 - Advise and help undergraduate students with tutorials, quizzes, assignments, and mini projects for thermodynamics and heat transfer courses: managing class records, attendance, and grades as directed by the supervisor.
- ✓ **December 2014–June 2015: Project research assistant**, Department of Material science and Metallurgical Engineering, Indian Institute of Technology Bombay, Mumbai, India.

Project Title: Fabricating low-cost Pt free ZnO based Dye-sensitized solar cells.

Responsibilities:

- Research and synthesis of Chalcogenide-based counter electrodes (CZTS, CNiTS, CFeTS, and CCoTS) via hydrothermal, solvothermal methods for ZnO-based Dye-sensitized solar cells.
- Fabricating high-efficiency solar cells and reporting milestones to the research supervisor.

Professional Service:

- ✓ **Guest Editor:** December 2022 – Present, “Energies” Journal, MDPI Publisher-Impact factor (2021):3.252 <https://www.mdpi.com/journal/energies>
- ✓ **Reviewer:** December 2022 – Present, “Energies” Journal, MDPI Publisher-Impact factor (2021):3.252 <https://www.mdpi.com/journal/energies>
- ✓ **Reviewer:** August 2022- Present, “International Journal of Energy Research” Journal, Wiley Publications-Impact factor (2021):4.672 <https://onlinelibrary.wiley.com/journal/1099114x>

List of Publications:

Journal Publications:

1. **Chaitanya, B.**, Bahadur, V., Thakur, A.D. and Raj, R., 2018, “Biomass-gasification-based atmospheric water harvesting in India”, *Energy*, 165, pp.610-621. (<https://doi.org/10.1016/j.energy.2018.09.183>)
2. **Chaitanya, B.**, Gunjan, M.R., Sarangi, R., Raj, R, Thakur, A.D., “Per-Fluorinated Chemical Free Robust Superhydrophobic Copper Surface for Scalable Applications”, *Materials Chemistry and Physics*. (doi.org/10.1016/j.matchemphys.2021.125667)
3. Sunil, Sinha, R., **Chaitanya, B.**, Rajan, B.K., Agarwal, A., Thakur, A.D. and Raj, R., 2019, “Design, fabrication, and performance evaluation of a novel biomass-gasification-based hot water generation system”. *Energy*, 185, pp.148-157. (<https://doi.org/10.1016/j.energy.2019.06.186>)

Book Chapter:

1. **Chaitanya, B.**, Thakur, A.D. and Raj, R., 2020, “Biomass Gasifier-Powered Adsorption Chiller for Atmospheric Water Harvesting: Prospects in Developing World”. In *Advances in Energy*

Research, Vol. 1 (pp. 451-460). Springer, Singapore. (https://doi.org/10.1007/978-981-15-2666-4_44)

Patents:

1. Sunil, Raj, R., Thakur, A.D., Ranjan, B.K., **Chaitanya, B.**, Sinha, R., Agrawal, A. and Agrawal, A. 2018. System and method for heat recovery in gasification process. Application filed with the Indian Patent Office, Serial Number 201831011600, and Application no. TEMP/E1/12145/2018-KOL, Date 28/03/2018.

Link to google scholar:

https://scholar.google.co.in/citations?view_op=list_works&hl=en&hl=en&user=VxbLcolAAAAJ&alert_p_review_top_rm=2

Fellowships and Awards:

- Ministry of Education India, Ph.D. Fellowship.
- **Best presentation** (runner-up) award in 'My Research in 3 Minutes' competition held on 9th Research Scholar's Day at IIT Patna.
- **Ministry of New and Renewable Energy** (MNRE) India, M-Tech Fellowship (Based on academic excellence, and among top 100 students in India).

Area of Interest:

- Wettability, non-wetting surfaces, and Microfluidics
- Water desalination/ purification
- Hydrogels, morphing and soft robotics
- Atmospheric water harvesting
- Condensation and phase change heat transfer
- Thermal management of electronics
- Renewable energy systems and thermodynamic modeling
- Energy-Water Nexus

Technical Skills:

- Fabrication various nanomaterials
- Material characterization- SEM, XRD, TGA, and others
- Micro-Goniometry and wettability
- High speed and thermal imaging
- Thermodynamic modeling of energy systems
- MATLAB programing, basics in AI & ML

References:

- a) [Dr. Rishi Raj](#) (Thesis Adviser), Thermal and Fluid Transport Laboratory, Department of Mechanical Engineering, Indian Institute of Technology Patna, India.
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- b) [Dr. Ajay D. Thakur](#) (Thesis Adviser), Department of Physics, Indian Institute of Technology Patna, India.
E-Mail: ajay.thakur@iitp.ac.in, Phone: +91-612-302-8126