

Name of Faculty Dr. Raj Kumar Verma
 Designation Assistant Professor
 Nature of Job/Appointment Regular

Date of Joining 16/05/2022

E-mail rajkumar_chem@cbit.ac.in



Education Qualifications	Name of the Degree	Class
Ph. D	Doctor of Philosophy (Chemical Engineering)	Awarded
PG	M. Tech (Chemical Engineering)	First
UG	B. Tech (Chemical Engineering)	First
Work Experience	5.2 Years	
Teaching	5.2 Years	
Research	4 Years	
Industry	--	
Others	--	
Area of Specialization	Process Intensification, Modeling and Simulation, Microfluidics, Multiphase flow, Biofuels, Waste to Energy	
Professional Memberships	--	
Responsibilities held at the Institution Level	Worked as Volunteer in COMPFLU-2018, An international conference organized by Department of Chemical Engineering, IIT Roorkee	
Responsibilities held at Department Level	DRC Coordinator, Department R&D Coordinator, NIRF Coordinator, NAAC Criteria 3 Coordinator, NBA Criteria 5 Coordinator, Class Teacher, Project supervisor, and Student mentor.	
Research Guidance	1. Electrochemical reduction of CO₂ in to formic acid by using micro-reactor 2. Bio-oil production from agricultural waste by using solvent extraction and pyrolysis. 3. Production of hydrogen gas from Biogas by using organic waste in ASPEN Plus. 4. Production of Biodiesel and Bioplastic (PHA extraction) from algae. 5. Modeling and Analysis of Carbon dioxide absorption using ASPEN Plus	
Awards Received	1. Graphical abstract is selected for cover page in I&EC Research Journal of an issue 16, Volume-59. (ACS publication). 2. One of my research article in ChemBioEng Reviews Journal (Wiley Online Library) is the most read and downloaded article in the year 2018-19. 3. Awarded with MHRD fellowship to pursue M. Tech. and Ph.D. in Chemical Engineering at IIT Roorkee, India in the year 2012 and 2016, respectively 4. Chaired a poster session at an International Chemical Engineering Conference on Energy, Environment and Sustainability (ICECEES-2024), organized by the Indian Institute of Technology Roorkee, India, from February, 15-17, 2024	
Courses Handled at Under Graduate / Post Graduate Level.	Mass Transfer Operation, Chemical Reaction Engineering, Transport Phenomena, Computational Fluid Dynamics, Process Modeling and Simulation	
No. of Papers Published	National Journals – Nil National Conference – 02	International Journals – 9 International Conference – 10

Projects Carried out

1. Fabrication of continuous micro reactor for the electrochemical conversion of CO₂ in to formic acid [**as PI Amount: Rs. 1.93 Lakh**, Grant No.-CBIT/PROJ-H/I039/Chemical/ D006 /2024].
2. Pulp hand sheet and Black liquor Characterization of hardwood species after Kraft cooking and bleaching process [**as Co-PI-Amount: Rs. 2.38 lakhs**, Grant No.-CBIT/PROJ-IH/I037/Chemical/D004/2024].
3. Sustainable ground improvement by using chemically treated shredded tire and HDPE in the sand [**as Co- PI-Amount: Rs. 2.35 lakhs**, Grant No.-CBIT/PROJ-IH/I042/Civil/D004/2024].

Patents

01 Granted

Technology Transfer

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Invited Speaker

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No. of Books/Chapter

6

Published with details

Details of Short-Term Training Programs/Faculty Development Programs/Seminars/Workshops. Other Trainings (Attended and/or Organized).

1. Participated in the AICTE Recognized Faculty Development Program on "Smart Materials Processing and Applications" Conducted by NITT Chandigarh in association with CBIT Hyderabad from 25/07/2022 to 29/07/2022.
2. Participated in a Faculty Development Program on "Industrial Wastewater Management" Conducted by the Department of Chemical Engineering Haldia Institute of Technology, Haldia, West Bengal from 28 August-01 September 2023.
3. Participated in a Faculty Development Program on "Sustainability in Process Engineering" Conducted by the Department of Chemical Engineering MIT WPU from 18-22 December 2023.
4. Participated in a Faculty Development Program on "Empowering Educators: AI Tools for Engineering and Technology (AITET-2024)" Conducted by the Department of Chemical Engineering CBIT Hyderabad from 29 January 2024-02 February 2024.
5. Participated in a one-week FDP on "Quality Education through OBE", organized by CBIT in association with IEEE Education Society Student Branch Chapter during January 2024.

Details of Journal Publications/ Conferences (National and International)

INSTITUTE OF TECHNOLOGY

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International Journal from the year 2017

1. **Verma, R.K.**, Prakash, R., Mehta, A., Ghosh, S. Biodiesel production in a serpentine mini reactor—Effect of flow distribution. **International Journal of Energy Research**, 2019, 43 (8), 3461-3474. IF: 4.3 <https://doi.org/10.1002/er.4488>. ISSN/ISBN- 1099-114X.
2. **Verma, R.K.**, Ghosh, S. Two-Phase Flow in Miniature Geometries: Comparison of Gas-Liquid and Liquid-Liquid Flows. **ChemBioEng Reviews**, 2019, 6 (1), 5-16. (Q1) IF: 4.8 (Q1). <https://doi.org/10.1002/cben.201800016>. ISSN-2196-9744
3. Prakash, R., **Verma, R.K.**, Ghosh, S. Liquid-liquid mass transfer in a serpentine miniature geometry- effect on pressure drop. **Chemical Engineering Journal**, 2019, 369, 489-497. IF: 13.3 (Q1). <https://doi.org/10.1016/j.cej.2019.03.064>. ISSN-1385-8947.
4. **Verma, R.K.**, Ghosh, S. Comparison of slug breakup for confined liquid-liquid flows in serpentine mini geometry, **Industrial & Engineering Chemistry Research**, 2020, 59 (16), 7955-7964. IF: 3.8 (Q1). <https://doi.org/10.1021/acs.iecr.0c00009>. ISSN- 1520-5045
5. **Verma, R.K.**, Ghosh, S. Effect of phase properties on liquid-liquid two-phase flow patterns and pressure drop in serpentine mini geometry, **Chemical Engineering Journal**, 2020, 397, 125443. IF: 13.3 (Q1). <https://doi.org/10.1016/j.cej.2020.125443>. ISSN-1385-8947.
6. **Verma, R.K.**, Ghosh, S. Curvature Induced Intensification of Biodiesel Synthesis in Miniature geometry. **Chemical Engineering and Processing: Process Intensification**, 2021, 163, 108363. IF: 3.8 (Q1). <https://doi.org/10.1016/j.cep.2021.108363>. ISSN-0255-2701.
7. Pydimalla M., Husaini S., Akshara K., **Verma R. K.** Sustainable Biodiesel: A Comprehensive Review on Feedstock, Production Methods, Applications, Challenges and Opportunities. **Materials Today Proceedings**, 2023, 92, (2), 458-464, (Q2). <https://doi.org/10.1016/j.matpr.2023.03.593>. ISSN-2214-7853 .
8. Husaini S., Akshara K., **Verma R. K.**, Pydimalla M., [Biodiesel production from blended feedstocks and by-product utilization for achieving sustainability](https://doi.org/10.1016/j.matpr.2024.05.116). **Materials Today Proceedings**, 2024. <https://doi.org/10.1016/j.matpr.2024.05.116>.
9. Rohilla, L., Prakash, R., **Verma, R.K.** Experimental Visualization of Mass Transfer from a Slug Bubble During Co-Current Flow in a Conventional Channel, **Chemical Engineering Science**, 2024, 283, 119388, IF-4.1 (Q1). <https://doi.org/10.1016/j.ces.2023.119388>. ISSN-1873-4405.

International /National Conferences from the year 2017

1. **Verma R.K.**, Ghosh, S. Reactive and non-reactive liquid-liquid dispersed flow in a serpentine mini reactor. International Conference of Heat Transfer, Fluid Mechanics and Thermodynamics (**HEFAT-2019**), (22-24, July), 2019, Wicklow, Ireland.
2. **Verma R.K.**, Ghosh, S. Effect of hydrodynamics on kinetics of transesterification reaction in a serpentine mini reactor. **CHEMCON**, 2018, NIT Jalandhar, Jalandhar, India.
3. Pydimalla M., Husaini S., Akshara K., **Verma R. K.** Sustainable Biodiesel: A Comprehensive Review on Feedstock, Production Methods, Applications, Challenges and Opportunities. 2nd International Conference on Multifunctional Materials, Dec., 22-24, 2022. Getthanjali College of Engineering and Technology, Keesara, Telangana State, India.
4. Chaitanya G.S.S.K., Dhruv P., **Verma R.K.** Synthesis of Pyrone-Based Compound-Mini Review. 3rd International Conference on Chemical, Bio & Environmental Engineering (CHEMBIOEN-2022), November 4-5, 2022. B V Raju Institute of Technology, Narsapur, Telangana State, India.
5. Perna, K.R., Mallick S., **Verma R.K.** Modeling and Analysis of CO₂ Absorption- Current Status and Future Scope. 3rd International Conference on Chemical, Bio & Environmental Engineering (**CHEMBIOEN-2022**), November 4-5, 2022. B V Raju Institute of Technology, Narsapur, Telangana State, India.
6. Prakash, R., **Verma, R.K.**, Rohilla, L. Effect of Wall Contact Angle on Force Wetting Transition in a Capillary Tube. *International Chemical Engineering Conference on Energy, Environment and Sustainability (ICECEES-2024)*, from February, 15-17, 2024 at Indian Institute of Technology Roorkee, India.
7. Srivardhini, B., Arvind, D., **Verma, R.K.**, Value added products from algae, at 2nd International Conference on Novel Materials and Technologies for Energy and Environment Application (**NMTEA-2024**) during 17-18 February 2024 at BITS Pilani Hyderabad Campus, India.
8. **Verma, R.K.**; Ghosh, S., *Hydrodynamics of liquid-liquid two phase slug flow in a miniature annulus*. *International Chemical Engineering Conference on Energy, Environment and*

Book Chapters:

1. Praveen, B.V.S., **Verma, R. K.**, Uttaravalli, A.N., Radhika, B., Sai, N.S. Stimuli responsive Polymer Nanocomposites for films and coatings. Woodhead Publishing, Pages 219-257, **2024**. ISBN 9780443191398, <https://doi.org/10.1016/B978-0-443-19139-8.00021-8>.
2. Rohilla, L., Prakash, R., **Verma, R.K.**, Das, A. K., Experimental Interfacial Reconstruction and Mass Transfer Modelling of a Slug Bubble in Co-Current Flow in a Millimetric Tube. Fluid Mechanics Fluid Power Vol-05, Pages: 745-757, **2024**. https://doi.org/10.1007/978-981-99-6074-3_68.
3. Gite, V.A., **Verma, R.K.**, Katiyar, R.S., Molecular Mechanisms in Drug Delivery, Microbiology-2.0 Update for a Sustainable Future. Springer, Singapore, Pages: 209-233, **2024**. https://doi.org/10.1007/978-981-99-9617-9_10
4. Alok Ranjan, Priyanka Adhikari, **Verma, R. K.**, A. Parthiban, Meenakshi Singh, Ashish Kumar. Advances in Pharmaceutical Coatings & Coating Materials. 2024. in John Willy and Sons. <https://doi.org/10.1002/9781394263172.ch7>
5. Praveen, B.V.S., Madhuri, P., **Verma, R.K.**, Anup A., Deshmukh, S.G. Metal Oxide Thin Films: A Comprehensive Study of Synthesis, Characterization and Applications, Thin Film Nanomaterials: Synthesis, Properties and Innovative Energy Applications (2024) 1: 166. <https://doi.org/10.2174/9789815256086124010010>

Articles contributed in Encyclopedia: -

Popular Articles in Magazine: -

