

## **CURRICULUM VITAE**

Vishal Anand (Ph.D.)

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### **Area of Interest**

Experimental Biofuels and Bioenergy: Algal Biorefinery; Metabolomics, CO<sub>2</sub> sequestration; Wastewater treatment; Bioremediation

### **Academic Qualification**

Degree/Certificate	Borad/University	Passing Year	Grad/Marks
PhD	IIT Indore	2021	Awarded
M. Tech (Biotechnology)	BIT Mesra	2015	8.07/10
B. Tech (Biotechnology)	Anna University	2012	7.60/10
12 <sup>th</sup>	C.B.S.E.	2006	67.8%
10 <sup>th</sup>	C.B.S.E.	2004	77.8%

**Present Position:** Institute Postdoctoral Fellow in Hydro and Renewable Energy Department at Indian Institute of Technology Roorkee (Uttarakhand)

**Ph.D. Thesis:** Stress-Induced Lipid Enhancement in Microalgae-*Scenedesmus* sp.

Hands on experiences:

1. Sample Preparation: Triacylglycerides, Lipid, Carbohydrate, Protein, Native Enzymes
2. Characterization Techniques: Spectrophotometers (fluorescence measurement, UV-vis absorptions measurement, FTIR), Chromatography analysis (gas chromatography and mass spectroscopy), Molecular biology techniques (NATIVE PAGE and SDS PAGE), Microscopy techniques (Scanning electron microscope, confocal microscope, compound microscopy)
3. Data Analysis: Excel, GraphPad prism, Origin 8.5, Principal component analysis using R studio

**UGC Project Fellow:** Proteomic analysis and lipid profiling of *Chlamydomonas reinhardtii* and its relevance towards bio-fuel production. **(From 04-07-2015 to 26-04-2016)**

**M. Tech. Thesis:** Optimization of L-Glutaminase Production and Extraction by Aqueous Two-Phase System.

## List of Publications

1. **Anand**, V., Kashyap, M., Sharma, M. P., & Bala, K. (2021). Impact of hydrogen peroxide on microalgae cultivated in varying salt-nitrate-phosphate conditions. *Journal of Environmental Chemical Engineering*, 9(5), 105814. <https://doi.org/10.1016/j.jece.2021.105814>
2. Samadhiya, K., Ghosh, A., Kashyap, M., **Anand**, V., & Bala, K. (2021). Bioprospecting of native algal strains with unique lipids, proteins and carbohydrates signatures: A Time dependent study. *Environmental Progress & Sustainable Energy*, e13735. <https://doi.org/10.1002/ep.13735>
3. Kashyap, M., Samadhiya, K., Ghosh, A., **Anand**, V., Lee, H., Sawamoto, N., ... & Bala, K. (2021). Synthesis, characterization and application of intracellular Ag/AgCl nanohybrids biosynthesized in *Scenedesmus* sp. as neutral lipid inducer and antibacterial agent. *Environmental Research*, 201, 111499. <https://doi.org/10.1016/j.envres.2021.111499>
4. **Anand**, V., Kashyap, M., Ghosh, A., Samadhiya, K., & Kiran, B. (2021). A strategy for lipid production in *Scenedesmus* sp. by multiple stresses induction. *Biomass Conversion and Biorefinery*, 1-11. <https://doi.org/10.1007/s13399-021-01392-2>
5. Kashyap, M., **Anand**, V., Ghosh, A., & Kiran, B. (2021). Superintending *Scenedesmus* and *Chlorella* sp. with lead and cobalt tolerance governed via stress biomarkers. *Water Supply*. <https://doi.org/10.2166/ws.2021.065>
6. Ghosh, A., Sangtani, R., **Anand**, V., Kashyap, M., & Kiran, B. (2021). Synergistic dynamics of critical cofactors effectuates fuel relevant metabolic profile of *Scenedesmus* sp.: Targeting cleaner energy production. *Journal of Cleaner Production*, 297, 126640. <https://doi.org/10.1016/j.jclepro.2021.126640>
7. **Anand**, V., Kashyap, M., Ghosh, A., & Kiran, B. (2020). Spectroscopic insights exploring triacylglyceride accumulation in *Scenedesmus* sp. via biomolecular transitions. *Bioresource Technology Reports*, 12, 100593. <https://doi.org/10.1016/j.biteb.2020.100593>
8. **Anand**, V., Kashyap, M., Samadhiya, K., Ghosh, A., & Kiran, B. (2019). Salinity driven stress to enhance lipid production in *Scenedesmus vacuolatus*: A biodiesel trigger?. *Biomass and Bioenergy*, 127, 105252. <https://doi.org/10.1016/j.biombioe.2019.05.021>
9. **Anand**, V., Kashyap, M., Samadhiya, K., & Kiran, B. (2019). Strategies to unlock lipid production improvement in algae. *International Journal of Environmental Science and Technology*, 16(3), 1829-1838. <https://doi.org/10.1007/s13762-018-2098-8>
10. Kashyap, M., Samadhiya, K., Ghosh, A., **Anand**, V., Shirage, P. M., & Bala, K. (2019). Screening of microalgae for biosynthesis and optimization of Ag/AgCl nano hybrids having antibacterial effect. *RSC advances*, 9(44), 25583-25591. DOI: 10.1039/C9RA04451E
11. Ghosh, A., Samadhiya, K., Kashyap, M., **Anand**, V., Sangwan, P., & Bala, K. (2020). The use of response surface methodology for improving fatty acid methyl ester profile of *Scenedesmus vacuolatus*. *Environmental Science and Pollution Research*, 27(22), 27457-27469. <https://doi.org/10.1007/s11356-019-07115-5>

12. **Anand**, V., Singh, P. K., Banerjee, C., & Shukla, P. (2017). Proteomic approaches in microalgae: perspectives and applications. 3 Biotech, 7(3), 1-10. <https://doi.org/10.1007/s13205-017-0831-5>
13. **Anand**, V., Perween, Q., Sinha, R. K., Singh, H. R., & Jha, S. K. (2015). Screening of L-glutaminase Producer and Optimization of Production Process by Taguchi Orthogonal Array. International Journal of Pharmaceutical and Clinical Research, 7(04), 246-251.
14. Perween, Q., **Anand**, V., Singh, H. R., & Jha, S. K. (2015). Enhanced recovery of L-glutaminase by the optimization of a three-phase partitioning system using the Taguchi Doe Methodology. International Journal of Pharmaceutical and Clinical Research, 7(03), 216-220.

### Conference /Workshop Attended

1. International conference on Emerging Areas in Biosciences and Biomedical Technologies (eBBT2), IIT Indore, January 7-9, 2020 (Participation)
2. International conference on Emerging Areas in Biosciences and Biomedical Technologies, IIT Indore, January 5-6, 2018 (Poster Presentation)
3. International Conference on Bioscience Research for Nutritional Security, Environmental Conservation & Human Health in Rural India; IINRG, Ranchi, December 22-24, 2014. (Poster Presentation)
4. National Conference on Empowering Mankind with Microbial Technologies (AMI- EMMT-2014), Tamil Nadu Agriculture University, Coimbatore, November 12-14, 2014. (Poster Presentation)
5. National Workshop on Immunoinformatics, Karpaga Vinayaga College of Engineering and Technology, Chennai, 21st September 2011. (Participation)
6. International Conference on Biomedical Instrumentation, Engineering and Environmental Management, Karpaga Vinayaga College of Engineering and Technology, Chennai, 22- 23rd July 2011. (Participation)
7. National Conference on Recent Biotechnological Perspectives in Human Diseases and Therapeutics, Bharath University, Chennai, 4th March 2011. (Oral Presentation)
8. National Level Technical Symposium on Bioinformatics, Sastra University, Chennai, 23-24th October 2010. (Participation)
9. National Level Workshop on Application of perl scripting and Bioinformatics Tools and Techniques for Biological Database, Karpaga Vinayaga College of Engineering and Technology, Chennai, 4-6th October 2010. (Participation)
10. Attended a short-term training course on Advanced Research Techniques on Genomics Proteomics and Bioinformatics (ARTGPB-2017) at National Facility for Marine Cyanobacteria, (NFMC), Tiruchirappall, November 7-21, 2017.
11. **Anand**, V., Kumar, R., & Bala, K. (2017) Potential of biofuel production from algae cultivated in wastewater, In Press: Proceedings of National Conference on Climate Change, Resource Conservation and Sustainability Strategies held on 16th – 17th March 2017 at GGS IPU, Delhi.

12. **Anand, V., Ghosh, A., Shingdilwar, S., Kumar, R., & Bala, K. (2017).** Fame production and fatty acid profiling of microalgae for biodiesel production. *Phycologia*, 56(4), 8.
13. **Anand, V., & Bala, Kiran., (2017).** Comparison of direct and indirect transesterification for fame profiling in *Chlorococcum* sp. *Phycologia*, 56(4), 8.

## References

<b>PhD Thesis Supervisor</b>  <b>Dr. Kiran Bala</b> Associate Professor Department of Bioscience and Biomedical Engineering Indian Institute of Technology Indore P.O. Simrol, Khandwa Road. Madhya Pradesh-453552 Mobile Number: +91-7869944490 Email: kiranb@iiti.ac.in	<b>Research Collaborator</b>  <b>Dr Mahaveer P. Sharma</b> Principal Scientist (Agricultural Microbiology), ICAR-Indian Institute of Soybean Research, Khandwa Road, Indore, M.P, India - 452 001 Mobile No.: +91-9926012261 Email ID: Mahaveer.Sharma@icar.gov.in
<b>Postdoc Mentor</b>  <b>Dr. Sanjeev Kumar</b> Assistant Professor Hydro and Renewable Energy Department Indian Institute of Technology Roorkee Roorkee Uttarakhand-247667 Mobile Number: 7428640872 Email: sanjukec@hre.iitr.ac.in	<b>Research Collaborator</b>  <b>Dr. Parasharam M. Shirage</b> Associate Professor and Ramanujan Fellow Discipline of Metallurgy Engineering and Materials Science Indian Institute of Technology Indore P.O Simrol, Khandwa Road. Madhya Pradesh-453552 Mobile Number: 7875222331 Email: pmshirage@iiti.ac.in
<b>PG Student's Progress Committee Member</b>  <b>Dr. Prashant Kodgire</b> Associate Professor Department of Bioscience and Biomedical Engineering Indian Institute of Technology Indore P.O Simrol, Khandwa Road. Madhya Pradesh-453552 Email: pkodgire@iiti.ac.in	<b>MTech Thesis Supervisor</b>  <b>Dr. Hare Ram Singh</b> Assistant Professor Department of Bio-Engineering and Biotechnology Birla Institute of Technology Mesra Ranchi, Jharkhand-835215 Email: hrsingh@bitmesra.ac.in