Dr Khwaja Osama
Assistant Professor, Department of Bioengineering, Faculty of Engineering,
Integral University, Lucknow
(Phone: +91-9452684037 Email: osama.khwaja@gmail.com)
(Google Scholar, | ORCID ID | Scopus, | Web of Science, | Research Gate, | LinkedIn)

PROFILE

- A **Research-oriented and seasoned professional** offering **10+ years** of expertise in **food science engineering, development and optimization of food production processes, food safety, quality, and efficiency**.
- Extensive hands-on experience in teaching and research in **Bioprocess Engineering and Food Process Engineering**.
- Adaptive to new technologies, and ability to work in a multicultural environment, and leading personnel.
- **Finesse in food science and engineering principles** with in-depth knowledge of food processing techniques, preservation methods, and food product development.
- **Competent at** analyzing and optimizing **food manufacturing processes** for improved efficiency, cost-effectiveness, and quality.
- **Skilled in** Research and Development (**R&D**), Food Processing, Food Science, Strategic Planning, Hazard Analysis and Critical Control Points.
- **Expertise in research towards offering composite solutions** to the industry. Well-versed in using food processing equipment.
- **Profound exposure in publishing research, attending conferences,** and delivering presentations to build a strong research network.
- Worked on **several projects in food technology.** Performed a collaborative approach towards learning, teaching, research, and functioning.
- **Mentor various B Tech and M Tech students** in Food Technology, Biotechnology, and Biomedical Engineering.
- **Worked as** a coordinator for 5 undergraduate programs running in the Department of Bioengineering. Departmental in charge of criteria **7 of NAAC.**
- **Member** of Academic Council, Integral University, Lucknow
- **Deputy Chairperson**, Departmental Quality Assurance Cell, Department of Bioengineering, Integral University, Lucknow

RESEARCH INTEREST:

- **Sustainable Food Science and Technology:**
  - Evaluation of the potential of underutilized fruits for food applications.
  - Development of food products enriched with fiber and calcium-rich fruit powder.
  - Sustainable utilization of food by-products (e.g., citrus peel) for obtaining pectin, protein etc.
- **Artificial Intelligence and Modeling:**
  - Application of artificial intelligence, machine learning, and modeling techniques in various research areas.
- **Biotechnology:**
  - Extraction and optimization methods for enhancing protein yield from plant materials.
  - Use of artificial intelligence and optimization techniques in bioprocess engineering in improving enzyme production.

SUMMARY OF RESEARCH ACCOMPLISHMENT:

- Successfully **authored 25 papers and 3 book chapters** in reputed journals**.**
- **Edited 2 book,** published **1 patent** and **guided undergraduate and postgraduate students** on various research projects.

PROFESSIONAL MEMBERSHIP:

- Lifetime member of the Indian Society of Agricultural Engineers (**ISAE**)
- Lifetime member of the Association of Food Scientists & Technologists of India (**AFSTI**)

COURSE TAUGHT:

B.Tech

- Bioprocess Engineering
- Mass Transfer Operations I
- Mass Transfer Operations II
- Fermentation Technology
- Principle of Biochemical Reaction Engineering

M.Tech

- Advanced Bioprocess Engineering
- Bioreactor Engineering
- Fermentation Technology

ADMINISTRATIVE/DEPARTMENTAL RESPONSIBILITY

- **Worked as** a coordinator for 5 undergraduate programs running in the Department of Bioengineering.
- Departmental in charge of criteria **7 of NAAC.**
- **Worked as the** departmental timetable coordinator
- **Member** of Academic Council, Integral University, Lucknow
- **Deputy Chairperson**, Departmental Quality Assurance Cell, Department of Bioengineering, Integral University, Lucknow

STUDENTS SUPERVISION

Doctoral Students

- **Hina Siddiqui** (Enroll no. 2001091), Extraction of Dietary Fiber from Under-utilized *Neolamarckia cadamba*: A Valorization Approach. 2024 (Submitted)
- **Maboodurrahman** (Enroll no. 2201035), The effects of plant protein on the physicochemical and shelf-life of high-protein bars. (Undergoing)
- **Saba Firdous** (Enroll no. 2201123), Optimization, Production and Characterization of Exopolysaccharides from Cyanobacteria for the Production of Edible Film. (Undergoing)

Postgraduate Students Guided

- **Mohsin** (Enroll no. 21011361007), Extraction of Soluble and Insoluble dietary fibre from *Neolamarckia cadamba* fruit. 2023
- **Alweera Ashfaq** (Enroll no. 2101207002), Preparation, characterization and application of sodium alginate and mustard protein-based emulsion gels. (Co-supervised by Dr. Kaiser Younis) 2023
- **Zayeema Anjum** (Enroll no. 2101207010), The application of sodium alginate and aqueous extract of kadam (*Neolamarckia cadamba*) leaf coating to extent the shelf life of cape gooseberry. (Co-supervised by Dr. Kaiser Younis) 2023
- **Alisha Ahmad** (Enroll no. 2101207001), Development and characterization of sodium alginate and lemon (*Citrus limon*) waste-based biodegradable film. (Co-supervised by Dr. Owais Yousuf) 2023
- **Priya Kumari** (Enroll. no. 17013610011), Media optimization for enhancement of C-phycocynin in the cyanobacterial strain *Plectonema boryanum*. (Co-supervised by Dr. Alvina Farooqui) 2019

- **Tarannum Parveen** (Enroll no. 1400110060), Ultrasound-assisted osmotic dehydration of Neolamarckia cadamba fruits. (Co-supervised by Dr. Kaiser Younis) 2019
- **Shama Parveen** (Enroll no. 1400110052), Foam-mat drying of *Neolamarckia cadamba* fruits. (Co-supervised by Dr. Ovais Shafiq Qadri) 2019
- **Sana Fatima** (Enroll no. 1100110087), Comparison of Response Surface Methodology, Artificial Neural Network and Gaussian Process Regression for Modelling Fermentation Media: Case Study of Fermentative Production of Amylase. 2016
- **Mohd. Umar Azeem** (Enroll no 1200136008), Computational modelling and simulation of hairy root growth of *Rauvolfia serpentina*. 2014.

Undergraduate Students Guided

- **Saddam Hussain** (Enroll no. 1800101457) Modelling and optimization of microwave and ultrasound assisted extraction of pectin from *Citrus maxima* fruit peel: A Machine Learning Approach. 2022
- **Pravesh Chandra Yadav** (Enroll no. 1801010032)) Optimization of microwave and ultrasound assisted extraction of pectin from *Citrus maxima* fruit peel using Response Surface Methodology. 2022
- **Mandvi Mishra** (Enroll no. 1400110022) Incorporation of *Neolamarckia cadamba* fruit powder in cookies. (Co-supervised by Dr. Kaiser Younis) 2018
- **Mohd. Shahid** (Enroll no. 1400110027) Engineering Properties of *Neolamarckia cadamba* fruit (Co-supervised by Dr. Kaiser Younis) 2018
- **Kavita Yadav** (Enroll no 1400110019) Pickling of *Neolamarckia cadamba* fruit (Co-supervised by Dr. Kaiser Younis) 2018
- **Arti Yadav** (Enroll no. 1100101447) Artificial Neural Network based modelling of fermentation media for protease production by Bascillus species. 2015
- **Arti Patel** (Enroll no. 1100100863) Statistical Modeling and Optimization of Alkaline Protease Production from a Newly Isolated Bacillus Species Using Response Surface Methodology and Genetic Algorithm. 2015
- **Asif Khan** (Enroll no. 1000100337) Enhancement of Protease production by Bacillus species in submerged cultivation by Response Surface Methodology. 2015
- **Asif Abdullah Khan** (Enroll no. 1100101353) Efficiency of neural networks in modelling of fermentation process for Glucose Isomerase production. 2015
- **Salman Ahmad** (Enroll no. 1100100906) Production of Polyhydroxy Butryrate (PHB) biopolymer from *Azohydromonas australica* using sucrose as a sole carbon source. 2015
- **Rizvan** (Enroll no. 1100100912) Production of Polyhydroxy Butryrate (PHB) biopolymer from *Azohydromonas australica* using molasses as a sole carbon source. 2015
- **Mohd. Danish** (Enroll no. 1100102568) A neural network approach for modelling of media components for maximum productivity of Amylase from newly isolated *Bascillus species*. 2015
- **Avinash Diwedi** (Enroll no. 1100101822) Modelling of culture conditions for fermentative production of ethanol by Feed forward Artificial Neural Network. (Co-supervised by Dr. Salman Akhtar) 2015
- **Mohd. Zafar** (Enroll no. 1100100915) Optimization of growth medium to produce Glucose Isomerase from Bacillus species using response surface methodology. (Co-supervised by Dr. Salman Akhtar) 2015
- **Prashant Singh** (Enroll no. 0900100818) Artificial Neural Network based modelling of fermentation conditions for ethanol production by *Saccaromyces cerevecea*. (Co-supervised by Dr. Aslam Yusuf) 2015
- **Prashant Yadav** (Enroll no. 1100101463) Induction and growth kinetic studies of *Rauvolfia serpentina* hairy roots in shake flasks. (Co-supervised by Dr. Haris Siddiqui) 2015
- **Naghma** (Enroll no. 1100100908) Response surface methodology for the optimization of alpha amylase production by newly isolated Bacillus species. (Co-supervised by Dr. Haris Siddiqui) 2015
- **Mohd. Fahad Parvez** (Enroll no. 1100100911) Comparison of Artificial Neural Network and Response Surface Methodology in fermentation media optimization: A Case study of fermentative production of glucose isomerase. (Co-supervised by Dr. Haris Siddiqui) 2015
- **Mohd. Shahbaz Khan** (Enroll no. 1100100901) Media optimization for enhanced production of glucose isomerase from Bacillus species. (Co-supervised by Dr. Haris Siddiqui) 2015

PUBLISHED/GRANT PATENTS

- Dr. Khan Chand, Neeraj Kumar Mehta, Asfaq Siddiqui, Dr. Ningthoujam Manda Devi, **Dr. Khwaja Osama** Gravitational Sugarcane Juice Filtration Apparatus, **UK Design** Patent, Design number: 6350909, 2024

PUBLISHED/ACCEPTED SCI/SCOPUS RESEARCH PAPERS

- Siddiqui, H., Younis, K., Farooqui, A., & **Osama, K.** (2024). Extracting insoluble dietary fiber from Kadam fruit (*Neolamarckia cadamba*) and its characterization. Journal of Food Measurement and Characterization, 1-11, https://doi.org/10.1007/s11694-024-02682-9 **IF 2.9**
- Thomas, D., Gangawane, A.K., Sayyed, R.Z., Ahmad, R.A., Khan, S., Khan, M., Singh, V., **Osama, K.,** Haque, S. (2023). Laccase production from Bacillus sp. BAB-4151 using artificial neural network and genetic algorithm and its application for wastewater treatment. Biomass Conversion and Biorefinery, https://doi.org/10.1007/s13399-023-04815-4 **IF 4.0**
- Jahan, K., Fatima, S., **Osama**, **K**., Younis, K., & Yousuf, O. (2023). Boosting protein yield from mustard (*Brassica juncea*) meal via microwave-assisted extraction and advanced optimization methods. Biomass Conversion and Biorefinery, 13(17), 16241-16251. https://doi.org/10.1007/s13399-023-04662-3 **IF 4.0**
- Ashfaq, A., **Osama, K.,** Yousuf, O., & Younis, K. (2023). Sustainable Nonfarm Approaches to Achieve Zero Hunger and Its Unveiled Reality. Journal of Agricultural and Food Chemistry, 71(28), 10486-10499. https://doi.org/10.1021/acs.jafc.2c09095 IF 6.1
- Sharma, P.**, Osama, K.,** Varjani, V., Farooqi., A., Younis, K. (2023). Microwave-assisted valorization and characterization of *Citrus limetta* peel waste into pectin as a perspective food additive. Journal of Food Science and Technology, 60(4), 1284-1293. https://doi.org/10.1007/s13197-023-05672-9 **IF 3.117**
- Sharma, P., **Osama, K.,** Gaur, V. K., Farooqui, A., Varjani, S., & Younis, K. (2023). Sustainable utilization of *Citrus limetta* peel for obtaining pectin and its application in cookies as a fat replacer. Journal of Food Science and Technology, 60(3), 975-986. https://doi.org/10.1007/s13197-022-05424-1 **IF 3.117**
- **Osama, K.,** Siddiqui, M.H., Makroo, H.A., Younis K. (2022). Development of cookies enriched with fiber and calcium-rich *Neolamarckia cadamba* fruit powder. Journal of Food Measurement and Characterization, 17 765–772. https://doi.org/10.1007/s11694-022-01656-z. **IF 3.006**
- **Osama, K.,** Mujtaba, A., Siddiqui, M. H., Qadri, O. S., & Younis, K. (2022). Optimization of vacuum drying and determination of functional properties of Kadam (*Neolamarkia cadamba*) fruit powder. Journal of Food Processing and Preservation, 46(8) e16751. https://doi.org/10.1111/jfpp.16751 **IF 2.609**
- **Osama K.,** Younis K., Qadri O.S., Parveen S., & Siddiqui M.H. (2022). Development of under-utilized kadam (*Neolamarkia cadamba*) powder using foam mat drying. LWT, 154, 112782. https://doi.org/10.1016/j.lwt.2021.112782 **IF 6.056**
- Khursheed, N., **Osama, K.**, Eldesoky, G. E., Wabaidur, S. M., Islam, M. A., & Younis, K. (2022). Ultrasound-assisted protein extraction from mosambi peel support vector regression and genetic algorithm-based modeling and optimization. Journal of Food Processing and Preservation, 46(11), e16979. https://doi.org/10.1111/jfpp.16979 **IF 2.609**
- Younis K., Yousuf O., Qadri O.S., Jahan K., **Osama K.**, & Islam R.U. (2022). Incorporation of soluble dietary fiber in comminuted meat products: Special emphasis on changes in textural properties. Bioactive Carbohydrates and Dietary Fibre, 27, 100288. https://doi.org/10.1016/j.bcdf.2021.100288
- O.S Qadri, **K. Osama,** A.K. Srivastava (2020). Foam mat drying of papaya using microwaves: Machine learning modeling. Journal of Food Process Engineering, 43(6), e13394. https://doi.org/10.1111/jfpe.13394. **IF 2.889**
- K. Younis, S. Ahmad, **K. Osama,** M.A. Malik (2019). Optimization of de-bittering process of mosambi (*Citrus limetta*) peel: Artificial neural network, Gaussian process regression and support vector machine modeling approach. Journal of Food Process Engineering,42(6), e13185. https://doi.org/10.1111/jfpe.13185. **IF 2.889**
- P. Chaurasiya, K. Younis, O.S. Qadri, G. Shrivastava, **K. Osama (2019).** Comparison of Gaussian Process Regression, Artificial Neural Network and Response Surface Methodology modelling approaches for predicting drying time of mosambi (*Citrus limetta*) peel. Journal of Food Process Engineering 42(2), e12966. https://doi.org/10.1111/jfpe.12966. **IF 2.889**
- S. Sarkar, **K. Osama,** Q.M.S. Jamal, M.A. Kamal, U. Sayeed, M.K.A. Khan, M.H. Siddiqui, and S. Akhtar (2017). Advances and implications in nanotechnology for lung cancer management. Current Drug Metabolism, 18(1), 30-38. 10.2174/1389200218666161114142646 **IF 3.408**
- L. Pathak, V. Singh, R. Niwas, **K. Osama,** S. Khan, S. Haque, C. Tripathi, and B. Mishra (2015). Artificial intelligence versus statistical modeling and optimization of Cholesterol Oxidase production by using Streptomyces Sp. PloS one 10(9) e0137268. https://doi.org/10.1371/journal.pone.0137268 **IF 3.752**
- S. Mehrotra, **K. Osama,** A. Kukreja, and L. Rahman (2012) ISSR and RAPD based evaluation of genetic stability of encapsulated micro shoots of *Glycyrrhiza glabra* following 6 months of storage. Molecular Biotechnology, 52(3), 262-268. https://doi.org/10.1007/s12033-011-9491-6 **IF 2.86**

PUBLISHED NON-SCI-SCOPUS BUT PEER-REVIEWED RESEARCH PAPERS

- Jouvairiya, U., Fatima Alvi, M., Ahmad Faridi, S., Osama, K., & Vimal, A. (2022). Varying Effects of Iron Oxide Nanoparticles (IONPs) on the Bacterial Cells. Nanoscience & Nanotechnology-Asia, 12(4), 1-9. 10.2174/2210681212666220822123017
- Ahmad, S., Amir, A., Zafaryab, M., **Osama, K.,** Faridi, S. A., Siddiqui, M. H., Rizvi, M., A., & Khan, M. A. (2017). Production and characterization of polyhydroxybutryrate biopolymer from *Azohydromonas australica* using sucrose as a sole carbon source. J Microb Biochem Technol, 9, 082-086. https://doi.org/ 10.4172/1948-5948.1000348
- **K. Osama,** M.H. Siddiqui, K. Younis (2020). Underutilized kadam (*Neolamarckia cadamba*) fruit: Determination of some engineering properties and drying kinetics. Journal of the Saudi Society of Agricultural Sciences, 19(6), 401-408. https://doi.org/10.1016/j.jssas.2020.06.001
- Husain A., Khan F., **Osama K,** Mahfooz S, Shamim A., Ahmad S., Farooqui A. (2020) Media optimization for C-phycocyanin production in Plectonema sp. using response surface methodology and central composite design. International Journal of Research in Pharmaceutical Sciences.11(3), 3897-3904.
- S.A. Khan, M.H. Siddiqui, **K. Osama (2018)**. Bioreactors for Hairy Roots Culture: A Review. Current Biotechnology, 7(6), 417-427. http://dx.doi.org/10.2174/2211550108666190114143824
- U. Bano, A.F. Khan, F. Mujeeb, N. Maurya, H. Tabassum, M.H. Siddiqui, M. Haneef, **K. Osama,** and A. Farooqui (2016). Effect of plant growth regulators on essential oil yield in aromatic plants. Journal of Chemical and Pharmaceutical Research, 8(7), 733-739.
- M.K.A. Khan, M.H. Siddiqui, S. Akhtar, K. Ahmad, M.H. Baig, and **K. Osama** (2015). Screening of plant-derived natural compounds as potent chemotherapeutic agents against breast cancer: An in-silico approach. Journal of Chemical and Pharmaceutical Research, 7(1), 519-526.
- **K. Osama,** P. Somvanshi, A.K. Pandey and B.N. Mishra (2013) Modelling of nutrient mist reactor for hairy root growth using Artificial Neural Network. European Journal of Scientific Research, 97(4), 516-526.

BOOK EDITED/ AUTHORED

- Yousuf, O., Younis, K., **Osama, K.** (Eds.). (2025). Meat Composition and Nutrition. Apple Academic Press, Canada. ISBN: 9781779640529 (In production)
- Yousuf, O., Younis, K., **Osama, K.** (Eds.). (2023). Food Processing & Supply Chain. Elite Publishing House, India. ISBN: 9789358999372

BOOK CHAPTERS

- Akhtar S., Khan M.K.A., **Osama K. (2020)** Machine Learning Approaches to Rational Drug Design. In: "Computer-Aided Drug Design". Springer, Singapore. Pp 279-306
- M. Goswami, S. Akhtar, **K. Osama (2018)**. Strategies for Monitoring and Modeling the Growth of Hairy Root Cultures: An in-silico perspective. In "Hairy Root: An Effective Tool of Plant Biotechnology" Springer Nature. Pp 311-327.
- **K. Osama** B. N. Mishra, and P. Somvanshi (2015) Machine learning techniques in plant biology. In "Plant Omics: The Omics of Plant**,** Science" Springer India. pp 731-754.
