

Dr. Keyur Raval

Professor, Department of Chemical Engineering,
National Institute of Technology Karnataka,
Ph. D. in Biochemical Engineering and Biotechnology
B.E. in Chemical Engineering

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Education

- 2003-2008** Ph. D. at Institute of Biochemical engineering, RWTH Aachen Technical University, Germany.
- 2000-2002** M. S. in Biochemical Engineering & Biotechnology with Cumulative Grade point Average of 8.96 (out of 10.00) at **Indian Institute of Technology Delhi**, New Delhi, India.
- 1995-1999** B. E. in Chemical Engineering with 72.6% at L.D. College of Engineering, Ahmedabad, Gujarat, India.
- 1995** H.S.C. (Science) with **79.0 %** from Gujarat Education Board
- 1993** S.S.C. with **80%** from Gujarat Education Board
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Research Activities: Capital items of more than INR 7 crore purchased within stipulated time and maintained to date

Funded Research project

1. CSR Grant from HEFA: Chito-oligosaccharides production from the enzymatic route, 18 lacs, (June 2022 to June 2024) (SAN/CSR/04/2022-23 dated 06.06.2022)
2. CSR Funding from Maire Tecnimont: Food waste to Biogas- Enrichment of Biogas to bioCNG, 11.44 lacs (NITL/Almn/CRWRCR Project/2021 dated 25.11.2021)
3. From IMPACT79, NITK Alumni funding: Chitooligosaccharides from marine enzymes. 3.9 lacs (January 2021 to July 2022)
4. From SERB on Impact of maternal diabetes on pre-implantation embryo development: Non-invasive approach to assess embryo quality using oxygen consumption, 54 lacs (March 2017 to Sept 2021) (EMR/2016/005737 dated 27.04.2017)
5. From Department of Science and Technology on Heavy metal removal on melanin coated polymer matrix, 37 lacs (March 2015 to March 2018) (DST/TSG/WP/2014/58 dated 27.03.2015).
6. From CAMP, NITK alumni funding: Rotating packed disc contactor for effluent treatment applications, 1.2 lacs (January 2019 to December 2019).

- **Number of Post Doctoral fellows:** 1 (completed), **Ph.D. scholars:** 2 (ongoing), 6 (completed) **Master's students:** 5 Ongoing, 37 Completed.

Patents granted

1. 503885: Ritu Raval, Keyur Raval, Athena P V, S. Arun Kumar. A method for direct generation of bioethanol from chitin substrates, application number: 202341011489, 20/02/2023.
2. 351997: Keyur Raval, Rohit Kalnake, D V R Murthy, Rotating packed disc bioreactor, patent application number: 201841000694, 06.01.2018
3. 351670: Keyur Raval, Vishnu M., Raj Mohan B., Removal Of Heavy Metals From Contaminated Water By Adsorption Using Melanin Bound Activated Carbon, application number: 201841000695, 06.01.2018
4. 368465: Raj Mohan B., Keyur Raval, Vishnu M., Method, System and Apparatus for Arsenic Removal from Water using Functionalized Melanin, application number: 201841047554, 15.12.2018

Professional Experience

- **January 2013 to date:** Faculty at the National Institute of Technology Karnataka. U.G. courses teaching: 2, P.G./Ph.D. Courses teaching: 2, U.G. Laboratory in-charge:1, P.G. Lab development: 1, Research lab: 1
- **January 2010 to December 2012:** Associate Professor, Department of Chemical Engineering, Manipal Institute of Technology (M.I.T.), Manipal University, Manipal. Courses taught: U.G. (3), P.G. (3), Laboratory in-charge:2
- **Dec 2008 to Dec 2009: Senior executive** at Alembic Ltd., Baroda
 - Member of a core group headed by GM-technical services for upstream and downstream processes for Lovastatin, Erythromycin and Penicillin production.
- **Achievements of our team:**
 - Reduced **contamination levels** from **85% to 5%** in span of four months.
 - Stabilized erythromycin production process, **increased production by 30%** and **improved down stream efficiency by 5%.**
 - Identified and removed bottlenecks in Lovastatin production process and **enhanced productivity by 80%.**
 - Achieved a total of ca. **Rs. 80 Lacs of cost savings per month** on raw materials due to process improvements, stabilization and media optimization.
 - **Mobilized dead inventory** in production process and achieved **cost savings of ca. Rs. 12 Lacs.**
- **Aug '99 to April 2000: Trainee Chemical Engineer** at Tata Chemicals Ltd, Mithapur.
 - The Marine Chemicals unit had technical staff of ca. 20 people. As an engineer in charge of a unit, my duties comprised of maintaining seamless process conditions and achieving maximum possible production using manpower management and technical skills.

International Journals

1. Rachana Arvind, Smruti Bhat, Vaishnavi N Pai, Amrutha Shastry P, Atheena P V, Aswathy Narayanan, Kaustuv Sanyal, Shivaprakash Rudramurthy, Keyur Raval, Ritu Raval. Marine chitinase BtChi disrupts cell wall integrity in *Candida albicans* and non-*albicans* species by chitin targeting and release of chitooligosaccharides, *Applied Microbiology and Biotechnology*, 2026, <https://doi.org/10.1007/s00253-026-14012-8>.
2. KM Rajesh, Preetha Ganguly, Surbhi Chauhan, Keyur Raval, Prashant Mishra, Ritu Raval. Enzymatically derived chitooligosaccharides exhibit enhanced therapeutic efficacy against estrogen receptor-positive and triple-negative breast cancer cells. *International Journal of Biological Macromolecules*, 2026, 374, article number 153109, DOI: <https://doi.org/10.1016/j.ijbiomac.2026.153109>.
3. Chigateri M Vinay, Akshay Pramod Ware, Kannath U Sanjay, Debyani Samantray, Reju R Krishnan, Keyur Raval, Mahendran Sekar, Yarappa Lakshmikanth Ramachandra, Bobby Paul, Padmalatha S Rai. CDMMM: a comprehensive platform of traditional Indian medicinal plant DNA barcodes and metabolite fingerprints database. *Scientific Reports*, 2026, 16 (1), 7674, <https://doi.org/10.1038/s41598-026-37812-4>.
4. PV Atheena, K Raval, R Raval. Identification, purification and functional characterization of a thermostable marine chitinase for potential fungal control via chitin degradation mechanism. *Carbohydrate Research*, 2025, 558, <https://doi.org/10.1016/j.carres.2025.109654>.
5. V Govindaraj, DK Anandan, SK Kim, R Raval, K Raval. Process optimisation for improved chitinase production from marine isolate *Bacillus haynesii* and bioethanol production with *Saccharomyces cerevisiae*. *Brazilian Journal of Microbiology*, 2025, 1-16, <https://doi.org/10.1007/s42770-025-01644-7>.
6. A Joseph, K Raval, V Manirethan. Photocatalytic Degradation of Chlorpyrifos and Tetracycline in Aqueous Medium Using Silver Titanate Perovskite Nanoparticles. *Environmental Processes*, 2024, 11 (4), 56. <https://doi.org/10.1007/s40710-024-00734-2>.
7. SD Hebbar, KA Sparsha, K Raval, DR Trivedi. Julolidine-hydrazide-based D- π -A fluorescent chemoprobes for detection of Al^{3+} and Differentiation of Arsenic species: Applications in portable test strips, ecological assessment, and DFT studies, *Microchemical Journal*, 2024, 207, 111776, <https://doi.org/10.1016/j.microc.2024.111776>.
8. Rajesh KM, Keyur Raval, Ritu Raval. Marine chitinase AfChi: green defense management against *Colletotrichum gloeosporioides* and anthracnose, *AMB Express*, 2024, 14 (1), 128. <https://doi.org/10.1186/s13568-024-01786-1>.
9. V Govindaraj, SK Kim, R Raval, K Raval. Marine *Bacillus haynesii* chitinase: purification, characterization and antifungal potential for sustainable chitin bioconversion. *Carbohydrate Research*, 2024, 541, 109170. <https://doi.org/10.1016/j.carres.2024.109170>.
10. PV Atheena, KM Rajesh, K Raval, S Selvaraj, R Raval. Identification and characterization of chitinase producing marine microorganism: Unleashing the potential of chitooligosaccharides for bioethanol synthesis. *International Journal of Biological Macromolecules*, 2024, 265, 130846. <https://doi.org/10.1016/j.ijbiomac.2024.130846>.

11. Arun Kumar Subramani, Reshma Ramachandra, Sachin Thote, Vishnupriya Govindaraj, Piyush Vanzara, Ritu Raval, Keyur Raval. Engineering a recombinant chitinase from the marine bacterium *Bacillus aryabhattai* with targeted activity on insoluble crystalline chitin for chitin oligomer production, *International Journal of Biological Macromolecules*, 2024, 264, 130499. <https://doi.org/10.1016/j.ijbiomac.2024.130499>.
12. P Hugar, A Dutta, S Srilakshmi, PD Belur, K Raval, R Iyyaswami. Phenolic profile of unripe areca nuts cultivated in various districts of Karnataka, India. *JSFA Reports* 4 (2), 102-113. doi.org/10.1002/jsf2.169
13. Priyanka Hugar, Prasanna D. Belur & Keyur Raval. Fermentative extraction of phenolic compounds from unripe areca nuts by solid-state fermentation using newly isolated *Rhizopus orizae* MW538932. *International Journal of Food Science and Technology* 2023. [doi:10.1111/ijfs.16579](https://doi.org/10.1111/ijfs.16579).
14. Rohit P Kalnake, Ritu Raval, DVR Murthy, Piyush B Vanzara, Keyur Raval. Enhanced degradation of azo dye using mixed cultures of white-rot fungi in a modified rotating packed disc bioreactor and reuse of treated water. *Bioresource technology reports*, 22, 2023, <https://doi.org/10.1016/j.biteb.2023.101449>
15. Vishnupriya Govindaraj, Arun Kumar Subramani, Ramya Gopalakrishnan, Se-Kwon Kim, Ritu Raval and Keyur Raval. Bioethanol: A New Synergy between Marine Chitinases from *Bacillus haynesii* and Ethanol Production by *Mucor circinelloides*. *Fermentation*, 9(1), 40, 2023, <https://doi.org/10.3390/fermentation9010040>
16. Arun Kumar Subramani, Ritu Raval, Subramaniam Sundareshan, Rashmi Sivasengh, Keyur Raval. A marine chitinase from *Bacillus aryabhattai* with antifungal activity and broad specificity toward crystalline chitin degradation. *Preparative Biochemistry & Biotechnology*, 1-13, 2022, <https://doi.org/10.1080/10826068.2022.2033994>.
17. Harsha Thairra, Ritu Raval, Keyur Raval. Adsorptive Bioprocess Improves Yield of Melanin from *Pseudomonas stutzeri*. *Journal of Visualized experiments*, 179, 2022, DOI: 10.3791/63339.
18. Goutam Mohan Pawaskar, Keyur Raval, Prathibha Rohit, Revathi P Shenoy, Ritu Raval. Cloning, expression, purification and characterization of chitin deacetylase extremozyme from halophilic *Bacillus aryabhattai* B8W22. *3 Biotech*, 11(12), 1-13, 2021, DOI: <https://doi.org/10.1007/s13205-021-03073-3>.
19. Aswathi Cheredath, Shubhashree Uppangala, Gitanjali Asampille, David Joseph, Keyur Raval, Nagana Gowda GA, Guruprasad Kalthur, Satish Kumar Adiga. Duration of dry and humidified incubation of single-step embryo culture medium and oxygen tension during sham culture do not alter metabolomics signature. *F1000 Research*, 11, 242, 2022. DOI:<https://doi.org/10.12688/f1000research.109895.1>.
20. Dhakshanya Predheepan, Akshatha Daddangadi, Shubhashree Uppangala, Sindhura Lakshmi Koulmane Laxminarayana, Keyur Raval, Guruprasad Kalthur, Borut Kovačič, Satish Kumar Adiga. Experimentally Induced Hyperglycemia in Prepubertal Phase Impairs Oocyte Quality and Functionality in Adult Mice., *Endocrinology*, Volume 163, Issue 9, September 2022, bqac121, <https://doi.org/10.1210/endocr/bqac121>
21. Archana S Nayak, Srivani Chodiseti, Shivaprasad Gadag, Usha Yogendra Nayak, Srinikethan Govindan, Keyur Raval. Tailoring solulan C24 based niosomes for transdermal delivery of donepezil: In vitro characterization, evaluation of pH sensitivity, and microneedle-assisted Ex vivo permeation. *Journal of Drug*

- Delivery Science and Technology, 60, 101945, 2020, DOI: <https://doi.org/10.1016/j.jddst.2020.101945>
22. RP Kalnake, DVR Murthy, A Achar, K Raval, Residence Time Distribution Studies in a Modified Rotating Packed Disc Contactor: Mathematical Modeling and Validation, International Journal of Chemical Reactor Engineering, 18(4), 2020, <https://doi.org/10.1515/ijcre-2019-0161>.
 23. V Manirethan, K Raval, RM Balakrishnan, Adsorptive removal of trivalent and pentavalent arsenic from aqueous solutions using iron and copper impregnated melanin extracted from the marine bacterium *Pseudomonas stutzeri*, Environmental Pollution, Volume 257, 2020, 113576, <https://doi.org/10.1016/j.envpol.2019.113576>
 24. V Manirethan, N Gupta, RM Balakrishnan, K Raval, Batch and continuous studies on the removal of heavy metals from aqueous solution using biosynthesised melanin-coated PVDF membranes, Environmental Science and Pollution Research, 27, 24723–24737 (2020), <https://doi.org/10.1007/s11356-019-06310-8>
 25. Priyanka Bhat, Goutam-Mohan Pawaskar, Ritu Raval, Stefan Cord-Landwehr, Bruno Moerschbacher, Keyur Raval. Expression of *Bacillus licheniformis* chitin deacetylase in *E. coli* pLysS: Sustainable production, purification and characterization. International Journal of Biological Macromolecules, Volume 131, 1008-1013, 2019. <https://doi.org/10.1016/j.ijbiomac.2019.03.144>
 26. Goutam Mohan Pawaskara, Srikala Pangannaya, Keyur Raval, Darshak R.Trivedi, Ritu Raval, Screening of chitin deacetylase producing microbes from marine source using a novel receptor on agar plate. International Journal of Biological Macromolecules, 131, 716-720, 2019. DOI: 10.1016/j.ijbiomac.2019.03.118
 27. Manirethan, Vishnu, Keyur Raval, Reju Rajan, Harsha Thaira, and Raj Mohan Balakrishnan. Data on the removal of heavy metals from aqueous solution by adsorption using melanin nanopigment obtained from marine source: *Pseudomonas stutzeri*. Data in brief 20 (2018): 178-189. DOI: 10.1016/j.dib.2018.07.065
 28. Harsha Thaira, Keyur Raval, Vishnu Manirethan & Raj Mohan Balakrishnan. Melanin nano-pigments for heavy metal remediation from water. Separation Science & Technology, 54 (2), 265-274, DOI: 10.1080/01496395.2018.1443132, 2018.
 29. Vishnu Manirethan, Keyur Raval, Reju Rajan, Harsha Thaira, Raj Mohan Balakrishnan. Kinetic and thermodynamic studies on the adsorption of heavy metals from aqueous solution by melanin nanopigment obtained from marine source: *Pseudomonas stutzeri*. Journal of Environmental management, 214, 315-324, 2018. DOI: doi.org/10.1016/j.jenvman.2018.02.084.
 30. Ritu Raval, Robin Simsa, Keyur Raval. Expression studies of *Bacillus licheniformis* chitin deacetylase in *E. coli* Rosetta cells. International Journal of Biological Macromolecules, Volume 104, Part B, 1692-1696, 2017
 31. Srikala Pangannaya, Arshiya Kaur, Makesh Mohan, Keyur Raval, Dillip Kumar Chand, Darshak R Trivedi. Synthesis and spectral investigation of colorimetric receptors for the dual detection of copper and acetate ions: application in molecular logic gates, Supramolecular Chemistry, 29(8), 561-574, 2017
 32. Keyur Raval, Kartik Gehlot, Prasanna B. D. Scale up of naringinase production process based on the constant oxygen transfer rate for a novel strain of *Bacillus methylotrophicus*. Preparative Biochemistry and Biotechnology, 47(2), 192-198, 2017

33. Shubhashree U., Fiona D'Souza, Shivanand P, Hanudatta S., Keyur Raval, Guruprasad K, Pratap K. and Satish Kumar Adiga. Laser assisted zona hatching does not lead to immediate impairment in human embryo quality and metabolism. *Systems Biology in Reproductive Medicine*, 62(6), 396-403, 2016
34. Senthoo K Ram, Keyur Raval, P.E. Jagadeeshbabu. Enhancement of a novel extracellular uricase production by media optimization and partial purification by aqueous three phase system. *Preparative Biochemistry & Biotechnology*, 45:8, 810-824, 2015. DOI: 10.1080/10826068.2014.970690
35. Vaishnavy Pervaje , Keyur Raval, M.B. Saidutta. Optimisation Of Sono Assisted Pretreatment Of SwitchGrass (*panicum virgatum* L.) For The Production of Reducing Sugars Using Response Surface Methodology (RSM), *International Journal for Research in Applied Science & Engineering Technology*, 3 (VII), 448-445, 2015.
36. Keyur Raval, Yoshihito Kato, Jochen Buechs. Characterization of heat transfer of large orbitally shaken cylindrical bioreactors. *Biochemical Engg J*, 86, 1-7, 2014.
37. Keyur Raval, Dhanya Sunil, Sakshi Singhania, Praful Deshapande. Enhanced Bioavailability of 6-[3-(4-chlorophenyl)-1H-pyrazol-4-yl]-3-[(2-naphthyloxy)methyl][1,2,4] triazolo[3,4-b][1,3,4] thiadiazole on C6 Cell Lines using Chitosan Encapsulation at Nano Scale. *Int J Innovative Research Scie Engg Technol*, 2 (11), 6532-6538, 2013.
38. Ritu Raval, Keyur Raval, Bruno Moerschbacher. Enzymatic Modification of Chitosan Using Chitin Deacetylase Isolated from *Bacillus cereus*. *OMICS online, Open Access Scientific Reports*, 2(1), 1-4, 2013.
39. Keyur Raval, Jochen Buechs. Extended method to evaluate power consumption in large disposable shaking bioreactors. *J Chem Eng Japan*, 41 (11), 2008.
40. Keyur Raval, Yoshihito Kato, Jochen Büchs. Comparison of torque method and temperature method for determination of power consumption in disposable shaken bioreactors. *Biochem. Eng. J.* 34(3), 224-227, 2007.
41. Keyur Raval, Chao-Min Liu, Jochen Büchs. Large scale disposable shaking bioreactors: A promising choice. *Biopro. Inter.* 4(1), 46-49, 2006.
42. Raval K.N., Hellwig S., Prakash G., Ramos-Plasencia A., Srivastava A., Büchs J. Necessity of a two-stage process for the production of Azadirachtin-related limonoids in suspension cultures of *Azadirachta indica*. *J. Biosci. Bioeng.*, 96(1), 16-22, 2003.

National Journal

1. Gunjan Prakash, Keyur Raval, Ashok Srivastava. Production of biopesticide Azadirachtin from plant cell culture of *A. indica*. *CSIR J.*, 11(1), 81-85, 2003. (Published in Hindi)

Book Chapters (14)

1. P Datta, S Bej, M Vasudeva, K Raval. Use of Microalgae for the Development of Carbon Neutral Bio-CNG Process. In Book: *Recent Trends and Developments in Algal Biofuels and Biorefinery*, 383-399, 2024, https://doi.org/10.1007/978-3-031-52319-9_17.
2. Arun Kumar S., Keyur Raval, Ritu Raval. Evaluation of chitosan and its derivatives in immunomodulating blood sentinel cells. In Book: *Hematopoiesis: Biochemical, cellular, molecular, and genomic perspectives*. Pp: 51-71, 2024. Editor: R. K Gutti. CRC Press, London, UK. E book ISBN: 9781774914731.

3. V. Atheena, Keyur Raval, Ritu Raval. Scale-Up Models for Chitinase Production, Enzyme Kinetics, and Optimization. In Book: Optimization of Sustainable Enzymes Production, 1st Edition, 2022, Editor: J Satya Eswari, Nisha Suryawanshi. CRC Press, NEW York, E book ISBN: 9781003292333
4. Vishnupriya Govindaraj, Keyur Raval, Ritu Raval. Immunomodulatory Effects of Chitooligosaccharides. Pp- 99-119, Chitooligosaccharides: Prevention and Control of Diseases, 2022, Springer Nature. DOI: 10.1007/978-3-030-92806-3_7
5. Saswata Goswami, Keyur Raval, Priyanka Bhat. Recent Trends in Conventional and Nonconventional Bioprocessing. Pp 404-417, Bioprospecting of Microorganism-Based Industrial Molecules. 2021, John Wiley & Sons Ltd., <https://doi.org/10.1002/9781119717317.ch20>
6. Ritu Raval, Anamika Verma, Keyur Raval. A sustainable bioprocess for lipase production using seawater and the byproduct obtained from coconut oil industries, Technologies for sustainable development, pp: 42-47, Springer verlag, 2020, <https://doi.org/10.1201/9780429321573>
7. RajMohan Balakrishnan, Priyanka Uddandaraao, Vishnu Manirethan, Keyur Raval. Insights on the advanced processes for treatment of inorganic water pollutants, Inorgaic pollutants in water, pp: 315-336, 2020, Elsevier Publishers, Netherlands. DOI: 10.1016/B978-0-12-818965-8.00016-0
8. Raj Mohan Balakrishnan, Priyanka Uddandaraao, Keyur Raval, Ritu Raval. perspective of advanced biosensors for environmental monitoring. Tools, Techniques and Protocols for Monitoring Environmental Contaminants, pp: 19-51, Elsevier Publications, Netherlands
9. Raval, Keyur, and Ritu Raval. Biomethane and ammonia generation through treatment of rice mill wastewater. In Technology Drivers: Engine for Growth: Proceedings of the 6th Nirma University International Conference on Engineering (NUICONE 2017), November 23-25, 2017, Ahmedabad, India, p. 13. CRC Press, 2018.
10. Raval, Ritu, and Keyur Raval. "Microbes and Their Products as Sensors in Industrially Important Fermentations." Microbial Sensing in Fermentation (2018): 253-266. Wiley-Blackwell Publishers, UK.
11. Lavanya, A., Keyur Raval, and Ritu Raval. "Photobioreactors for wastewater treatment: Recent advances." In Photobioreactors: Advancements, Applications and Research, pp. 15-34. Nova Science Publishers Inc, 2017.
12. Ritu Raval, Keyur Raval, Satinder Kaur Brar, Mausam Verma. Proteases: Enzyme aided value addition in food processing industries. Enzymes in Value addition of waste, Nova Publishers, New York.
13. Harsha Thaira, Shraddha Bhosle, Rajmohan Balakrishnan and Keyur Raval. Selection of Medium and Optimization of Process Parameters for Melanin Biosynthesis from Pseudomonas Stutzeri HMGM-7. Biotechnology and Bioengineering, Springer Volume of Selected Proceedings of ICACE-2015.
14. Ritu Raval, Raj Rangnekar and Keyur Raval. Optimization of Chitosan Nanoparticles Synthesis and its Applications in Fatty Acid Absorption. Materials, Energy and Environmental Engineering, Springer volume of Selected proceedings of ICACE-2015

International Conference Presentations

1. Ritu Raval, Steffen Krohn, Keyur Raval. Modeling Fusion of Chitin Deacetylase with Chitin Binding Modules for Insoluble Chitin. Bioprocessing India, 16th to 18th December 2018, IIT Delhi.
2. Akshay Achar, Ritu Raval, Keyur Raval. Production, Purification and Characterisation of Agar Degrading Novel Marine Bacteria Isolated from Arabian Sea. Bioprocessing India, 16th to 18th December 2018, IIT Delhi.
3. Rashmi Sivasengh, Akshay Achar, Ritu Raval, Keyur Raval. Fishing of Chitinase Gene from Marine Microorganisms. Bioprocessing India, 16th to 18th December 2018, IIT Delhi.
4. Sowndarya K, Keyur Raval, Ritu Raval, Goutam Mohan Pawaskar. Optimization of process and biological parameters for chitinase production from *Bacillus haynesii*. Bioprocessing India, 16th to 18th December 2018, IIT Delhi.
5. Keyur Raval, Anamika Varma, Harsha Thaira. Producing Multiple Products from a Single Fermentation Process. Bioprocessing India, 16th to 18th December 2018, IIT Delhi.
6. Goutam Mohan Pawaskara, Srikala Pangannaya, Keyur Raval, Darshak R.Trivedi, Ritu Raval, Screening of chitin deacetylase producing microbes from marine source using a novel receptor on agar plate. 14th International Chitin and chitosan Conference, 27-30 August, 2018 Kansai University, Japan.
7. Priyanka Bhat, Goutam-Mohan Pawaskar, Ritu Raval, Stefan Cord-Landwehr, Bruno Moerschbacher, Keyur Raval. Expression of *Bacillus licheniformis* chitin deacetylase in *E. coli* pLysS: Sustainable production, purification and characterization. 14th International Chitin and chitosan Conference, 27-30 August, 2018 Kansai University, Japan.
8. Keyur Raval, Anamika Verma and Harsha Thaira. Producing Multiple Products From a Single Fermentation Process: A Case Study of *Pseudomonas stutzeri*. Bioprocessing India – 2018, 16th to 18th December 2018, IIT Delhi
9. Niharika Gupta, Vishnu M., Rajmohan B., Keyur Raval. Melanin coated PVDF discs packed bed cholumn for removal of hexavalent chromium from aqueous solution. 7th International engineering symposium, IES-2018, Kumamoto University, Japan. March 2018.
10. Keyur Raval, Ritu Raval. Biomethane and ammonia generation using rice mill waste water. International Conference on Engineering, Nirma University, November 2017.
11. Priyanka Bhat, Mrugali Sanjay Ghavte, Ritu Raval, and Keyur Raval. Chitosan through Chitin Deacetylases: Past, Present and Future. Indo-Japan Conference on Crystal Ball vision on Science & Engineering for Societal Upliftment, 7th to 9th August, 2017, National Institute of Oceanology, Goa.
12. Harsha Thaira, Vishnu Manirethan, Keyur Raval, Raj Mohan Balakrishnan, Optimizing the Biosynthesis of Melanin Nano Particles and their Application in Heavy Metal Contaminated Ground Water Remediation. International Conference on Nanotechnology Applications: Chemical, Energy and Environment (NACEE-2017) 22-23 March, 2017.
13. Harsha Thaira, Papacharyula Naveen Kumar, Keyur Raval and Raj Mohan Balakrishnan. Studies on feasibility of organic solvents for melanin extraction. Indo-Japan Conference on Crystal Ball vision on Science & Engineering for Societal Upliftment, 7th to 9th August, 2017, National Institute of Oceanology, Goa
14. Vishnu M, Reju Rajan, Harsha Thaira, Raj Mohan B and Keyur Raval. Heavy Metal Remediation from Ground Water Using Bacterial Melanin Nanoparticles. Indo-Japan Conference on Crystal Ball vision on Science & Engineering for

- Societal Upliftment, 7th to 9th August, 2017, National Institute of Oceanology, Goa.
15. Vishnu Manirethana, Keyur Raval and Raj Mohan B. Tetravalent selenium removal from aqueous solutions using biosynthesized melanin coated PVDF membrane. G16-Asian: 5th International chalcogen conference 19-21 December 2016, Goa, India.
 16. Keyur Raval, Shashwat Shekhar, Chirasmitha Amin and Harish Kumar. Novel swirled bubble column bioreactor for chalcogen research. G16-Asian: 5th International chalcogen conference 19-21 December 2016, Goa, India
 17. Ritu Raval, R. H. Ranganekar, Keyur Raval. Chitosan nanoparticles for lipid absorption- A potential food additive. Indo-Japan International Conference on Science & Technology: future Challenges and Solutions 2016, held on 8th-9th August 2016 at Mysore.
 18. Keyur Raval, Ritu Raval, Ganesha A. Comparison of Physical and Chemical Treatment Methods for Rice Mill Wastewater and Subsequent Biomethane and Ammonia Generation. International conference on Advances in science and engineering 2016, held on 26th June 2016 at Ahmedabad.
 19. Ritu Raval, Raj Ranganekar and Keyur Raval. Optimization of Chitosan Nanoparticles Synthesis and its Applications in Fatty Acid Absorption. International Conference on Recent advances in Chemical Engineering 2015, December 2015.
 20. Harsha Thaira, Shraddha Bhosle, Rajmohan Balakrishnan and Keyur Raval. Selection of Medium and Optimization of Process Parameters for Melanin Biosynthesis from *Pseudomonas Stutzeri* HMGM-7. International Conference on Recent advances in Chemical Engineering 2015, December 2015.
 21. Keyur Raval, Ritu Raval, Nithasha Chinnan, Bruno Moerschbacher. Bioprocess development of Chitin Deacetylase production from recombinant *E. coli* pLysS cells. International engineering Symposium, Kumamoto University, Japan. March 2015.
 22. Keyur Raval, Ritu Raval. Chitosan synthesis through Enzymatic route. International conference on frontiers in energy, environment, health and materials research organized by CSIR Lab, Bhuvaneshwar, August 2013.
 23. Keyur Raval, Wolf Kloeckner, Jochen Buechs. Characterization and Application of Novel Disposable Shaking Bioreactors. Asian Congress of Biotechnology organized by IIT Delhi, December 2013.
 24. Characterization and application of disposable large shaking bioreactors. Presentation given at "GVC/DECHEMA –Fachausschusstagung", Germany, August, 2004.

National Conference presentations

1. Keyur Raval, Satish Adiga. State-of-the-art on embryo selection using oxygen transfer rate. 71th Annual Session of Indian Institute of Chemical Engineers, CHEMCON–2018, 27-30th December 2018, NIT Jalandhar.
2. Amit, Keyur Raval, D V R Murthy, Effects of liquid swirling on gas to liquid mass transfer in two phase swirled bed reactor. New Approach in Chemical Sciences & advancement in Renewable energy, Delhi, March 2014.
3. Ved Tripathi, Keyur Raval, Gopal Mugeraya. Production of fuel by pyrolysis of waste plastic. New Approach in Chemical Sciences & advancement in Renewable energy, Delhi, March 2014.

4. Shashank Dwivedi, Keyur Raval and Ganesha A. Environmental pollution control from waste generated from small scale industries using appropriate technologies and potential for biorefinery development. National Conference on Energy and Environmental Issues related to Chemical Industries, Proceedings Page 30, 2012.
5. Keyur Raval, Shashwat Shekhar, Chirasmitha Amin, S Harish Kumar. Development and Characterization of a Novel Bioreactor system for algae production for biofuels. CHEMCON-2012.
6. Keyur Raval, Padmini. T, Ritu Raval, Ganesh A. Treatment of Rice Mill Waste Water by Hydrogen peroxide and subsequent Bio gas generation. CHEMCON-2012.
7. Keyur Raval, Ganesha A. Reduction of BOD and COD of fish industries waste water by physical and chemical methods. CHEMCON- 2011.

Academic and administrative experience

- Professor- In-Charge of Central Research Facility of NITK worth 120+ crore, from November 2023 to date. The facility houses equipments worth 80 crore and tests about 17000+ samples annually.
- Developed two Post Graduate research laboratories at Manipal Institute of Technology.
- Department coordinator for Management Information System to be installed at National Institute of Technology Karnataka (NITK).
- Member of the committee formed at Institute level to formulate and design the course module “Biology for Engineers” for all first year students of N.I.T.K.
- Secretary of Department Undergraduate Committee.
- Secretary of Mangalore Chapter of Indian Institute of Chemical Engineers.
- Incorporated AutoCAD for Chemical engineering drawing & design and developed laboratory course in AutoCAD at Department of Chemical Engineering, M.I.T, Manipal University
- Involved in various outreach activities such as delivered four expert lectures, member of doctoral scrutiny committees in other institutions etc.
- Invited reviewer for four international journal publications.

Workshops/Conferences/Seminars conducted

1. Co-convenor: Recent Challenges in atmospheric and earth science, December 2014.
2. Organizing committee member: International conference on advances in chemical engineering, Dec 2015
3. Organizing committee member: One day seminar on Multi-phase flow September 2017.

Awards and Achievements

- Awarded International Research interaction grant from Technical Education Quality Improvement Program – II in June 2016.
- Awarded Dale Carnegie Certificate for high impact teaching skills.

- Awarded Mission10X learning approach practitioners certificate for innovative teaching methods.
 - Distinguished Visiting Fellowship at University of Nottingham to research on sustainable energy using appropriate technologies in 2011.
 - DAAD (Deutsche Akademische Austausch Dienst) international scholarship (September 2001-March 2002) award for pursuing research in one of the top six technical universities of Germany.
 - Successfully completed a 3 months faculty development certificate course in Nano-science and Technology
 - All India rank 134th in Graduate Aptitude Test in Engineering (GATE) conducted in year 2000 for higher studies in one of the seven Indian Institutes of Technology of India.
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Technical skills

- **Process development and scale-up of**
 - microbial fermentation, plant cell culture, insect cell and mammalian cell culture, therapeutic protein production, secondary metabolites production
- **Bioreactor design and characterization**
 - Disposable bioreactor systems, stirred tank bioreactors design based on oxygen transfer, hydro-mechanical stress, mixing time or power consumption
- **Separation and analytical methods**
 - for proteins: ELISA, SDS-PAGE, LC-MS
 - for secondary metabolites: HPLC, TLC, Spectrophotometry
 - ultra filtration, centrifugation
- **Computer proficiency**
 - Modeling and optimization software: ModelMaker, gPROMS
 - MSOffice, CorelDraw. Operating system: Windows
 - Bioinformatics tools: DNASTAR, BLAST, NCBI, JGI, SEQUEST, GPF, Expasy

Personal skills

- A well focused, innovative and strategic attitude towards project execution
- Effective communication skills, flexible, results driven and self motivated
- Capable to execute projects in team or independently
- **Languages known**
Fluent: English, German, Hindi, **Native:** Gujarati

NITK, 11th August, 2026
 Dr. Keyur Raval

Dept. of Chemical Engg.
 NITK, Surathkal