

Dr. P.E. Jagadeesh Babu, B.Tech., M.Tech., Ph.D.

Department of Chemical Engineering,
National Institute of Technology Karnataka,
Srinivasanagar, Surathkal, Mangalroo-575 025,
Karnataka, India.

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Personal Background

Date of Birth : 4-June-1978
Nationality : Indian
Marital Status : Married
Passport No : H8527006

Educational Background

- **Ph. D.** (Chemical Engineering) **2001-2005**
(*A.C.Tech, Anna University – Chennai, India.*)

Dissertation: “studies in two-phase flow through packed beds (hydrodynamic studies in concurrent gas-liquid (newtonian / non-newtonian) downflow Through packed beds)”

- **M. Tech.** (Energy Engineering) **1999-2001**
(*Regional Engineering College – Trichy, India.*)

Thesis: “Heat Transfer Studies in agitated vessel using immiscible liquid systems, using computational fluid dynamics (CFD)”

- **B. Tech.** (Chemical Engineering) **1995-1999**
(*Madras University – Chennai, India.*)

Thesis: “Design project - Manufacturing of ethyl acetate 300TPD”

Professional Background

2009 Jan-Till Date

Associate Professor

*Department of Chemical Engineering, National Institute of Technology Karnataka (NIT-K),
Surathkal, Mangalore, Karnataka, India, 575025.*

2008 July-2009 Jan

Post Doc

*Chemical Robotic lab, Institute of Chemical Technology, Czech Technical University, Prague,
Czech Republic.*

2005-2008-March

Asst. Professor

Department of Chemical Engineering, St. Joseph’s College of Engineering, Chennai, India.

2001-2005

Teaching Research Associate – to Professor Dr. T. Murugesan

Dept. of Chemical Engineering, A.C.Tech., Anna University, Chennai, India.

Course Taught:

For Under Graduate:

Process Dynamic and Control
Particulate Technology
Chemical Process Equipment Design
Momentum Transfer

For Post Graduate:

Chemical Process Equipment Design-I
Mechanical Design of Process Vessel
Mathematical Methods in Chemical Engineering

Administrative Duties

Warden Tower-1	2014-2018
Liaison Office (SC/ST Cell)	2016-2018

Research Area

- Nano Drug Delivery System (Soft/Hard Carriers, Bio-Conjugation)
- Nano Materials in Photocatalyst and Membrane Technology

Research Guidance

No of PhD guided: 8 (completed), 4 (ongoing)
No of M.Tech Project guided: 50

List of Publication:

2006

1. P.E. JagadeeshBabu, A. Arunagiri, T. Murugesan, "Prediction of Two-Phase Pressure Drop and Liquid Holdup in Co-current Gas-Liquid Downflow of Air-Newtonian Systems Through Packed Beds", Journal Chemical Technology and Biotechnology, Vol. 18, Issue 1, Jan., 2006, Pages: 70-81. (Impact Factor-1.682)

2007

2. P.E. JagadeeshBabu, A. Arunagiri, T. Murugesan "Pressure Drop and Liquid Holdup in Co-current Gas-Liquid Downflow of Air-CMC Solutions Through Packed Beds", Chem. and Biochem. Eng. Q. 21 (2), 121-129, (2007). (Impact Factor 0.346)

2008

3. P.E. JagadeeshBabu, RenukaVisvanathan, "Studies on the Production of Pectinase from Tamarind Kernel Powder by Submerged Fermentation using Aspergillus species, and Optimization of Medium using Design Expert", Chem. and Biochem. Eng. Q. 21 (4), 2008. (Impact Factor 0.346).

2010

4. P.E. JagadeeshBabu, RenukaVisvanathan, "Studies on the effect of Temperature, pH, Metal ions on the production of Pectinase from Tamarind Kernel Powder by Submerged Fermentation using *Aspergillus specie*", *Asia-Pacific Journal of Chemical Engineering*, 5, 396 – 400, 2010. (Impact Factor 0.241)
5. I Regupathi, P.E. JagadeeshBabu, T. Murugesan, "Drag Reduction in Packed Bed down Flow Reactor using Polymeric Solution (xanthum)", *Korean Journal of chemical Engineering*, 27 (4) 1205-1212, 2010.
6. P.E. JagadeeshBabu, VimalKumar, Renuka Visvanathan, "Equilibrium and Kinetic Study for the Removal of Malachite Green using Activated Carbon produced from *Borassus Flabellifer* Male Flower", *Asia-Pacific Journal of Chemical Engineering*, 5, 465-472, 2010. (Impact Factor 0.241)
7. P.E. JagadeeshBabu, Ram Krishnan, Mandeep Singh "Bed Depth Service Time Model (BDST) for Biosorption of Reactive Red 198 using *Portunus Sanguinolenus*" *Asia-Pacific Journal of Chemical Engineering* 5, 791-797, 2010.(Impact Factor 0.241)
8. P.E. JagadeeshBabu, "Heat Transfer Studies in Agitated Vessel using Immiscible Liquid Mixtures" *National Journal of Chembiosis*, Vol.1, No.1, pp. 5-9, 2010. (Impact Factor 0.0)

2011

9. P.E. JagadeeshBabu, Sandeesh K, M.B. Saidutta, "Kinetics of Esterification Of Acetic Acid With Methanol In Presence Of Ion Exchange Resin Catalysts" *Industrial and Engineering Chemistry Research*, 50, 7155-7160, 2011. (Impact Factor 2.07)
10. P. E. JagadeeshBabu, Sureshkumar K., Mageswari, "Synthesis and characterization of temperature sensitive P-NIPAM macro/micro hydrogels" *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 384, 466-472, 2011.(Impact Factor 3.4)

2012

11. P.E. JagadeeshBabu, Pooja Nanda, "Study on Pegylation of therapeutic enzyme uricase and its physio-chemical properties for improving pharmaceutical characteristics" *International Journal of Pharmacology and Pharmaceutical Technology*, Volume 1, Issue 1, 2012, 58-62. (Impact Factor 0.0)
12. Pooja Nanda, P.E.JagadeeshBabu, Jenifer Fernandes, Pranita Hazarika, Rohini Raju Dhabre "Studies on the Production, Optimization and Purification of Uricase enzyme from *Gliocladium viride*" *Research in Biotechnology*, 3(4): 35-46, 2012
13. Pooja Nanda, P.E.Jagadeesh Babu, Sumanth Tekalkote, Benny Malaam Kunnummal, Noel Jacob "Bio-Conjugation Of *Bacillus Fastidiosus*-Uricase With Methoxy Polyethylene Glycol Derivative And Study Of Physicochemical Properties" *International Journal Of Pharmacy And Pharmaceutical Sciences*, Vol 4, Issue 4, 290-295, 2012

2013

14. K. Sandesh, P.E.Jagadeeshbabu*, Suhasmath, M.B. Saidutta, “Reactive Distillation Using Ion Exchange Catalyst: Experimental And Simulation Studies For The Production Of Methyl Acetate”, *Ind. Eng. Chem. Res.*, 2013, 52 (21), pp 6984–6990
15. K Sandessh, K. SureshKumar, P.E. JagadeeshBabu “Rapid removal of cobalt (II) from aqueous solution using cuttle fish bones; Equilibrium, Kinetics and Thermodynamic study” *Asia-Pac. J. Chem. Eng.* 2013; 8: 144–153

2014

16. Pooja Nanda and P.E. Jagadeesh Babu , Isolation, Screening and Production Studies of Uricase Producing Bacteria from Poultry Sources, *Preparative Biochemistry & Biotechnology*, 2014, 44 (8), 811-821, DOI:10.1080/10826068.2013.867875
17. B. Maheswari, P.E. Jagadeeshbabu, Mayank Agarwal, “Role Of N-Vinyl-2-Pyrrolidinone On The Thermoresponsive Behaviour Of Pnipam Hydrogel And Its Release Kinetics Using Dye As Model Drug” *Journal of Biomaterials Science*, Polymer Edition 25 (3), 269-286
18. Punnappuzha Ardra¹, Ponnann Ettiyappan JagadeeshBabu*¹, Reval Sekhar Nishith², Sanjay Hadigal², Preethi Ganapathi Pai², “synthesis and characterization of polysialic acid- uricase conjugates for the treatment of hyperuricemia” *International Journal of Peptide Research and Therapeutics*, December 2014, Volume 20, Issue 4, pp 465-472, D10.1007/s10989-014-9411-2
19. Jaya Mary Jacob, B Raj Mohan, Soubhik Kumar Bardhan, PE JagadeeshBabu, M Aruna, Selenium and Lead Tolerance in Marine *Aspergillus Terreus* for Biosynthesis of Nano Particles–Quantum Dots/Rods, *Int’l Journal of Advances in Chemical Engg., & Biological Sciences (IJACEBS)* Vol. 1, Issue 1(2014)

2015

20. Satheesh K, P E JagadeeshBabu*, M.B. Saidutta, “Two Step Biodiesel Production and its Kinetics studies using Indion-190/AmberliteIRA-900 from Waste Cooking Oil”, *Energy Source Part A: Recovery, Utilization, and Environmental Effects* Volume 37, Issue 1, 2015. DOI: 10.1080/15567036.2013.875080
21. Senthooor K. Rama, Keyur Ravala & P. E. JagadeeshBabua, Enhancement of a Novel Extracellular Uricase Production by Media Optimization and Partial Purification by Aqueous Three-Phase System, *Preparative Biochemistry and Biotechnology*, Volume 45, Issue 8, 2015. DOI: 10.1080/10826068.2014.970690

2016

22. Abhinav K. Naira*, P.M. Shalina* & P.E. JagadeeshBabua, Performance enhancement of polysulfone ultrafiltration membrane using TiO₂ nanofibers, *Desalination and Water Treatment*, 2015 Page 1-9. DOI:10.1080/19443994.2015.1037356
23. P Nanda, PE JagadeeshBabu, Studies on the Site-specific PEGylation Induced Interferences Instigated in Uricase Quantification Using the Bradford Method, *International Journal of Peptide Research and Therapeutics*, 22, Page 1-8, 2016. DOI: 10.1007/s10989-016-9518-8.

24. P Nanda, PE JagadeeshBabu, JR Raju, Production and Optimization of Site-Specific monoPEGylated Uricase Conjugates Using mPEG-Maleimide Through RP-HPLC Methodology, *Journal of Pharmaceutical Innovation*, 11 (4), 279-288, 2016. DOI: 10.1007/s12247-016-9251-z
25. P Nanda, PE Jagadeeshbabu, P Gupta, AG Prasad, Development of a spectrophotometric biphasic assay for the estimation of mPEG-maleimide in thiol PEGylation reaction mixtures, *Chemical Engineering Communications*, 203 (11), 1464-1472, 2016. DOI: 10.1080/00986445.2016.1204604
26. AK Nair, BV Kumar, PE Jagadeeshbabu, Photocatalytic Degradation of Congo Red Dye Using Silver Doped TiO₂ Nanosheets, *Recent Advances in Chemical Engineering*, 211-217, 2016 (Proceedings)

2017

27. AK Nair, PE JagadeeshBabu, (2017), TiO₂ nanosheet-graphene oxide based photocatalytic hierarchical membrane for water purification, *Surface and Coatings Technology*, (published online). DOI: <http://dx.doi.org/10.1016/j.surfcoat.2017.01.022>
28. S.S. Kola, Abhinav K. Nair, P.E. JagadeeshBabu, (2017), Synthesis and characterization of silver decorated polysulfone/cellulose acetate hybrid ultrafiltration membranes using functionalized TiO₂ nanoparticles, *Desalin. Water Treat.*, 76 (2017) 112-120. doi:10.5004/dwt.2017.20692
29. AK Nair, PE JagadeeshBabu, (2017), Ag-TiO₂ nanosheet embedded photocatalytic membrane for solar water treatment, *Journal of Environmental Chemical Engineering* 5 (4), 4128-4133, 2017
30. SD Neelapala, AK Nair, PE JagadeeshBabu, (2017), Synthesis and characterisation of TiO₂ nanofibre/cellulose acetate nanocomposite ultrafiltration membrane, *Journal of Experimental Nanoscience*, 1-14, 2017.
31. E Mugunthan, MB Saidutta, PE Jagadeeshbabu, (2017), Photocatalytic degradation of diclofenac using TiO₂-SnO₂ mixed oxide catalysts, *Environmental technology*, 1-13, 2017

2018

32. GKS Arumugam, D Sharma, RM Balakrishnan, JBP Ettiyappan, (2018), Extraction, optimization and characterization of collagen from sole fish skin, *Sustainable Chemistry and Pharmacy* 9, 19-26
33. AK Nair, PE JagadeeshBabu, Ag-TiO₂ Nanofiber Membranes for Photocatalytic Degradation of Dyes, *Advanced Science Letters* 24 (8), 5764-5767
34. PE JagadeeshBabu, Abhinav K. Nair, B. Vinay Kumar, Gopinath Kalaiarasan, (2018), TiO₂ nanosheet incorporated polysulfone ultrafiltration membranes for dye removal, *Desalination and Water Treatment*, 107, 324-331
35. D Deepika, PE JagadeeshBabu, (2018), Synthesis and characterization of microporous hollow core-shell silica nanoparticles (HCSNs) of tunable thickness for controlled release of doxorubicin, *Journal of Nanoparticle Research* 20 (7), 187

36. GKS Arumugam, D Sharma, RM Balakrishnan, PE JagadeeshBabu, (2018), Extraction, optimization and characterization of collagen from sole fish skin, *Sustainable Chemistry and Pharmacy* 9, 19-26
37. S Havanur, PE JagadeeshBabu, (2018), Role of graphene quantum dots synthesized through pyrolysis in the release behavior of temperature responsive poly (N, N-diethyl acrylamide) hydrogel loaded with doxorubicin, *International Journal of Polymer Analysis and Characterization* 23 (7), 606-620
38. E Mugunthan, MB Saidutta, PE Jagadeeshbabu, (2018), Visible light assisted photocatalytic degradation of diclofenac using TiO₂-WO₃ mixed oxide catalysts, *Environmental nanotechnology, monitoring & management* 10, 322-330

2019

39. S Havanur, V Farheenand, PE JagadeeshBabu, (2019), Synthesis and optimization of poly (N,N-diethylacrylamide) hydrogel and evaluation of its anticancer drug doxorubicin's release behaviour, *Iranian Polymer Journal* 28 (2), 99-112
40. E Mugunthan, MB Saidutta, PE Jagadeeshbabu, (2019), Photocatalytic degradation of diclofenac using TiO₂-SnO₂ mixed oxide catalysts, *Environmental technology* 40 (7), 929-941
41. VV Kadam, JP Ettiyappan, RM Balakrishnan, (2019), Mechanistic insight into the endophytic fungus mediated synthesis of protein capped ZnO nanoparticles, *Materials Science and Engineering: B* 243, 214-221
42. D Sharma, DA Rakshana, RM Balakrishnan, PE JagadeeshBabu, (2019), One step synthesis of silver nanowires using fructose as a reducing agent and its antibacterial and antioxidant analysis, *Materials Research Express* 6 (7), 075050
43. D Deepika, PE Jagadeeshbabu, Sacrificial polystyrene template assisted synthesis of tunable pore size hollow core-shell silica nanoparticles (HCSNs) for drug delivery application, *AIP Conference Proceedings* 2148 (1), 030016
44. E Mugunthan, MB Saidutta, PE Jagadeeshbabu, (2019), Photocatalytic activity of ZnO-WO₃ for diclofenac degradation under visible light irradiation, *Journal of Photochemistry and Photobiology A: Chemistry*, Vol-383, 111993
45. S Havanur, I Batish, SP Cheruku, K Gourishetti, PE JagadeeshBabu , (2019), Poly (N, N-diethyl acrylamide)/functionalized graphene quantum dots hydrogels loaded with doxorubicin as a nano-drug carrier for metastatic lung cancer in mice, *Materials Science and Engineering: C* 105, 110094

2020

46. D Deepika, PE Jagadeeshbabu, (2019), Sacrificial polystyrene template assisted synthesis of tunable pore size hollow core-shell silica nanoparticles (HCSNs) for drug delivery application, *AIP Conference Proceedings* 2148 (1), 030016
47. AK Nelapati, PE JagadeeshBabu, (2020), Computational analysis of therapeutic enzyme uricase from different source organisms, *Current Proteomics* 17 (1), 59-77

48. AK Nelapati, BK Das, PE JagadeeshBabu, D Chakraborty, (2020), In-silico epitope identification and design of Uricase mutein with reduced immunogenicity, *Process Biochemistry*
49. Anand Kumar Nelapati, Shubham Meena, Aditya Kumar Singh, Narsimha Bhakta, PE JagadeeshBabu (2020), In Silico Structural and Functional Analysis of Bacillus Uricases, *Current Proteomics*

2021

50. Sensing of p-nitrophenol in aqueous solution using zinc oxide quantum dots coated with APTES, VV Kadam, RM Balakrishnan, JP Ettiyappan, NS Thomas, SAD Souza, *Environmental Nanotechnology, Monitoring & Management* 16, 100474
51. Photocatalytic degradation of diclofenac using TiO₂-CdS heterojunction catalysts under visible light irradiation, M Elangovan, SM Bharathaiyengar, J PonnannEttiyappan, *Environmental Science and Pollution Research* 28 (14), 18186-18200
52. Photocatalytic degradation of p-nitrophenol using biologically synthesized ZnO nanoparticles, VV Kadam, SD Shanmugam, JP Ettiyappan, RM Balakrishnan, *Environmental Science and Pollution Research* 28 (10), 12119-12130
53. Fluorometric detection of bisphenol A using β -cyclodextrin-functionalized ZnO QDs VV Kadam, RM Balakrishnan, JP Ettiyappan, *Environmental Science and Pollution Research* 28 (10), 11882-11892
54. Synthesis of silica hollow core shell nanoparticles by sacrificial nitrated polystyrene template approach for targeted drug delivery application, D Deepika, PE Jagadeeshbabu, *Materials Today: Proceedings* 45, 740-744

Book Chapter:

1. Abhinav K. Nair, B. Vinay Kumar, and P.E. Jagadeeshbabu. 'Photocatalytic Degradation of Congo Red Dye Using Silver Doped TiO₂ Nanosheets' *Recent Advances in Chemical Engineering, Springer* (2016) DOI 10.1007/978-981-10-1633-2_23.

International Conference:

2007

1. Generalized Mathematical Expression for the Identification of Flow Regime in Packed Bed Down Flow Reactors" Presented in International Conference "CHEMCON-2007", 1-5 December 2007, Calcutta, India.

2010

2. Studies on the Performance of Reactive Distillation Column for the Production of Methyl Acetate by Esterification of Acetic Acid with Methanol using Ion Exchange Catalyst"RSCE-2010, 22-23 November 2010, Bangkok, Thailand.

2012

3. Study on pegylation of therapeutic enzyme uricase and its physio-chemical properties for improving pharmaceutical characteristics, Presented in International Joint Conference on Pharmacology and Pharmaceutical Technology, IJCPPT-2012, Bangalore, India, 29th January-2012.
4. Pooja Nanda and JagadeeshBabu P.E. PEGylation of Uricase with Linear Polyethylene-glycol molecule (Mol Wt:8 KDa). *International joint conference on Pharmacy and Pharmaceutical Technology*, Jan 2012.

2015

5. Solid phase PEGylation of Uricase, International Conference On Advances In Chemical Engineering (Icace2015), Nitk, 20th 22nd Dec-2015
6. Photocatalytic degradation of congo red dye using silver doped TiO₂ nanosheets, A. K. Nair, V. K. Bandaru & P. E. JagadeeshBabu, International conference on advances in chemical engineering, organized by the Department of Chemical engineering, National Institute of Technology Karnataka, Surathkal (December, 2015)
7. Pooja Nanda and JagadeeshBabu P.E. Synthesis of site-specifically PEGylated Uricase conjugate with improved pharmaceutical properties for the treatment of hyperuricemia. *4th IES 2015, Kumamoto University, Japan*, March 2015.

2016

8. Ag-TiO₂ nanosheet photocatalytic hierarchical membrane for water treatment, A. K. Nair & P. E. JagadeeshBabu, 69th Chemical engineering Congress (Chemcon-2016) organized by the Indian Institute of Chemical Engineers (IIChe), Chennai Regional Centre, A. C. Tech. Chennai, (December, 2016).
9. Ag-TiO₂ nanofiber membranes for photocatalytic degradation of dyes, A. K. Nair & P. E. JagadeeshBabu, International Conference on Nanoscience and Nanotechnology organized by the Center for Nanotechnology, Vellore Institute of Technology, Vellore (October, 2016).
10. TiO₂ nanosheet-graphene oxide based photocatalytic hierarchical membrane for water purification, A. K. Nair & P. E. JagadeeshBabu, International Conference on Technological Advances of Thin Films and Surface Coatings (Thinfilms-2016) organized by the Thinfilm society, Nanyang Technological University (NTU), Singapore (July, 2016).
11. Pooja Nanda, Jagadeeshbabu, P.E. Solid Phase PEGylation of Uricase. *ICEMS-2016*, JNU Jaipur

List of Projects:

1. Under Seed Grant Scheme, MHRD. 5,00,000.00 (INR)
(Synthesis and characterization of stimuli response polymers)

2. Fast Track Young Scientist, 18,00,000.00 (INR)
Department of Science and Technology (DST)
(Synthesis and Characterization of temperature sensitive nano hydrogels for drug delivery system)
3. Council of Scientific and Industrial Research 21,00,000.00(INR)
Synthesis and characterization of SPION embedded inorganic hollow core-shell nano particle as magnetic drug delivery vector
4. INMAS-DRDO,India (currently active) 45,00,000.00(INR)
Design and Development of Affinity Based Sensors for the Detection of Radiological Compounds in Point of CBRN Emergencies using ZnO NPs Functionalized by Amidoxine and Mugenic Acid.
5. SERB-CRG, DST (ongoing) 30,00,000.00(INR)
Particle Migration and Margination in bidispersed fluid flow through constricted channels

List of Workshop Attended:

1. Workshop on “Modeling and Simulations in Chemical Engineering” conducted by Anna University, Chennai – 25 on January 26, 2002.
2. National Seminar on “Membrane Technology” conducted by Department of Chemical Engineering, A.C.Tech., Anna University, Chennai – 25 on May 9-10, 2002.
3. Workshop on “Emerging Trends on Teaching and Research in Technical Education” conducted by Anna University, Chennai – 600 025 on September 17-18, 2002.
4. Course on “Modern Teaching Competencies” organized by the Center for University-Industry Collaboration, Anna University, Chennai – 25, August 5-19, 2002.
5. Attended a course on “Teaching with MATLAB and Simulink” conducted by Indo-US Engineering Faculty Leadership Institute at Infosys Mysore, during 22-26 June 2009.
6. Intensive continuing education training program on “Nano Fabrication technologies” conducted by Center for continuing education, Indian Institute of Science (IISc), Bangalore during 15-16 of April 2010.
7. Industry-Academic Workshop on “Refining and Petrochemicals” conducted by Petroleum federation of India, Lovraj Kumar memorial trust (LKMT) and Chennai petroleum Corporation Ltd (CPCL), March 16-19, 2011.
8. AICTE-MHRD approved STTP on “Recent Advances in Polymer Science” conducted by NITK, during 1 - 5 August 2011.
9. Teaching Control System Concepts using MATLAB and Simulink, Conducted by MathWorks Events Team at The Ocean Pearl Hotel - Pacific 3 Hall during 11 Mar 2014

Research Interaction:

1. Visited School of Materials Science and Engineering, Nanyang Technological University, Singapore, during 1st May 2011 to 30th May 2011.
2. Dr. Saravanan Kumar Jaganathan, Cardiovascular Engineering Centre, Universiti Teknologi Malaysia in the field of “Chemical Engineering Aspects of cardiovascular biomedicine” during 1st March 2015 to 8th March 2015

Workshop Conducted:

1. Recent trends in monitoring, control and abatement of air pollution, at Dept. of Chemical Engineering, NITK, 26th to 28th December 2012.
2. Recent Challenges in Atmospheric and Earth Science” (RCAEs-2014) at Dept. of Chemical Engineering, NITK, 17th – 20th December 2014.
3. International Conference on Advances in Chemical Engineering, on the eve of Golden Jubilee of Dept. of Chemical Engineering, NITK, 20th – 22nd December 2015.
4. International conference on “Research Frontiers in Chalcogen Cycle Science & Technology, at ICG-Goa, 19th - 21st December 2016.
5. Self Enrichment Program for Ist year Btech Student of NITK