D. KRISHNA SANDILYA
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Department of Chemical Engineering
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Education

Ph.D. in Chemical Engineering (2011)

Indian Institute of Technology Madras (IIT-M), Chennai, Tamil Nadu, India.

Thesis: Intensification of Solid Dissolution Process using Power Ultrasound

Thesis Advisor: Prof. A. Kannan, Department of Chemical Engineering, IIT-M.

M. Tech. in Chemical Engineering with specialization in Plant Design (2004)

Osmania University (OU), Hyderabad, Andhra Pradesh, India.

Thesis: Studies on Flow Structure of Liquid–Solid Circulating Fluidized Bed (LSCFB)

Thesis Advisor: Prof. V. V. Basava Rao, Department of Chemical Engineering, UCT, OU.

B. Tech. in Chemical Engineering (2000)

Swami Ramananda Tirtha Institute of Science and Technology, Nalgonda, Affiliated to JNT University, Hyderabad, Andhra Pradesh, India.

Work Experience

- Aug 2023 onwards : Associate Professor,
  Department of Chemical Engineering,
  IIT (ISM), Dhanbad, Jharkhand, India.
- May 2013 – Aug 2023 : Assistant Professor,
  Department of Chemical Engineering,
  IIT (ISM), Dhanbad, Jharkhand, India.
- Aug 2011 – Apr 2013 : Associate Professor,
  Department of Chemical Engineering,
  Vignan University, Vadlamudi,
  Andhra Pradesh, India.
- Aug 2003 – Jul 2004 : Assistant Professor,
  Department of Chemical Engineering,
  DVR College of Engineering and Technology, Kashipur, Medak (Dt.), Andhra Pradesh, India.

Areas of Research Interest

- Process intensification
- Waste to energy
- Biofuels
- Water treatment
- Adsorption
- Microreactors

Courses Taught

Undergraduate Level

Biochemical Engineering
Biochemical Reaction Engineering
Bioprocess Technology
Chemical Engineering Thermodynamics – II
Chemical Process Plant Design and Economics
Chemical Process Technology
Chemical Reaction Engineering – I
Chemical Reaction Engineering – II
Design and Analysis of Experiments
Introduction to Chemical Engineering
Multicomponent Separations
Numerical Methods
Process Control and Instrumentation
Process Engineering Principles
Process Modeling and Simulation
Thermal & Air Engineering
Transport Processes
Transport Phenomena

Postgraduate Level

Advanced Biochemical Reaction Engineering
Advanced Chemical Reaction Engineering
Advanced Process Control
Term Paper and Presentation

Professional Membership & Positions held

Life Member, Indian Institute of Chemical Engineers (IIChE): LM-56059

Serving as a Member of the Executive body of the Dhanbad Regional Centre (DRC) of the Indian Institute of Chemical Engineers (IIChE) since July 2021.

Courses / Workshops Organized

Course Title: A Short Term Course on *Coal to Chemicals*, 24 – 28 Jan'2018.

Course Coordinators: Dr. Suman Dutta & **Dr. D. K. Sandilya**

Academic Activities undertaken @ IIT (ISM)

- ✓ Coordinated guest lectures of Prof. K. Krishnaiah, Emeritus Professor, Department of Chemical Engineering, IIT Madras and Former Dean (Academic Research), IIT Madras during 27–28 August, 2014.
- ✓ Coordinated the lectures of Prof. K. D. P. Nigam, Emeritus Professor, Department of Chemical Engineering, IIT Delhi during his visits to the Department of Chemical Engineering, IIT(ISM), Dhanbad as Adjunct Professor in 2015, 2016 & 2017.

Responsibilities undertaken @ IIT (ISM)

Institute level

- ✓ **Warden**, Amber Hostel from 2nd June, 2020 – 30th June, 2022.
- ✓ **Faculty representative** from the Department of Chemical Engineering in the Institute's **TimeTable Committee** (TTC) from 1st January, 2020 – 31st December, 2022.
- ✓ **Moodle / IT Coordinator** of the Department of Chemical Engineering from 2nd Aug, 2020 – till date.
- ✓ **Coordinator** for *M.Tech. (Chemical Engineering)* program from Jan'2014 to Dec'2017.
- ✓ Member from sister Department for DSC's of JRF's: Dept. of Applied Mathematics and Department of Environmental Science and Engineering.
- ✓ Member from sister Department, JRF Selection Committee of Department of Petroleum Engineering.
- ✓ Performed Invigilation duties at the institute level (2013-2014 & 2014-2015).
- ✓ Served as a *Micro Observer* for General Elections at Targa, Jharkhand (May 2014) and for Assembly Elections at Akash Kinari, Jharkhand (December 2019).
- ✓ Serving as a member of anti-ragging squad since 2013.
- ✓ Tabulator for the Department of Chemical Engineering since Nov 2013.

Department level – present

- ✓ Member, Departmental Faculty Screening Committee (DFSC) since 2nd Jan, 2024.
- ✓ Member, Departmental Undergraduate Committee (DUGC)
- ✓ Faculty-in-Charge, UG Lab – III
- ✓ Member, Departmental Library and Book Purchase Committee
- ✓ Member, Departmental PG Laboratory Coordination Committee
- ✓ Member, UG lab reorganization Committee

Department level – past

- ✓ Chairman, Moderation Committee (MTech) from Jan'2014 to Dec'2017.
- ✓ Convener, Board of Course Studies (BOCS) for MTech (Chemical Engineering) program from Jan'2014 to Dec'2017.
- ✓ Secretary, Departmental Advisory Committee (DAC), Department of Chemical Engineering during 2013 – 2017.
- ✓ Member, Departmental Postgraduate Committee (DPGC)
- ✓ Faculty advisor for the BTech (chemical engineering) batch admitted in 2016.
- ✓ Faculty advisor for the BTech (chemical engineering) batch admitted in 2012.
- ✓ Member of Departmental Purchase Advisory Committee (DPAC)
- ✓ Member of Departmental Tender Advisory Committee (TAC)
- ✓ Member, Board of Course Studies (BOCS) for BTech (chemical engineering) program
- ✓ Member, JRF Selection Committee, Department of Chemical Engineering
- ✓ Member, Departmental Course Distribution & Time Table Committee

Research Guidance

PhD

Completed

1. Paidinaidu Paluri, *Agricultural Waste Derived Activated Carbons: Development, Characterization, and Application for the Removal of Methylene Blue from Synthetic Wastewater*. (Date of thesis defense: 24th May, 2021)
2. Akash Pratim Bora, *Sono–assisted production of biodiesel from waste cooking oil using bifunctional catalysts*. (Date of thesis defense: 21st July, 2023)

Ongoing

1. Aparna Singh, *Mitigation of groundwater contamination using hybrid techniques*, joint-guidance with Prof. Srinivas Pasupuleti, Department of Civil Engineering, IIT(ISM) Dhanbad, Prof. Hari Vuthaluru, Curtin University, and Prof. Gordon Ingram, Curtin University.
2. Rajshri Chaurasia, *Delineation of groundwater contamination zones and remediation strategies using novel techniques*, joint-guidance with Prof. Srinivas Pasupuleti, Department of Civil Engineering, IIT(ISM) Dhanbad.
3. Sabyasachi Mukherjee, *Application of geoinformatics for the demarcation of groundwater contamination zones and remediation strategies using novel techniques*, joint-guidance with Prof. Srinivas Pasupuleti, Department of Civil Engineering, IIT(ISM) Dhanbad.

MTech

Completed

1. Rajat Rautela (2016), *Exploring the Usability of Serpentine Rock for CO_2 Sequestration and Magnesium Metal Extraction*, Dr. Veerendra Singh (co-guide).
2. Himangshu Jyoti Gogoi (2016), *Adsorption study of methylene blue onto raw and treated low cost egg shell as adsorbents*.
3. Vivek Chaudhary (2016), *Studies on adsorption of methylene blue using activated carbon prepared from sugarcane bagasse*, joint-guidance with Prof. Paidinaidu Paluri.
4. Bhaskar Sharma (2017), *Fluoride removal from drinking water by electrocoagulation process* (joint-guidance with Prof. I. M. Mishra).
5. B. K. Tudu (2017), *Studies on influence of power ultrasound on solubility limit of sparingly soluble solids*.
6. Raju (2018), *Studies on the influence of power ultrasound on the solubility limit of a sparingly soluble solid*.
7. Dipanshu Prakash Gupta (2019), *Lipid extraction from rice bran for the synthesis of biodiesel*.
8. Sriya Naik (2020), *Influence of ultrasound pre-treatment on rice bran oil extraction*.
9. Rajlakshmi (2021), *Kinetic modeling of tranesterification reaction*.
10. Tushar Kashyap (2022), *Development and characterization of nanocatalyst for biodiesel production using solid waste as a precursor*.
11. Vishal Kumar (2023), *Study on the influence of ultrasound on the flow behavior of polymer-cellulose* (joint-guidance with Prof. Suresh Kumar Yatirajula).
12. Manas Singh (2024), *Biodiesel from waste resources*. (joint-guidance with Prof. Lutukurthi D. N. V. V. Konda).

Ongoing

1. Mohanish Bhakne (2025), *Design and development of heterogeneous catalysts for biodiesel synthesis*.
2. Samragee Akhanda (2025), *Intensified recovery of critical and strategic metals from mine wastes*.

Reviewer of Peer Reviewed Journals

- *Applied Biochemistry and Biotechnology* (Springer)
- *Biochemical Engineering Journal* (Elsevier)
- *Biomass Conversion and Biorefinery* (Springer)
- *Bioresource Technology Reports* (Elsevier)
- *Biotechnology and Bioprocess Engineering* (Springer)
- *Chemical Engineering Research and Design* (Elsevier)
- *Chemical Product and Process Modeling* (De Gruyter)
- *Clean Energy* (Oxford University Press)
- *Fuel* (Elsevier)
- *International Journal of Mining Science and Technology* (Elsevier)
- *Journal of Cleaner Production* (Elsevier)
- *Particulate Science and Technology* (Taylor & Francis)
- *Powder Technology* (Elsevier)
- *Science of the Total Environment* (Elsevier)

Publications

Books Authored:

1. Subbu, M., and **D. K. Sandilya**, "GATEway to Chemical Engineering," Volume **1** of **5** (Process Calculations & Thermodynamics), Rishal Publications, Chennai, India (2018). ISBN: 978-81-935993-2-7.
2. Subbu, M., and **D. K. Sandilya**, "GATEway to Chemical Engineering," Volume **4** of **5** (Reaction Engineering & Process Control), Rishal Publications, Chennai, India (2018). ISBN: 978-81-935993-5-8.

Refereed Journals:

1. Ashwin Singh, **Krishna Sandilya Durbha**, Alok Sinha, Srinivas Pasupuleti, Comparative assessment of fluoride and arsenic mobilization mechanisms among the groundwater of the major affected river basins of India. *Water Supply*, **24**, 2024, 2969–2998. [DOI: 10.2166/ws.2024.196] 2023 Journal Impact Factor: **1.90**

2. Akash Pratim Bora, Lutukurthi D. N. V. V. Konda, Paidinaidu Paluri, **Krishna Sandilya Durbha**, Valorization of hazardous waste cooking oil for the production of eco‐friendly biodiesel using a low‐cost bifunctional catalyst. *Environmental Science and Pollution Research*, **30**, 2023, 55596–55614. [DOI: 10.1007/s11356-023-26177-0]
   2022 Journal Impact Factor: **5.8**

3. Akash Pratim Bora, Lutukurthi D. N. V. V. Konda, Srinivas Pasupuleti, **Krishna Sandilya Durbha**, Synthesis of MgO/$MgSO_4$ nanocatalyst by thiourea–nitrate solution combustion for biodiesel production from waste cooking oil. *Renewable Energy*, **190**, 2022, 474–486. [DOI: 10.1016/j.renene.2022.03.127]
   2023 Journal Impact Factor: **9.0**

4. Paidinaidu Paluri, **Krishna Sandilya Durbha**, Equilibrium, kinetic and thermodynamic study for the adsorption of 6ethylene blue onto activated carbons prepared from the banana root through chemical activation with phosphoric acid. *Biomass Conversion and Biorefinery*, **13**, 2021, 10575–10594. [DOI: 10.1007/s13399-021-01883-2]
   2023 Journal Impact Factor: **3.5**

5. Paidinaidu Paluri, Khwaja Alamgir Ahmad, **Krishna Sandilya Durbha**, Importance of estimation of optimum isotherm model parameters for adsorption of methylene blue onto biomass mass derived activated carbons: Comparison between linear and non-linear methods, *Biomass Conversion and Biorefinery*, **12**, 2020, 4031–4048. [DOI: 10.1007/s13399-020-00867-y] 2023 Journal Impact Factor: **3.5**

6. Akash Pratim Bora, Dipanshu Prakash Gupta, **Krishna Sandilya Durbha**, Sewage sludge to bio-fuel: A review on the sustainable approach of transforming sewage waste to alternative fuel, *Fuel*, **259**, 2020, Article 116262. [DOI: 10.1016/j.fuel.2019.116262] 2023 Journal Impact Factor: **6.7**

7. Veerendra Singh, Rajat Rautela, **Krishna Sandilya Durbha**, and Y. Rama Murthy, Study of the kinetics of the magnesium leaching from serpentine bearing chromite overburden rocks for mineral carbonation, *Mineral Processing and Extractive Metallurgy*, **129**, 2020, 282–289. [DOI: 10.1080/25726641.2018.1505206] 2023 Journal Impact Factor: **0.9**

8. Sudhakar Singha, Srinivas Pasupuleti, **Krishna Sandilya Durbha**, Soumya S. Singha, Rambabu Singh, A. S. Venkatesh, An analytical hierarchy process-based geospatial modeling for delineation of potential anthropogenic contamination zones of groundwater from Arang block of Raipur district, Chhattisgarh, Central India, *Environmental Earth Sciences*, **78**(24), 2019, Article 694. [DOI: 10.1007/s12665-019-8724-z] 2023 Journal Impact Factor: **2.8**

9. Srinivas Pasupuleti, **Sandilya D. K.**, Sudhakar Singha, Soumya S. Singha and Sarbani Saha, Delineation of groundwater potential zones utilising geospatial techniques in Kadiri watershed of Anantapur district, Andhra Pradesh, India, *Journal of Environmental Biology*, **40**(1), 2019, 61–68. [DOI:10.22438/jeb/40/1/MRN-935] 2023 Journal Impact Factor: **0.6**

10. **D. Krishna Sandilya** and A. Kannan, Quantification of surface area and intrinsic mass transfer coefficient for ultrasound–assisted dissolution process of a sparingly soluble solid dispersed in aqueous solutions, *Ultrasonics Sonochemistry*, **19**(3), 2012, 509–521. [DOI: 10.1016/j.ultsonch.2011.09.008] 2023 Journal Impact Factor: **8.7**

11. **D. Krishna Sandilya** and A. Kannan, Intensification of the dissolution of a sparingly soluble solid from a spinning disk in the presence of power ultrasound, *Industrial & Engineering Chemistry Research*, **50**(23), 2011, 13083–13091. [DOI: 10.1021/ie101702u] 2023 Journal Impact Factor: **3.8**

12. **D. Krishna Sandilya** and A. Kannan, Effect of ultrasound on the solubility limit of a sparingly soluble solid, *Ultrasonics Sonochemistry*, **17**(2), 2010, 427–434. [DOI: 10.1016/j.ultsonch.2009.10.005] 2023 Journal Impact Factor: **8.7**

13. V. V. Basava Rao, Ch. Sailu and **D. Krishna Sandilya**, An experimental study of liquid-particle flow in circulating fluidized bed, *Chemical Engineering Communications*, **194**(3), 2007, 353–367. [DOI: 10.1080/15397730600830062] 2023 Journal Impact Factor: **1.9**

Conferences:

International

1. Akash Pratim Bora, Sriya Naik, **Krishna Sandilya Durbha**, Investigation of parametric optimisation for the extraction of rice bran oil with the aid of ultrasound and its synthesis to biodiesel, International Conference on Process Engineering and Advanced Materials 2020 (ICPEAM2020), 13 – 15 July 2021, Borneo Convention Centre Kuching, Malaysia; E3S Web of Conferences, Volume 287, 2021, Article number 04014. [DOI:10.1051/e3sconf/202128704014]

2. Akash Pratim Bora, Dipanshu Prakash Gupta, **Krishna Sandilya Durbha**, Sono-assisted synthesis of Ca/Si catalyst using rice husk for the production of biodiesel from waste cooking oil, International Conference on Advances in Chemical Engineering (AdChE-2020), February 2020, UPES, Dehradun, India.

3. Veerendra Singh, Rajat Rautela, Y. Rama Murthy, and **K. Sandilya Durbha**, Use of Serpentine Bearing Chromite Overburden Rocks for CO_2 Sequestration, XVI International Seminar on Mineral Processing Technology (MPT) 2017, organized by Indian Institute of Mineral Engineers, 1–3 February, 2017, Chennai, Tamil Nadu, India.

4. **D. Krishna Sandilya** and Kannan. A., Effect of ultrasound on the particle breakage and solid dissolution, Poster presentation at Indo-German Workshop on Advances in Reaction and Separation Processes, February 2008, Indian Institute of Technology Madras, Chennai, Tamil Nadu, India.

National

1. Paidinaidu Paluri1, Khwaja Alamgir Ahmad, **D. K. Sandilya**, Comparison of linear and non-linear method for determination of optimum equilibrium isotherm for adsorption of methylene blue onto prepared activated carbon, 72nd Annual session of Indian Institute of Chemical Engineers (CHEMCON-2019), December 2019, Delhi, India.

2. Paidinaidu Paluri and **D. Krishna Sandilya**, Preparation and Characterization of activated carbons from coconut pulp and removal of methylene blue from an aqueous solution, 71st Annual session of Indian Institute of Chemical Engineers (CHEMCON-2018), December 2018, Jalandhar, India.

3. Ash Narayan Ram, **D. K. Sandilya**, V. K. Saxena, Adsorption of methylene blue onto Potassium Hydroxide Treated Tea Waste Activated Carbon: Adsorption Isotherm and Kinetic Studies, 70th Annual Session of the Indian Institute of Chemical Engineers (CHEMCON-2017), December 2017, Haldia, India.

4. Paidinaidu Paluri and **D. Krishna Sandilya**, Preparation and characterization of activated carbons from green coconut pulp by chemical activation with phosphoric acid, 69th Annual Session of the Indian Institute of Chemical Engineers (CHEMCON-2016), December 2016, Chennai, India.

5. **D. Krishna Sandilya** and Kannan. A., Effect of ultrasound on the particle breakage and solid dissolution, National Level Conference in Chemical Engineering (CHEMVIGOR-2008), March 2008, Vignan's Engineering College, Guntur, Andhra Pradesh, India.

6. **D. Krishna Sandilya** and Kannan. A., Enhancement of Solubility using Ultrasound, 59th Annual Session of the Indian Institute of Chemical Engineers (CHEMCON), December 2006, Bharuch, Gujarat, India.

7. **D. Krishna Sandilya** and Kannan. A., Ultrasound - assisted Intensification of Solubility, National conference on Recent Advances in Chemical Engineering (RACE), November 2006, S.V. University, Tirupati, Andhra Pradesh, India.

8. **K. Sandilya Durbha** , T. Balanarsaiah and V. V. Basava Rao, Flow Structure of Liquid-Solid Circulating Fluidized Bed (LSCFB), 57th Annual Session of the Indian Institute of Chemical Engineers (CHEMCON), December 2004, Mumbai, Maharashtra, India.

9. **D. Krishna Sandilya**, T. Bala Narasaiah & V. V. B. Rao, Liquid-Solid Circulating Fluidization and its Applications, All India Seminar on Advances in Fluidization Engineering, Febuary 2004, Tirupati, Andhra Pradesh, India.

10. **D. Krishna Sandilya**, E. Santosha & V. V. B. Rao, Prediction of Transport Velocities in Liquid - Solid Circulating Fluidized Bed., 56th Annual Session of the Indian Institute of Chemical Engineers (CHEMCON), December 2003, Bhubaneswar, Orissa, India.

11. **D. Krishna Sandilya**, B. Rajendra Kumar, A. S. Kanthi & V. V. B. Rao, Estimation of Richardson - Zaki's Constant in Liquid - Solid Fluidized Bed., 56th Annual Session of the Indian Institute of Chemical Engineers (CHEMCON), December 2003, Bhubaneswar, Orissa, India.

12. **D. Krishna Sandilya** and V. V. Basava Rao, Flow Behavior in Liquid - Solid Circulating Fluidized Bed Regime, 55th Annual Session of the Indian Institute of Chemical Engineers (CHEMCON), December 2002, Hyderabad, Andhra Pradesh, India.

Externally Funded Consultancy Projects

1. *Project title: To conduct an Independent Study on Assessment and Validation of Mine-Wise water to Ensure Optimum and Gainful Utilization of Mine water*
Client name: WCL Nagpur.
Role: Co-CI

Externally Funded Research Projects

1. *Project title: High ash coal gasification and associated upstream and downstream processes (Coal to Chemicals - CTC)*
Funding Agency: Coal India Ltd.
Role: Co-PI

Contribution in Other Academic Activities

- PhD Thesis Examiner for JNTU-Kakinada, Andhra Pradesh, in 2013.
- Question paper setter for Vinoba Bhave University, Hazaribag, Jharkhand.
- Question paper setter for SSN College of Engineering (Autonomous), affiliated to Anna University, Chennai, Tamil Nadu.
- Question paper setter for Vignan's Foundation for Science Technology & Research (VFSTR), Vadlamudi, Andhra Pradesh.

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