

CURRICULUM VITAE

Dr. Adarsh Kumar Arya

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Designation: Professor

Department: Chemical Engineering



PROFILE SNAPSHOT

- A competent professional with nearly 20 years of experience in Research and Development / delivering lectures to chemical engineering graduates and post graduates.
- Exercises judgment within generally defined practices in selecting methods & techniques for obtaining teaching solutions; ensuring compliance to quality measures and maintenance requisite documentation as well as records
- Skills in managing the administrative activities entailing student management, faculty appraisal/training and upholding of the institution's motto
- Proficiency in **teaching Oil and Gas Pipeline and core chemical engineering subjects** to Chemical Engineering Graduate and post graduate students.
- Experience in developing curriculum to accommodate different learning styles & maximize students' comprehension
- **Received Annual Research award in 2021 at University of Petroleum & Energy Studies**
- **Received Rs. 1 lakh Research Award for the excellent research contribution at University Of Petroleum and Energy Studies, Dehradun in 2022.**
- **Received Research Excellence Award in 2024 from Hon'ble Governor and Vice Chancellor HBTU.**
- **Received Research Excellence Award in 2025 from Hon'ble Governor and Vice Chancellor HBTU.**
- Worked on live projects with **T.A.N.A.P. Gas Pipeline Project at Worley Parsons.**
- Exposure in planning and organizing day-to-day research activities and resolving the procedural problem as appropriate to the timely accomplishment of research objectives
- An effective leader with proven skills in leading teams during the project phase, training & guiding team members and enabling knowledge sharing among the team
- Provided consultancy to Indraprastha Gas Grid Limited (IGGL) on Compatibility study on Transporting Hydrogen in Natural Gas Pipeline Networks.
- Worked for project on ' Production of Anhydrous ethanol using salt'.

ORGANIZATIONAL EXPERIENCE

- Working as Professor in the Department of Chemical Engineering at Harcourt Butler Technical University, Kanpur, India
- Worked as 'Associate Professor in the Department of Chemical Engineering at Harcourt Butler Technical University, Kanpur, India
- Additional Responsibility: Working as Associate Dean in Incubation and Startups.
- Coordinator for Prime Minister- Uchhatar Siksha Abhiyan (Uttar Pradesh)
- Worked Since Jul '08 to June 2022 with Petroleum University – University of Petroleum and Energy Studies, Dehradun Chemical Engineering Department as 'Assistant Professor(Selection Grade)'.
- Worked at Worley Parsons Mumbai in TANAP Gas pipeline project.

Key Result Areas:

- Fostering a healthy learning atmosphere in class and responding to all classroom queries spontaneously,

empathic manner; ensuring discipline by observing students' work, behaviour and attendance.

- Guiding university subjects to undergraduate & postgraduate students; reviewing pre-set educational goals, objectives & classroom instructional programs, establishing academic/other performance objectives
- Evaluating curriculum, teaching methods & programs for designing subjects to determine their effectiveness and efficiency, thereby ensuring that Institute activities
- Teaching as per academic curriculum to students, recognizing, respecting & nurturing the creative potential of each student; preparing exercises, questionnaires and assignments for students at various levels

Highlight:

- Project and Placement Coordinator for **M.Tech. Chemical & M.Tech. Pipeline Engineering (Spl. Process Design) at University of Petroleum & Energy Studies, Dehradun.**
- Taught Design of 'Pipeline Transportation of Oil and Gas' to M.Tech. Pipeline students from last seven years.
- Taught Fluid Mechanics, Mass Transfer, Heat Transfer, Chemical Reaction Engineering, Material and Energy Flow Computation to graduate and post-graduate chemical Engineering students.
- Faculty Convenor-IICChE(Indian Institute of Chemical Engineers) at UPES, Dehradun

Sep' 05- Jun '08 at I.M.S.E.C., Ghaziabad as Lecturer in Chemical Engineering

Highlights:

- Imparted training to the students on chemical engineering subjects with implications on industrial units, including Heat Transfer, Mass Transfer, Mechanical Operations, Fluid Mechanics, Chemical Reaction Engineering, Mass and Material Balances

PUBLICATIONS

Major Publications

- Adarsh Kumar Arya Devanshi Srivastava Murali Pujari, A. K. (2025). Materials for High Temperature: A General Concept. *Materials Research Foundations*, 178, 259-278, 2025.
- Adarsh Kumar Arya, D. S. (2025). Challenges and opportunities in Hydrogen blend Natural Gas Transportation. *Goya Journal*, 18(8).
- Arya, A. K. (n.d.). *Multiobjective Optimization of a Multimodal Gas Pipeline*. Dehradun.
- Arya, A. K. (2021). Optimal operation of a multi-distribution natural gas pipeline grid: an ant colony approach. *Journal of Petroleum Exploration and Production Technology*, 11(10), 3859–3878.
- Arya, A. K. (2022a). 11 Application and Challenges of. *Blockchain Technology: Exploring Opportunities, Challenges, and Applications*, 181.
- Arya, A. K. (2022b). A comparison of the MOGA and NSGA-II optimization techniques to reduce the cost of a biomass supply network. *Materials Today: Proceedings*. <https://doi.org/10.1016/j.matpr.2021.12.161>
- Arya, A. K. (2022c). A critical review on optimization parameters and techniques for gas pipeline operation profitability. *Journal of Petroleum Exploration and Production Technology*, 12(11). <https://doi.org/10.1007/s13202-022-01490-5>
- Arya, A. K. (2022d). Application and Challenges of “Blockchain Technology” in the Oil and Gas Industry. In *Blockchain Technology: Exploring Opportunities, Challenges, and Applications*. <https://doi.org/10.1201/9781003138082-11>
- Arya, A. K. (2023). *Machine Learning Based system for early disease prediction using medical*

- records. SE Patent 2023/03,142.
- Arya, A. K. (2024a). *AI enhanced battery technologies with carbon nanotube- infused conductive additives*. IN Patent App. 10/09/2,024.
- Arya, A. K. (2024b). *Ant colony algorithm- driven optimization of pipeline design for efficient hydrogen and natural gas blend distribution*. IN Patent App. 202,411,066,492.
- Arya, A. K. (2024c). *Self Optimized smart atmospheric water generator using machine learning*. IN Patent App. 202,441,058,792.
- Arya, A. K. (2025). Artificial Intelligence as a Sustainable Tool for Optimizing the Wastewater Treatment Plant. In *Practical Applications of Machine Learning and AI: Medicine, Environmental Science, Transportation, and Education* (pp. 117–138). IGI Global Scientific Publishing.
- Arya, A. K., Gautam, S., & Yadav, S. (2022). Impact of Hydrogen Embrittlement in Pipeline Structures—A Critical Review. In *Springer Proceedings in Materials* (Vol. 15). https://doi.org/10.1007/978-981-19-2572-6_31
- Arya, A. K., Gautam, V., & Kumar, A. (2023). Comparative Studies of Stochastic Techniques to Minimize the Cost of Biomass Supply Networks. *International Conference on Recent Trends in Image Processing and Pattern Recognition*, 383–392.
- Arya, A. K., & Honwad, S. (2016). Modeling, Simulation, and Optimization of a High-Pressure Cross-Country Natural Gas Pipeline: Application of an Ant Colony Optimization Technique. *Journal of Pipeline Systems Engineering and Practice*, 7(1). [https://doi.org/10.1061/\(asce\)ps.1949-1204.0000206](https://doi.org/10.1061/(asce)ps.1949-1204.0000206)
- Arya, A. K., & Honwad, S. (2018a). Multiobjective optimization of a gas pipeline network: an ant colony approach. *Journal of Petroleum Exploration and Production Technology*, 8(4). <https://doi.org/10.1007/s13202-017-0410-7>
- Arya, A. K., & Honwad, S. (2018b). Optimal Operation of a Multi Source Multi Delivery Natural Gas Transmission Pipeline Network. *Chemical Product and Process Modeling*, 13(3), 1–17. <https://doi.org/10.1515/cppm-2017-0046>
- Arya, A. K., Jain, R., & Bisht, S. (2022). Corrosion Inhibitors in Oil and Gas Industry—A Critical Review. In *Springer Proceedings in Materials* (Vol. 15). https://doi.org/10.1007/978-981-19-2572-6_27
- Arya, A. K., Jain, R., Yadav, S., Bisht, S., & Gautam, S. (2022). Recent trends in gas pipeline optimization. *Materials Today: Proceedings*, 57, 1455–1461. <https://doi.org/10.1016/J.MATPR.2021.11.232>
- Arya, A. K., & Kapoor, A. (2024). Environmental Consequences of Wind Energy Technologies. *Wind Energy Storage and Conversion: From Basics to Utilities*, 17–32.
- Arya, A. K., Kapoor, A., de Jesus Pacheco, D. A., Pujari, M., Shingan, B., Kumar, P. S., & Rangasamy, G. (2026). Progress in the application of carbon nanotubes for wastewater treatment: a bibliometric analysis. *Carbon Letters*, 1–25.
- Arya, A. K., Kapoor, A., & Kapoor, A. (2025). Surface-Functionalized MXenes for Adsorptive Wastewater Treatment Applications. In *Engineering Materials* (pp. 479–503). Springer Nature Singapore. https://doi.org/10.1007/978-981-96-3640-2_15
- Arya, A. K., Kapoor, A., Mzili, T., Srivastava, D., & Shreya. (2024). Artificial Intelligence for Hunger Monitoring and Mitigation. In *Smart Technologies for Sustainable Development Goals* (pp. 143–158). CRC Press. <https://doi.org/10.1201/9781003519010-9>
- Arya, A. K., Kapoor, A., & Pal, D. B. (2023). *Short Oil Pipe Inspection*. IN Patent 387215-001.
- Arya, A. K., Kapoor, A., Pal, D. B., Awasthi, A., Sastry, S., & Kumar, S. (2024). Molten Salt

- Thermal Storage Systems for Solar Energy Concentrators. *Solar Energy Concentrators: Essentials and Applications*, 219–234.
- Arya, A. K., Kapoor, A., Sridhar, A., Srivastava, D., & Raina, A. (n.d.). 7 | *Smart Healthcare Infrastructure*.
- Arya, A. K., Katiyar, R., Senthil Kumar, P., Kapoor, A., Pal, D. B., & Rangasamy, G. (2023). A multi-objective model for optimizing hydrogen injected-high pressure natural gas pipeline networks. *International Journal of Hydrogen Energy*, xxxx. <https://doi.org/10.1016/j.ijhydene.2023.04.133>
- Arya, A. K., Kumar, A., Pujari, M., & Pacheco, D. (2024). Improving natural gas supply chain profitability: a multi-methods optimization study. *TIDEE: TERI Information Digest on Energy and Environment*, 23(1/2), 37.
- Arya, A. K., Kumar, A., Pujari, M., & Pacheco, D. A. de J. (2023). Improving natural gas supply chain profitability: A multi-methods optimization study. *Energy*. <https://doi.org/10.1016/j.energy.2023.128659>
- Arya, A. K., Sastry, S. V. A. R., Sneha, S., Gupta, B., & Pujari, M. (2024). Recent Developments in Leak Detection Techniques for Pipelines: A Critical Evaluation. In *Sustainability in Chemical Processes through Digitalization and Green Chemistry Approaches*.
- Arya, A. K., & Shingan, B. (2012). Scour-mechanism, detection and mitigation for subsea pipeline integrity. *International Journal of Engineering Research & Technology*, 1(3), 1–14.
- Arya, A. K., Shingan, B., & Prasad, C. V. (2015). Seismic design of continuous buried pipeline. *Int. J. Eng. Sci*, 1(1), 6–17.
- Arya, A. K., Shreya, Ponnuchamy, M., Pal, D. B., & Kapoor, A. (2024). Algae Biomass Valorization for Wastewater Remediation. In *Sustainable Clean Energy Production Using Waste Biomass: Sustainable Energy Production and Utilization* (pp. 251–271). Springer.
- B Shingan AK Aarya, M. P. (2025). Advancing environmental safety in city gas distribution: sustainable solutions and infrastructure resilience. In *Sustainable and Resilient Infrastructure*.
- Bhalchandra Shingan, A. K. A. (2024). Efficiency meets innovation. *Sustainable Technologies for Energy Efficient Buildings*.
- Devanshi Srivastava Ashish Kapoor, A. K. A. (2024). Multi-Objective Optimization Enabled Improved Feature Selection. *Advancing Healthcare through Data-Driven Innovations*.
- Devanshi Srivastava, A. K. A. (n.d.). Challenges and opportunities in Hydrogen blend Natural Gas Transportation. *Goya Journal*.
- Dr. Adarsh Kumar Arya Dr. Murali Pujari Sudharshan Reddy Manyam, D. R. P. (2023). Lead Adsorption by Fly Ash Geopolymer: Isotherm, Kinetic, and Thermodynamic Studies. *Chemical Engineering & Technology*.
- Gupta, S. S. (2019). *Optimizing maintenance and inspection practices to minimize 3rd party damage probability in liquefied petroleum gas pipeline (LPG) in India*. UPES, Dehradun.
- Gupta, S. S., & Arya, A. K. (2019). *An approach to determine probability of third-party damage to cross-country pipelines in India*.
- Kapoor, A., Kumar, S., Arya, A. K., Nishad, V., Fatma, H., Gupta, A., & Singh, S. (2024). Microfluidic biosensors for the detection of foodborne pathogens. In *Biosensors for foodborne pathogens detection* (pp. 223–246). Academic Press.
- Kotni, T. R., Sampath, M. K., Seepana, M. M., & Arya, A. K. (2026). A Review on Corrosion Characteristics of Bulk Metallic Glasses. *Journal of Materials Engineering and Performance*, 1–19.
- Mylapilli, L. K., Gogula, P. V. R., & Arya, A. K. (2015). Hydraulic and surge analysis in a pipeline

- network using pipeline studio. *International Journal of Engineering Research and Technology*, 4(02), 41–48.
- Mzili, T., & Arya, A. K. (2025a). *Innovations in Optimization and Machine Learning*. doi:10.4018/979-8-3693-5231-1.
- Mzili, T., & Arya, A. K. (2025b). *Optimization, Machine Learning, and Fuzzy Logic: Theory, Algorithms, and Applications*.
- Mzili, T., & Arya, A. K. (2025c). *Practical Applications of Machine Learning and AI: Medicine, Environmental Science, Transportation, and Education*.
- Mzili, T., Mzili, M., Abatal, A., Arya, A. K., & Bacanin, N. (2025). A spotted hyena algorithm for quadratic allocation problems: a novel bio-inspired solution. *Annals of Operations Research*, 1–34.
- MZILI, T., Mzili, M., Boudierba, S. I., Abatal, A., Aribowo, W., & Arya, A. K. (2025). Interoperability in Internet of Things: Taxonomies and Open Challenges. *Babylonian Journal of Internet of Things*, 2025, 101–112.
- Pal, D. B., Kapoor, A., Arya, A. K., Arya, R. K., & Tiwari, A. K. (2025). Characterization and sustainable utilization of Punica granatum and Citrus limetta peels: Insights for biomass valorization. *Biomass Conversion and Biorefinery*, 15(17), 24403–24411.
- Pujari, M., P, R., Manyam, S. R., & Arya, A. K. (2024). Lead Adsorption by Fly Ash Geopolymer: Isotherm, Kinetic, and Thermodynamic Studies. *Chemical Engineering & Technology*, 47(2), 283–288.
- Pujari, M., Shingan, B., Arya, A. K., & Naga Chaitanya, G. (2025). Review on Synthesis of Ceramic Membranes to Mitigate Membrane Fouling in Oil–Water Separation. *Chemical Engineering & Technology*, e202400273.
- Pujari, M., Srikanth, K., Sunil, K., & Arya, A. K. (2023). Equilibrium, kinetic, and thermodynamic study on biosorption of indigo carmine using Hypnea musciformis algae. *Environmental Progress & Sustainable Energy*, 42(2), e13990.
- Sarkar, A., & Arya, A. K. (2022). A Survey on Optimization Parameters and Techniques for Crude Oil Pipeline Transportation. In *Smart Innovation, Systems and Technologies* (Vol. 292). https://doi.org/10.1007/978-981-19-0836-1_43
- Shingan, B., & Aarya, A. K. (2024). Efficiency meets innovation: City gas systems in modern buildings. *Sustainable Technologies for Energy Efficient Buildings*, 102–115.
- Shingan, B., Arya, A. K., Mahapatra, D. M., & Singh, V. P. (n.d.). A Novel Hybrid Cryogenic LNG Cold Energy System Integrating ORC, Direct Expansion, and CO₂ Capture for Power Generation. In *Direct Expansion, and CO₂ Capture for Power Generation*.
- Shingan, B., Pujari, M., Arya, A. K., & Singh, V. (2024). Optimizing Air Separation and LNG Cold Utilization: Energy Savings, Exergy Efficiency, and System Reliability. *Chemical Engineering and Technology*. <https://doi.org/10.1002/ceat.202400085>
- Srivastava, D., & Arya, A. K. (2023). Hydrogen Injection in Natural Gas Pipeline Networks. *Indian Chemical Engineering Congress*, 115–128.
- Srivastava, D., & Arya, A. K. (2025a). A multi-objective model to improve the profitability and reduce carbon emissions in a Natural Gas Pipeline Network. *Indian Chemical Engineer*, 1–35. <https://doi.org/10.1080/00194506.2025.2499834>
- Srivastava, D., & Arya, A. K. (2025b). Advanced Studies on Hydrogen Energy Using Computational Chemistry. In *Advances in Computational Intelligence and Robotics* (pp. 167–190). IGI Global. <https://doi.org/10.4018/979-8-3373-1399-3.ch007>
- Srivastava, D., & Arya, A. K. (2026). Artificial Intelligence for Flow Optimization in Renewable

- Energy Systems. In *Artificial Intelligence and Computational Modeling in Heat Transfer and Fluid Dynamics* (pp. 307–331). Wiley. <https://doi.org/10.1002/9781394433605.ch11>
- Srivastava, D., Arya, A. K., & Mzili, T. (2026). Hydrogen Transport and Distribution. In *Hydrogen Energy Systems* (pp. 231–249). Wiley. <https://doi.org/10.1002/9781394358403.ch11>
- Srivastava, D., Arya, A. K., Mzili, T., & Pujari, M. (2025). Recent Trends in Optimizing Hydrogen Supply Networks. In *Advances in Computational Intelligence and Robotics* (pp. 1–24). IGI Global. <https://doi.org/10.4018/979-8-3373-1399-3.ch001>
- Srivastava, D., Arya, A. K., Pujari, M., & Shingan, B. (2026). Optimized computational framework for hydrogen blending in natural gas pipeline networks: analyzing hydrogen injection algorithms and operational parameters. *Clean Technologies and Environmental Policy*, 28(1), 3.
- Thakur, A. K., Arya, A. K., & Sharma, P. (2020). The science of alternating current-induced corrosion: a review of literature on pipeline corrosion induced due to high-voltage alternating current transmission pipelines. *Corrosion Reviews*, 38(6). <https://doi.org/10.1515/corrrev-2020-0044>
- Thakur, A. K., Arya, A. K., & Sharma, P. (2021). Corrosion of pipe steels under alternating currents. *International Journal of Electrochemical Science*, 16. <https://doi.org/10.20964/2021.12.22>
- Thakur, A. K., Arya, A. K., & Sharma, P. (2022a). Analysis of cathodically protected steel pipeline corrosion under the influence of alternating current. *Materials Today: Proceedings*, 50, 789–796. <https://doi.org/10.1016/j.matpr.2021.05.548>
- Thakur, A. K., Arya, A. K., & Sharma, P. (2022b). Prediction and mitigation of AC interference on the pipeline system. *Corrosion Reviews*, 40(2). <https://doi.org/10.1515/corrrev-2021-0061>
- Tiwari, A. K., Prasad, N., Kapoor, A., Arya, A. K., & Pal, D. B. (2025). Sustainable valorization of Cascabela thevetia fruit peel and seed waste biomass: characterization and thermo-kinetic analysis. *Biomass Conversion and Biorefinery*, 15(19), 26435–26447.
- No. of Patents:** 15

ACADEMIC DETAILS

- Ph.D (Chemical Engineering/ Natural Gas Pipeline Optimization) from University of Petroleum & Energy Studies, Dehradun in 2015 (**Phd Topic: Multi-objective Optimization of A Multi-nodal Gas Pipeline**).
- Piping Engineering from I.I.T. Mumbai, 2008
- M.Tech. (Chemical Engineering) from H.B.T.I., Kanpur in 2005. (First Division with Honors)
- GATE qualified with Percentile 93.31 (A.I.R. 381) in 2004.
- B.Tech. Chemical Engineering from B.I.E.T., Jhansi in 2002.(First Division)
- 12th from J.I.C. Lucknow in 1997 (First Division).
- 10th from J.I.C. Lucknow in 1995 (First Division)
- Guided scholar for PhD (**As Main Supervisor**) -SS GUPTA . PhD Thesis Topic-Optimizing Maintenance and Inspection Practices to minimize 3rd Party Damage Probability in Liquefied Petroleum Gas Pipeline (LPG) In INDIA(**PhD COMPLETED**)
- Guided PhD (**As main Supervisor**)- Ajit Thakur. PhD Topic. Aletrnating Current Induced Corrosion In pipelines(**PhD completed**)
- Guiding One PhD scholar (As Single Supervisor); Topic: Computational Studies in Hydrogen Blend Natural Gas Transportation
- Guiding one student from Oil India Limited- Guwahati (Topic- Optimization of multicrude pipeline networks)

CERTIFICATIONS

- Attended a workshop on 'Defect Assessment & Maintenance in pipelines' organized by PETROFED from July 26-28 July 2010.
- Obtained certificate on regional workshop and brainstorming session on water quality management and river bank certification, organized by U.C.O.S.T. on 4 Feb 2012.
- Obtained certificate of attending one week short term program on retail management practices in Indian industries at I.M.S. Ghaziabad from April 2008 to ay 2, 2008.
- Attended Complimentary seminar on MATLAB and Simulink for engineering education on 20 July 2012.
- Certification for successfully attending certificate courses on petroleum refining and petrochemicals organized by Petrotech and I.I.P.M. Gurgaon.
- Certificate for poster presentation on the production of anhydrous ethanol using salt at I.M.S. Ghaziabad.
Certification for participating as a committee member at I.M.S., Ghaziabad from 18-19 January.
- Certification on organizing INTERFACE-2004 at H.B.T.I. Kanpur.
- Certification course on 'Transportation of Oil and Gas Through Pipelins' organized by the Petroleum Federation of India from 08-10 July 2009.
- Internship at Shriniwas Fertilizers Limited from 25/06/2001 to 02/08/2001.
- Member and Faculty Advisor of Indian Institute of Chemical Engineers at University of Petroleum & Energy Studies, Dehradun.
- Attended. Faculty Development program from NTTR Bhopal

PERSONAL DETAILS

Marital Status: Married
Languages Known: Hindi, English
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