

## **Dr. Avdesh Singh Pundir (Chemical Engineering)**

**Soft Skills** Excellent

### **Specialization**

**M.Tech:** Engineering Education **Ph.D:**

Chemical Processes Control **Other:**

### **Area of Interest**

**Research:** Reactor Control and Wastewater Treatment

### **Technology Development:**

**Innovation:** I had formed a hardware interface to control the whole reactor setup consisted of many tanks, pumps and a reactor through my laptop using Matlab interface. This was my PhD work. At that time, no one in India had such ready-made setup available with them. We had contacted a few manufacturers of Mumbai and major one was Amar Equipment. They had no such arrangement to apply user define algorithm. So, we purchased only the metal equipment and modified electrically according to our need. They had only provided SCADA interface which had no use for us.

**Technology Transfer:** During my stay in the industries, I had played the role of both the project eng and the technology transfer eng in coordination with the R&D dept. of bulk pharma group

**Other:**

### **Participated - In Specialized Training / Certified Courses:**

#### **Short Term Course Attended:**

- One-week STC on '**Environmental Monitoring and guidelines for Environmental Impact Assessment Studies**' organized by IIT, Roorkee, 2011.
- One-week STC on '**Mathematical Modelling and Numerical Simulation of Various Engg. Problems in Transport Phenomena**' organized by IIT, Roorkee, 2018.
- One-week STC on '**Advances in Pipeline Transportation of Crude Oils**' organized by MNIT, Jaipur, 2018.
- One-week STC on '**Novel Separation Techniques in Process Industry**' organized by VNIT, Nagpur, 2009.
- Three-day E-FDP on '**Build Prospective Academic Career**' organized by MIET, Meerut, 2020
- One-week E-FDP on '**Next Generation of Chemical Manufacturing & Waste Management**', organized by IET, Sitapur, 2020

#### **Industrial /Academic Training Attended:**

- One-month training in '**The Co-operative Company Ltd (Distillery), 2004.**
- One-month training in '**Plikhani Distillery & Chemical Works,**' 2003.
- Two days training for the estimation of properties of wastewater conducted by **Uttar Pradesh Pollution Control Board, Moradabad, 2009.**
- One-week training on '**Patent searching, drafting & filing**', organized by IEEE Computer Society and Computer Society of India, 2020.

#### **Participated in the Workshop:**

- I have participated in a national symposium on "**Water purification & Rejection Management**" (WPRM-2016).

- Participated in a national conference on **'Process Automation and Control' (NCPAC-2016)**.
- I have participated in a one-day workshop on **'Refinery Process Technology: Advances through Research & Development'** organized by Indian oil and LKMT, 2013.
- I have participated in a one-day workshop on **'Advanced Metal Finishing & Electroplating Techniques'** organized by CSIR-CERI in association with MIT, Moradabad, 2013.

**Participated in online Webinar:** I have attended more than 20 online webinars, a few interesting as a Chemical Engineer are as follow:

- TEQIP-III sponsored webinar on the topic 'Why A Manuscript is Rejected, organized by NIT Jalandhar,2020
- 'Chemical Process Industrial Safety in India: A big concern', organized by MNIT Jaipur,2020
- 'Role of Chemical Engineering in Industrial Safety', organized by Saveetha Engineering College, Chennai,2020.
- 'Green Fuels: Novel Catalytic Synthesis', organized by RBS College, Agra,2020.
- 'Mass Transfer Operations and Troubleshooting' organized by RBS College, Agra,2020.

**Organised Webinar (as a Convener):**

- 'Scope of Chemical Engineering in Various Sectors and Its Future Aspects', organized by Dept. of Chemical Engineering, MIET, 2020.
- 'Recent Innovations in the Field of Chemical Engineering' organized by Dept. of Chemical Engineering, MIET, 2020.
- 'Application of Numerical Methods for a system of ODEs and PDEs' organized by Dept. of Chemical Engineering, MIET, 2020.

**Publication - Books / Chapters / Papers / Articles / Blogs:**

**International Journal (SCI/Scopus):**

[1] **A. S. Pundir**, K.Singh, Temperature control of real-time identified fixed bed reactor by adaptive sliding mode control equipped with Arduino in Matlab, Asia-Pacific J. Chem. Eng. (2019) 1–15. (Volume 14, Issue-2, February)

[2] **A.S. Pundir**, K. Singh, Chattering Free Sliding Mode Control with Observer-based Adaptive Radial Basis Function Neural Network for Temperature Tracking in a Fixed Bed Reactor, Int. J. Chem. React. Engineering Int. J. Chem. React. Eng (2019) 1-24

[3] **A. S. Pundir**, K. Singh, Varshika, Mayank, Garvit, Rohaan, Sunil Rajoriya and Girish Tyagi, RTD Modeling of a Non-Ideal Coiled-Tube Reactor Through Experimental Investigation for Pulse Input Using Methylene Blue Dye, JETT, 8 (3), 1220-1231.

[4] Anjali Ghildiyal, Garvita Gupta, Bhawana Chauhan, Sunil Rajoriya, Girish Tyagi, **Avdesh Singh Pundir**, Ajay Kumar Jain, Fenton oxidation process for the treatment of artificial binary dye mixture in aqueous solution, Research Journal of Chemistry and Environment, 24 (7), 70-80.

[5] **Pundir AS**, Singh K, Dohare RK. Simulation of fixed bed catalytic reactor through adomian decomposition method and reduced differential transform method. International Journal of Advanced Technology and Engineering Exploration. 2016 Sep 1;3(22):131.

[6] Sunil Rajoriya, Ahlaam Haqiqi, Bhawna Chauhan, **Avdesh Singh Pundir**, Girish Tyagi, Ajay

Kumar Jain. Influence of adsorption process parameters on the removal of hexavalent Chromium (Cr (VI)) from wastewater: a review, JETT, 8 (2), 597-603.

[7] Sunil Rajoriya, Ahlaam Haquiqi, Bhawna Chauhan, Girish Tyagi\*, **Avdesh Singh Pundir**, Ajay Kumar Jain, Divya Agarwal. Adsorption studies on the removal of hexavalent Chromium (Cr (VI)) from aqueous solution using black gram husk, JETT,8 (3), 1144-1150.

[8] **A.S. Pundir**, K. Singh, Semi-analytical Approximate Solution for a Fixed Bed Reactor Model using Multistage Adomian Decomposition Method, Walailak Journal of Science and Technology. (2020).(Communicated)

[9] **A.S. Pundir**, K. Singh, Single parameter based adaptive sliding mode control: a real-time temperature control approach with Scilab, International Journal on Emerging Technologies (Scopus, Under-Review, 2020).

[10] **A.S. Pundir**, K. Singh, Global Fast Terminal Sliding Mode Control for Fixed Bed Reactor using Real-time Identification, ASEAN Journal of Chemical Engineering. (Scopus, Under-Review, 2020).

#### **International Conference:**

[1] **A.S. Pundir**, K. Singh, Equivalent Control based Sliding Mode Control for Fixed Bed Reactor, in: CHEMCON, 2016: p. IXXXII.

[2] **A.S. Pundir**, K. Singh, Design of Adaptive Control for Oxidation of O-xylene in Packed Bed Reactor : A highly Sensitive System, in: CHEMCON, 2015: p. 189.

[3] **A.S. Pundir**, K. Singh, Study of Transient Behaviour of One Dimensional Packed Bed Reactor for High-temperature Reaction System, in: CHEMCON, 2015: p. 184.

[4] **A.S. Pundir**, K. Singh, PID Controller Design for Cascade CSTRs : A Model Reduction Approach, in: CHEMCON, 2014: p. 2.

[5] Sunil Rajoriya, Ahlaam Haquiqi, Bhawna Chauhan, **Avdesh Singh Pundir**, Girish Tyagi\*, Ajay Kumar Jain. Removal of methyl violet dye from aqueous solution using peanut shell as an adsorbent in: Invo and Oppor. in Chemical Eng. for Sustainable, Environment and Energy, RBS Agra (Accepted ,27-28 February 2020)

[6] **Avdesh Singh Pundir**, Kailash Singh, Girish Tyagi, Sunil Rajoriya, Khushi Rastogi and Anamika Arya. Production modeling and simulation of ethylene oxide using a catalytic fixed bed reactor at a higher molar flow rate and pressure in MATLAB, RBS Agra (Accepted, 27-28 February 2020)

[7] **A.S. Pundir**, K. Singh, G. Tyagi, S. Rajoriya, V. Singhal, M. Pandey, Investigation of vapor-liquid-equilibrium for an ethanol-butyl methyl ether system using ASPEN and MATLAB, in: Int. Conf. Chem. Bio Environ. Eng. (CHEMBIOEN-2020), Febr. 13-14, NIT Jalandhar, 2020.

[8] **A.S. Pundir**, K. Singh, G. Tyagi, S. Rajoriya, M. Rohaan, G. Gupta, Selection of a Company for Jobs-offered using TOPSIS, in: Int. Conf. Chem. Bio Environ. Eng. (CHEMBIOEN-2020),

Febr. 13-14, NIT Jalandhar, 2020.

[9] **A.S. Pundir**, K. Singh, G. Tyagi, S. Rajoriya, V. Singhal, M. Pandey, Experimental and theoretical investigation of Txy data for the methanol-water system at ambient pressure, in: Int. Conf. Chem. Bio Environ. Eng. (CHEMBIOEN-2020), Febr. 13-14, NIT Jalandhar, 2020.

[10] **A. S. Pundir**, Kailash Singh, Girish Tyagi, Sunil Rajoriya, Ajay Kumar Jain, Mayank Aggarwal and Abhishek Malik. Reaction Modeling of CO<sub>2</sub> in a Liquid Column of NaOH using Method of Lines, in: Int. Conf. Chem. Bio Environ. Eng. (CHEMBIOEN-2020), Febr. 13-14, NIT Jalandhar, 2020.

#### **National Conference:**

[1] **A.S. Pundir**, K. Singh, R.K. Dohare, Simulation of Fixed Bed Catalytic Reactor through Analytical Approach, in: Process Autom. Control, 2016.

[2] **A.S. Pundir**, K. Singh, G. Tyagi, S. Rajoriya, Optimal Temperature Control for a Real-time Identified Fixed Bed Reactor, in: Adv. Chem. Environ. Eng., NIT, Jalandhar, 2019. (23-24 March 2019)

[3] **A.S. Pundir**, K. Singh, G. Tyagi, S. Rajoriya, Optimal Weight Sensitivity based Temperature Control for a Real-time Identified Fixed Bed Reactor, in: Adv. Chem. Environ. Eng., NIT, Jalandhar, 2019. (23-24 March 2019)

[4] Anjali Ghildiyal, Garvita Gupta, Bhawana Chauhan, Sunil Rajoriya, Girish Tyagi, **Avdesh Singh Pundir**, Ajay Kumar Jain. Treatment of dye wastewater using the Fenton oxidation process: Influence of various process parameters in: Adv. Chem. Environ. Eng., NIT, Jalandhar, 2019. (23-24 March 2019)

[5] Ravi Mishra, Ram Singha, **A.S. Pundir**. CO<sub>2</sub> absorption in packed column influences by the presence of surfactant concentrations in Na<sub>2</sub>CO<sub>3</sub> solution. in: KHOJ'13 National Conference on Emerging Trends in Chemical Sciences, BIT Meerut (6 April, 2013)

**Funded Projects Undertaken:** Project submitted under SERB (As a co-PI)

#### **Academic & Other Responsibilities:**

- Prepared Syllabus and organized a new lab course for the Department of Chemical engineering B. Tech. Students, in consultation with HOD & Director (For UPTU Affiliated College).
- Prepared Question Paper for B. Tech Students (As per UPTU format).
- Worked as a member of the **Canteen Committee**.
- Worked as a member of the **Proctorial Board**.
- Worked as a member of the **Examination Conduction Committee** (UPTU, Lucknow).
- Worked as a member of the **Media Committee**.
- Worked as a member of the **Admission Board (MIT, Moradabad)**.
- Worked as volunteers for **CSAB Counselling 2016**, MNIT Jaipur.
- Worked as volunteers for **organising various conferences**, MNIT Jaipur.
- Working as a **Departmental Admission Coordinator** (MIET, Meerut).
- Working as a member (Specially to handle **GC** and Other sophisticated equipment) for **DST-FIST Lab under supervision of Prof. (Dr.) Eliza Chakraborty, Dept. of Biotech, MIET**.
- Working as a departmental **NBA** Coordinator

