Dr. Jogender Singh
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Brief Introduction

Dr. Jogender Singh is currently working as Assistant Professor in the department of chemical engineering of SVNIT, Surat. After completing his Ph.D. from IIT Delhi, he worked in **Tecnológico De Monterey, Mexico** as **Postdoctoral Researcher**. His research interest includes *Process Intensification, Heat Transfer and Fluid flow, Microfluidics, Micro-flow Extraction Processes, Separation Processes, CFD, Modelling and Simulation, Industrial Safety and Hazards Management.* He has published several papers in peer reviewed international journals and international conferences of repute. He has received the National **Doctoral Fellowship of AICTE** for pursuing his Ph.D. in IIT Delhi. He has been also conferred with the **international award (SNI-Candidate Level-2018)** for his research contribution, by **Sistema Nacional de Investigadores, Mexico**.

Experience Research

10th Jan 2018 - 26th Sep 2019 ***Tecnológico de Monterrey*** **Monterrey, México**

Postdoctoral Researcher
Worked in the field of process intensification and energy intensive devices such as helical coil and coiled flow inverter. The aim was to develop a compact and micro heat exchanger that can be efficiently used to extract heat from a solar pond.

1st Jan 2009- 4th Feb 2016 ***Indian Institute of Technology, Delhi*** **, New Delhi, India**

Ph.D. from Department of Chemical Engineering
My major research focus was in the field of heat exchanger/micro heat exchanger, for process intensification in chemical and other allied industry.

Teaching

10th Jan 2018 - 26th Sep 2019 ***Tecnológico de Monterrey*** **Monterrey, México**

In addition to the research work in the field of process intensification, I taught heat transfer operations to the undergraduate students of School of Engineering and Sciences, Tecnológico de Monterrey for last two consecutive semester.

12th Aug 2016 - 01st Jan 2018 ***NIT Hamirpur*** **Himachal Pradesh, India**

Lecturer
Job responsibilities at NIT Hamirpur

Taught several subjects including advance transport phenomena, heat transfer, chemical process calculations, computational methods in chemical engineering, and computational fluid dynamics. Coordinated the various student activities such as cultural fest, technical quizzes, and seminar presentations. Also, worked as the coordinator of the departmental time table and mass transfer laboratory.

16th Jul 2007- 31st Dec 2008 ***JMIT, Radaur*** **Haryana, India**

Lecturer

Job responsibilities at JMIT.

Teaching work in the field of heat and mass transfer. Also, worked as coordinator of the student chapter of Indian Institute for chemical Engineers (IIChE) along with coordinating the departmental training and placement activities.

Industrial

26th of Sep 2006- 6th July 2007 ***M/s. Standard Surfactant Ltd*** **Bhopal, India**

Engineer (Process & Technical Service)
Job responsibilities at Standard Surfactant Ltd are.
To design of Chemical Processes and Process equipment also to design the Industrial safety & Health program. Troubleshooting related to Process and Process Equipment. Improvement in quality of products **CABS** and of **LABSA** as per the client specification. To handle the installation of new equipment at the plant.

Industrial Training

2003 ***Oil and Natural Gas Corporation Ltd*** **Dehradun, India**

Chemical Engineering – Trainee
Successfully completed a project **"Productivity and Improvement through Stimulation Techniques and Water Control Measures"** under the guidance of Dr. V.K. Bahuguna. Learnt different methods of making Gels as by the use of gels the porosity and permeability of hydrocarbons can be improved during oil exploration process. Studied the different methods of removing the different impurities like unwanted water during the oil exploration process.

Projects

Aug 05- June 06 ***Central Building Research Institute*** **Roorkee, India**

Projects — Studies on Compartment Fire-Effect of Ventilation
This was the dissertation carried out at IIT Roorkee and the required practical experiments were conducted at Fire Research Laboratory, Central Building Research Institute, Roorkee. The experimental results of were compared with the results from CALTREE, a fire zone model software.

Aug 03- Jun 03 ***M.J.P. Rohilkhand University*** **Bareilly, India**

Projects - Manufacturing of Tobias Acid
Learned different methods to manufacture the Tobias acid and brushed up the basics of the chemical engineering such as mass and energy balances during the course of this work.

Publication Highlights

a.) <u>Journal Publications</u>

1. J. Singh, V. Verma, K.D.P. Nigam, Flow Characteristics of Power-Law Fluids in Coiled Flow Inverter, Ind. Eng. Chem. Res. 52 (2012) 207–221.
2. J. Singh, N. Choudhary, K.D.P. Nigam, The Thermal and Transport Characteristics of Nanofluids in a Novel Three Dimensional Device, Can. J. Chem. Eng. 92 (2014) 2185–2201.

3. J. Singh, N. Kockmann, K.D.P. Nigam, Novel Three-Dimensional Microfluidic Device for Process Intensification, Chem. Eng. Proc. 86 (2014) 78–89.
4. J. Singh, K. D. P. Nigam, Pilot Plant Study for Effective Heat Transfer Area of Coiled Flow Inverter, Chem. Eng. Proc. 102 (2016) 219-228.
5. J. Singh, V. Srivastava, K.D.P. Nigam, "Novel Membrane Module for Permeate Flux Augmentation and Process Intensification" Ind. Eng. Chem. Res. 55 (2016) 3861–3870.
6. R Ramirez-Tijerina, C Rivera-Solorio, J. Singh, K. D. P. Nigam, "Numerical study of heat transfer enhancement for laminar nanofluids flow" Applied Sciences 8 (2018), 2661.
7. J. Singh, A. Montesinos-Castellanos, K. D. P. Nigam, "Thermal and hydrodynamic performance of a novel passive mixer 'wavering coiled flow inverter. Chem. Eng. Proc. 141 (2019) 107536.
8. J. Singh, A. Montesinos-Castellanos, K. D. P. Nigam, "Process Intensification for Compact and Micro Heat Exchangers through Innovative Technologies: A Review" Ind. Eng. Chem. Res. 58 (2019) 13819−13847.
9. M. S. Bretado-de los Rios, C. Rivera-Solorioa, J. Singh, K. D. P. Nigam, "Experimental Analysis of Thermal and Hydrodynamic Performance of Coiled Flow Inverter using Al_2O_3/H_2O Nanofluids" Ind. Eng. Chem. Res. (under review)
10. J. Singh, E.A. López-Guajardoa, C. Rivera-Solorioa, K. D. P. Nigam, A. Montesinos-Castellanos, "A comprehensive review of the hydrodynamics, heat transfer and chemical reaction of the nanofluids flow in μ-Channels" Appl. Therm. Eng. (ready to be submitted)
11. J. Singh, S. Jain, M. Yadav, A. Montesinos-Castellanos, K. D. P. Nigam, "Effect of Nanofluids and Complex Micro-Devices on Heat Transfer Enhancement" Energ. Syst. (submitted through conference F&R Energy 2020)

b.) *Conference Proceedings*

1. J. Singh, S. Jain, M. Yadav, A. Montesinos-Castellanos, K. D. P. Nigam, "Effect of Nanofluids and Complex Micro-Devices on Heat Transfer Enhancement" F&R Energy 2020, Houston, TX, USA, February 17 - 19, 2020 (Accepted).
2. J. Singh, R. Aggarwal, S. Palwal, D. Kumar Pal, S. Kumar, K. Meena and A. Jindal "Process Intensification for the Small Footprint Compact Heat Transfer Device", HEFAT 2017, 17 – 19 July 2017.
3. R. Gupta, R. Agarwal, J. Singh "Modelling and Simulation of Fluidized Bed Membrane Reactor for Methane Steam Recent Trends in Chemical Science and Engineering", NIT Hamirpur (India), 13 – 14 October 2017.
4. J. Singh, N. Choudhary, K.D.P. Nigam, "Hydrodynamics of Nanofluid flow in Coiled Flow Inverter" TechConnect World Summit and Innovation, Washington D.C. 2013; 05/2013.
5. J. Singh, N. Choudhary, K.D.P. Nigam, "Convective Heat Transfer and Flow Characteristics of Nanofluid in Coiled Flow Inverter" HEFAT2012; 07/2012.

6. J. Singh, N. Choudhary, K.D.P. Nigam, "Convective heat transfer and flow characteristics of nanofluid flow in complex geometries" Indian Chemical Engineering Congress (CHEMCON 2011); 12/2011.
7. J. Singh, K.D.P. Nigam, "Heat Transfer and Flow Characteristics of Water in Chaotic Configuration Microchannel" 19th International Congress of Chemical and Process Engineering CHISA 2010 and the 7th European Congress of Chemical Engineering ECCE- 7, Prague, Czech Republic; 09/2010.
8. J. Singh, "Compartment Fire and Effect of Ventilation on it" GLS-8, India, 16 – 19 December 2007.

c.) *Books/Book Chapters*

1. J. Singh, L. Sharma, J. Chaouki, "Process Intensification for Micro-Flow Extraction: Batch to Continuous Process" in Sustainable Metal Extraction from Waste Streams authored by G. Chauhan, P. Kaur, K. K. Pant, K. D. P. Nigam, Publisher – Wiley 2019.

Other contribution towards research

a.) *Memberships in Professional Bodies:*

1. Indian Institute of Chemical Engineers (IIChE), LM.

b.) *Workshop/FDP/STC coordinated:*

1. Coordinated STC on "Rastriya Ekta Saptah" from 31/10/2016 to 02/11/2016 at Chemical Engineering Department of NIT Hamirpur, Himachal Pradesh.
2. Coordinated a STC along with Dr. Varun Goel of mechanical engineering department, NIT Hamirpur, on "Fundamentals and Industrial applications of Fluid Mechanics from 17/12/2017 to 22/12/2017 at Chemical Engineering Department of NIT Hamirpur, Himachal Pradesh.

c.) *Invited Lectures:*

1. Delivered an expert lecture in one-week STC on *Computational Fluid Dynamics and Heat Transfer* organized by chemical engineering department of NIT Hamirpur from September 05 – 10, 2016.
2. Delivered an expert lecture in one-week STC on *Learning CFD using Ansys* organized by chemical engineering department of NIT Hamirpur from May 16 – 21, 2017.
3. Delivered an expert lecture in one-week STC on *Fundamentals and Industrial applications of Fluid Mechanics* organized by chemical engineering department of NIT Hamirpur under Skill India of MHRD, from December 17 – 22, 2017.

d.) *Designated Reviewer of the Journals*

1. ACS publishers: by completing and passing the exam of the ACS Reviewer Lab Completion Course by ACS publishers.
2. Journal of Applied and Computational Mechanics.

e.) *Member of various committees*

1. Acted as co-chair in the session Advanced materials of the National Conference on Recent Trends in Chemical Sciences & Engineering (RTCSE-2007) held on October 13th – 14th, 2017.
2. Member of the technical program committee, International Conference on Advancement in Petroleum and Chemical Engineering Technology and Applications (APCETA 2015), Krabi, Thailand, 1 - 3 December 2015.
3. Member of the technical program committee, International Conference on Advancement on Mechanical and Manufacturing Engineering Technology, in Bandung, Indonesia (ADMMET2015) 24 - 26 November 2015.
4. Member of the technical program committee, International Conference on Computing in Mechanical Engineering (ICCME, 15), Kochi (India), 10 -13 August 2015.
5. Member of the technical program committee, 11th International Conference on Fluid Mechanics, And Thermodynamics (HEFAT2015), Skukuza Rest Camp, Kruger National Park, (South Africa), 20 - 23 July 2015.
6. Member of the technical program committee, International Conference on Solar Energy and Building (ICSoEB' 2015), Tunisia, Sousse, 20 - 21 January, 2015.
7. Member of the technical program committee, 10th International Conference on Fluid Mechanics, And Thermodynamics (HEFAT2014), Orlando, Florida (USA), 14-16 July 2014.
8. Member of the technical program committee, World Symposium on Mechatronics Engineering & Applied Physics (WSMEAP 2014), Tunisia, Sousse, 18 - 20 June, 2014.
9. Member of the technical program committee, International Conference on Composite Materials & Renewable Energy Applications (ICCMREA' 2014), Sousse, Tunisia from 22 - 24 January, 2014.
10. Member of the technical program committee, 9th International Conference on Fluid Mechanics, And Thermodynamics (HEFAT2012), Malta, 16-18 July 2012.

Extracurricular Involvement	Successfully completed a FDP by AICTE Training And Learning (ATAL) Academy on "Design of Experiment and Artificial Neural Network" from 04-11-2019 to 08-11-2019 organized at Sardar Vallabhbhai National Institute of Technology, Surat.

Successfully completed one-week GIAN-MHRD course on **"**Emerging Electrical Energy Storage Applications" by **Prof. Arunachalanadar Mada Kannan, Arizona State University, USA** organized by NIT Hamirpur from June 12 – 17, 2017.

Successfully completed a Short-Term Course on **"**Applications of LaTeX-2017" organized by Department of Mathematics, at NIT Hamirpur from September 18 – 24, 2017.

Successfully completed one-week GIAN-MHRD course on **"**Chemical, Biochemical and Environmental Issues Related to Cancer and Solutions Addressing Problems" by **Dr. Bo Hang, Lawrence Berkeley National Laboratory, Berkeley, USA** organized by NIT Hamirpur from June 12 – 17, 2017.

Successfully completed a seminar on **"**Quality Technical Education – Teaching & Research (QTE-2017)" organized by NIT Hamirpur from June 12 – 17, 2017.

Successfully completed a workshop on **"**Industry Institute Interaction Programme" organized by chemical engineering department of NIT Hamirpur from October 21 – 22, 2016.

Successfully completed a short-term course on **"**basics of microfluidics and microtechnology" sponsored by **Department of Science and Technology (DST), India** under **IITD-EPFL** Project.

Successfully completed an **AICTE-MHRD** Sponsored summer school on "Cleaner production Technologies" conducted by **NITTR, Chandigarh, India**.

Attended the "**SPE** Oil and Gas India Conference and Exhibition 2010 (OGIC)".

A seminar delivered on **Safety Audits** at IIT Roorkee, India.

Attended a seminar on **CAD/CAM** presented by **Solutions Pvt. Ltd. Delhi**, at the Rohilkhand University, Bareilly, India.

Delivered a seminar on **DMFC** at IIT Roorkee, India.

Successfully conducted delivered on **Coal Purifying Bacteria** at I.E.T, (M.J.P. Rohilkhand University, India.
Served NSS, as a mentor of JAGRITI Cell, NSS at IIT Roorkee, India.

Personal Qualities

I am an attentive, diligent and committed individual with PhD in Chemical Engineering from IIT Delhi and M. Tech. in Chemical Engineering from IIT Roorkee with keen interest in fields of Process Intensification, Heat Transfer and Fluid flow, Microfluidics, Micro-flow Extraction Processes, Separation Processes, CFD, Modelling and Simulation, Industrial Safety and Hazards Management.

Excellent communication skills garnered from top-class education, at both a Secondary and Tertiary level, honed through extensive experience in the projects. Possess strong inter-personal and communication skills & ability to work under pressure situations and delivering to full potential

Ability to work as part of a cohesive team, demonstrated through industrial experience.

A computer savvy individual competent in a wide array of computer skills across C, C++, MATLAB, COMSOL, ANSYS etc.

Academic Credentials

1st Jan 2009- 4th Feb 2016 **IIT Delhi** **Delhi, India**

Ph.D. (Chemical Engineering)
Specialization: Heat and Mass transfer Studies in a Novel Device Coiled Flow Inverter.

2004-2006 ***IIT Roorkee*** **Roorkee, India**
M. Tech. (Chemical Engineering)
Specialization: Industrial Safety and Hazards Management

2000-2004 ***M.J.P. Rohilkhand University*** **Bareilly, India**
B. Tech. (Chemical Engineering)
Specialization: Chemical Engineering

Computer Proficiency

Programming languages: C, C++

Engineering Software: MATLAB, COMSOL, and ANSYS.

Additional Information

Father's Name:	Late Shri Kunwer Pal
Date of Birth:	20th Dec 1981.
Marital Status:	Married
Gender:	Male
Nationality:	Indian
Languages:	Hindi, English, Spanish