

## Profile Page



Name : Dr Rajeev Kukreja

Designation : Associate Professor

Department : Mechanical Engineering

Qualification : PhD Mechanical Engineering( Thermal) (IIT, Delhi)  
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### **Research Interests :**

Flow condensation and Flow boiling, Multi phase flow, Alternative refrigerants, Design and Simulation of Thermal systems, Design of heat Exchangers, Renewable energy, Solar systems, Thermal Energy Storage, Spray cooling

### **Journal Publications :**

Year	Journal	Publication
2023	Renewable Energy	Experimental thermal performance investigation of a direct absorption solar collector using hybrid nanofluid of gold nanoparticles with natural extract of Azadirachta Indica leaves
2023	International Journal of Multiphase Flow	Experimental investigations on heat transfer enhancement of enhanced surfaces in spray cooling using HFE-649
2022	Advances in Building Energy Research	Quantification of thermal environments and comfort expectations of residents in hostel dormitories during hot and humid days in Indian composite climate
2022	Journal of Process mechanical engineering	Experimental study on spray cooling heat transfer enhancement using MWCNT and TiO <sub>2</sub> hybrid nanofluid
2022	Journal of process mechanical engineering	Effect of binary mixed-surfactants and hybrid nanofluid on spray cooling heat transfer,
2022	Energy Sources, Part A: Recovery, Utilization, and Environmental Effects	Two-phase frictional pressure drop of R134a and R410A condensing inside multiport rectangular microchannels with different aspect ratio
2022	Energy Sources, Part A: Recovery, Utilization, and Environmental Effects	Comparative thermal performance enhancement study of a reverse - irradiated and direct - irradiated direct absorption solar collector using silver nanofluid

2022	International Journal of Thermal Sciences	Condensation heat transfer of R134a and R410A in multiport rectangular microchannels with different aspect ratio
2022	Sustainable Energy and Assessments	Experimental investigation of a volumetric solar collector using natural extract of Azadirachta Indica based heat transfer fluids
2022	Energy Sources, Part A: Recovery, Utilization, and Environmental Effects	Experimental study on effect of enhanced surfaces and inclined mode on spray cooling heat transfer performance using HFE-649 coolant
2022	Energy Sources, Part A: Recovery, Utilization, and Environmental Effects	Frictional pressure drop correlation for condensation of refrigerants in microchannel heat exchangers
2021	Energy Sources, Part A: Recovery, Utilization, and Environmental Effects	Experimental study on effects of surfactant and spray inclination on heat transfer performance in nonboiling regime
2021	Solar Energy	Progress, challenges and future prospects of plasmonic nanofluid based direct absorption solar collectors – A state-of-the-art review
2019	International Journal Of Air Conditioning and Refrigeration	An Experimental Investigation of Flow patterns during condensation of HFC Refrigerants in Horizontal Micro fin tubes
2019	Journal Of Mechanical Engineering and Technology, Vol.(10)No.2	Thermal Performance Analysis of Nano Enhanced Paraffin Wax and Myristic Acid
2019	Journal Of Building Engineering	Comparative study of thermal comfort and adaptive actions for modern and traditional multi-storey naturally ventilated hostel buildings during monsoon season in India
2019	Refrigeration Science and Technology	Condensation Characteristics of R134a and R404A in horizontal microfinned tubes
2019	Refrigeration Science and Technology	Experimental and Numerical Investigations on Thermal Conductivity of Al <sub>2</sub> O <sub>3</sub> /Ethylene Glycol Water and TiO <sub>2</sub> /Ethylene Glycol Water Nanofluids
2019	Journal of Institution of Engineers(India):Series C	Effect of Plenum Shape on Thermohydraulic Performance of Microchannel Heat Sink
2018	International Journal of Heat and Technology, Vol.36(4),1463-69	Two phase heat transfer and Flow regimes of R134a and R410A during condensation in horizontal microfin tubes
2018	International Journal Of Air Conditioning and Refrigeration, Vol.26(4),pp1-16	Experimental Heat transfer coefficient and Pressure drop during condensation of R134a and R410A in horizontal microfin tubes

## Conference Publications :

Year	Conference	Publication
2022	International Conference on Solar Energy for buildings and Industry-Eurosun2022, Kassel, Germany	Experimental studies on Heat Transfer Enhancement of Salt hydrate based Phase Change Material(PCM) for efficient Thermal Energy storage
2022	International Conference on Solar Energy for buildings and Industry-Eurosun2022, Kassel, Germany	Numerical Investigation and Performance evaluation of Food grain drying unit integrated with Thermal energy storage system
2022	International Conference on Recent Advances in Sustainable Environment	Performance Investigation of Ejector Humidification Dehumidification(EHD) cycle for Fresh water and cooling Generation
2022	1st International Conference in Fluid Thermal and Energy Systems	Heat Exchanger Design For Two Stage HDH Desalination Unit

2021	2nd International Conference on Recent innovation in Science, Engineering and Technology	Numerical Study on the melting Phase Change Material using multi section in the Triplex Tubular Heat Exchanger
2019	25th IIR International Congress of Refrigeration, Montreal, Canada	Experimental and Numerical Investigations on Thermal Conductivity of Al <sub>2</sub> O <sub>3</sub> /Ethylene Glycol Water and TiO <sub>2</sub> /Ethylene Glycol Water Nanofluids
2019	25th IIR International Congress of Refrigeration, Montreal, Canada	Condensation Characteristics of R-134a and R-404A in Horizontal Micro Finned Tubes
2019	2nd International Conference on New Frontiers in Engineering, Science & Technology	Experimental Heat Transfer Coefficient during Condensation of R410A in Horizontal Micro-fin Tubes
2018	19th ISME Conference on Advances in Mechanical Engineering	Comparison of quenching behaviour of heated Brass and Stainless steel cylindrical rods with water & water based alumina nanofluids
2018	19th ISME Conference on Advances in Mechanical Engineering (20th-22nd Dec, 2018)	Heat and Mass transfer Enhancement during Condensation on Aluminium Surface
2018	19th ISME Conference on Advances in Mechanical Engineering	A Comprehensive review on Hybrid Nanofluids for heat transfer applications
2018	19th ISME Conference on Advances in Mechanical Engineering	Experimental Investigation of Condensation heat transfer coefficient with HFC refrigerants in horizontal smooth and Micro-fin tubes
2018	19th ISME Conference on Advances in Mechanical Engineering	A review of condensation pressure drop and heat transfer in mini/micro channels
2015	4th National Conference on Refrigeration and Air conditioning (NCRAC-15), 28-30th Oct, 2015, Chennai, India	Flow boiling characteristics of Refrigerants in Micro channels
2015	Proceedings of 24th IIR International Congress of Refrigeration, Yokohama, Japan	Two Phase Heat Transfer and Flow Regimes of R134a and R410A during condensation in Horizontal Microfin Tubes
2011	Proceedings of 23rd IIR International Congress of refrigeration, 21st–26th Aug, 2011, Prague, Czech Republic	Experimental investigations on Condensation Characteristics of Pure and Mixture Refrigerants of HFCs in Horizontal Micro-fin Tubes
2010	IIT Delhi in 2010	Study of condensation characteristics of pure and mixtures of HFC refrigerants in horizontal tubes with micro-fins
2007	Proceedings of 22nd IIR International Congress of refrigeration, 21st -26th Aug, 2007, in Beijing, China.	Convective Condensation heat transfer correlations for pure and blended refrigerants in horizontal micro fin tubes
2007	Proceedings of National conference on Trends and Advances in Mechanical Engg, YMCA Institute of Engineering, Faridabad.	Prediction of flow regimes of Pure refrigerants during condensation inside smooth horizontal tubes

### Book/Chapter Publications :

Type	Title	Publisher	Authors	ISBN/ISS N No.	Year
Engineering /Technology	Condensation Characteristics of HFC refrigerants in horizontal tubes	Lambert Academic Publishing	Rajeev Kukreja Sanjeev Jain R S Agrawal	978-620-2-08029-3	2018

### Research Projects :

Role	Project Type	Title	Funding Agency	From	To	Amount	Status	Co-Investigator
Principal Investigator	Extra Mural Research	Study on condensation characteristics of refrigerants in Macro and Micro Channels	SERB under DST	14-10-2016	Till date	37 lakhs	completed	
CoPI	IMPRINT-II C.1	Experimental Investigation on Tower Type Hybrid Vapour Compression Refrigeration and Humidification-Dehumidification Desalination plant	SERB	2019	2021	17 lacs	completed	Dr T Srinivas

### Events Organized :

Category	Type	Title	Venue	From	To	Designation
STC	National	IC Engine Fuels and Combustion Technologies (ICEFCT-13)	Dr B R Ambedkar National Institute Of Technology, Jalandhar	14-12-2013	18-12-2013	Cordinator
Conference	National	19th ISME Conference on Advances in Mechanical Engineering	Dr B R Ambedkar National Institute of Technology, Jalandhar	20-12-2018	22-12-2018	Chairman

### Professional Affiliations :

Designation	Organization
Life Member	ISTE
Member	American Society of Thermal and Fluids Engineers (ASTFE),
Associate Member	American Society of Heating, Refrigeration & AirConditioning Engineers

### PhD Supervised :

Scholar Name	Research Topic	Status	Year	Co-Supervisor
Vajeer Baba Roll NO. 21809011 DOR (03-09-2021)	Single Stage Hybrid HDH-VCR Plant for Water and Air Conditioning	Coursework completed	Sept 2021	Dr T Srinivas

Ashutosh Verma (Roll No.21809004) DOR (13-09-2021)	Design And Performance Study of Solar, Thermal Energy Storage System; TES; For Drying & Cooking Applications.	Coursework completed, Comprehensive examination passed(14/04/2023)	Sept 2021	Dr T Srinivas Prof Dharm Budhi
Varun Kumar Gupta Roll no.18509009 DOR (06-08-2018)	Performance analysis of integrated energy storage volumetric absorption solar collector using plasmonic nanofluids	Coursework Completed / Comprehensive defended/ Experimental work on	2018	Dr Sanjay
Sukhdeep Singh	Studies on Spray Cooling for Electronic Industry	Dissertation submitted	2015	
Varinder Singh Malhi	Condensation characteristics of refrigerants in Micro channels	Dissertation submitted	2014	Prof S S Sehgal, Chandigarh University
Sanjeev Singh	Condensation Characteristics of HFC refrigerants in Horizontal Micro fin tubes	PhD awarded	2013	

### PG Dissertation Guided :

Student Name	Dissertation Title	Status	Year	Co-Supervisor
Deepak Singh	Performance Investigation of the Ejector Humidification, Dehumidification (EHD) Cycle for Fresh Water and Cooling generation	Completed	2022	Dr T Srinivas
Avanish Kumar Rai	“Experimental Investigations on Condensation Heat Transfer and Pressure Drop of Refrigerant R134a in Horizontal Macro-Channels Having Enhanced Inner Surface”,	Completed	2022	Dwesh K Singh
Anoop Singh Yadav	NUMERICAL STUDY ON THE MELTING PHASE CHANGE MATERIAL USING MULTI SECTION IN THE TRIPLEX TUBE HEAT EXCHANGER	Completed	2021	
Abhishek Jaitley	EXPERIMENTAL INVESTIGATIONS ON ENHANCEMENT OF CONDENSATION HEAT TRANSFER COEFFICIENT AND PRESSURE DROP IN HORIZONTAL SMOOTH AND MICRO-FIN TUBES	Completed	2021	
Akash Saxena	ENERGY AND EXERGY ANALYSIS OF R404A AND R410A REFRIGERANTS AS SUBSTITUTE FOR R22 IN VAPOUR COMPRESSION REFRIGERATION SYSTEMS	Completed	2019	Dr Sanjay
Keshav Gupta	Experimental Analysis Of Quenching Behaviour Of Heated Cylindrical Rods With Water-Based Nanofluids	Completed	2018	

Nandyala Mahesh	Experimental and Numerical Investigations on Thermal Conductivity and Heat Transfer of nano fluids	Completed	2018	
Ukani Palash	Heat Transfer Enhancement of Phase Change Material(PCM) for efficient Thermal Energy Storage system	Completed	2017	
Sunil Kumar Sharma	Experimental Analysis of Performance of Vapour Compression Refrigeration System using Nanoparticles	Completed	2017	
Ajay M Nair	Thermal Performance Analysis of Nano Enhanced Myristic Acid as Phase Change Material	Completed	2016	
Arvind Kumar Singh	CFD Design and Thermal Analysis of Double Pipe Heat Exchanger used in Refinery	Completed	2016	
P Vinod Kumar Naidu	Thermal Performance Analysis of Nano Enhanced Paraffin Wax as PCM	Completed	2016	
Sandeep Yadav	Performance, Simulation and Optimization of Shell and Tube Heat Exchanger using Genetic Algorithm	Completed	2015	
Uday Shankar Chaudhary	CFD Simulation of Evaporative cooling by Water Spraying system	Completed	2015	
Praveen Kumar Tyagi	Effect of Surface Roughness and inclination angle on Heat Transfer characteristics in Non Boiling Spray Cooling of Water	Completed	2015	
Amit Kumar	CFD Analysis of Crystallization Fouling in 2D Plate Heat Exchangers	Completed	2014	
Mayur Partap Singh	CFD Analysis of Natural Convection in Domestic refrigerator	Completed	2014	
Sachin Kumar	Experimental Investigations of Coefficient of Drag and Flow separation over circular and square cross-sections	Completed	2013	
Neeraj Kumar	Non Boiling Heat Transfer Characteristics of Water sprays impinging on Heated Surface	Completed	2013	
Zorawar Singh	Optimization of Shell and Tube Heat Exchanger using Genetic Algorithm and Hybrid Genetic Algorithm	Completed	2012	
Lokendra Kurrey	Performance Simulation and Design optimization of Shell and Tube Heat exchanger in MATLAB	Completed	2010	

### Admin. Responsibilities :

Position Held	Organization	From	To
Member, BOS, Chemical Engineering	Dr B R Ambedkar National Institute of Technology, Jalandhar	01--8-2013	06-06-2016
Head( Mechanical and Mining Engineering)	Dr B R Ambedkar National Institute Of Technology, Jalandhar	25-01-2017	23-01-2019
Associate Dean ( Faculty Welfare)	Dr B R Ambedkar National Institute of Technology	11-008-2015	24-01-2017
Chairman(Transport)	Dr B R Ambedkar National Institute Of Technology, Jalandhar	24-01-2019	05-02-20
Coordinator	Atal Community Innovation Centre	24-10-2019	05-04-2022
Coordinator	Atal Ranking of Institutions on Innovation Achievements(ARIIA), NIT,Jalandhar	01-10-2019	05-04-2022

Coordinator	Atal Ranking of Institutions on Innovation Achievements(ARIIA), NIT,Jalandhar	01-10-2019	05-04-22
Head(Placement)	Dr B R Ambedkar National Institute Of Technology, Jalandhar	07-02-2020	31-05-2022
Associate Dean(Faculty Welfare)-I	Dr B R Ambedkar National Institute of Technology, Jalandhar	16-02-2023	Till date

### **Award and Honours :**

<b>Title</b>	<b>Activity</b>	<b>Given by</b>	<b>Year</b>
Meritorious award(Silver MEDALLION)	Teaching	Institute	2013