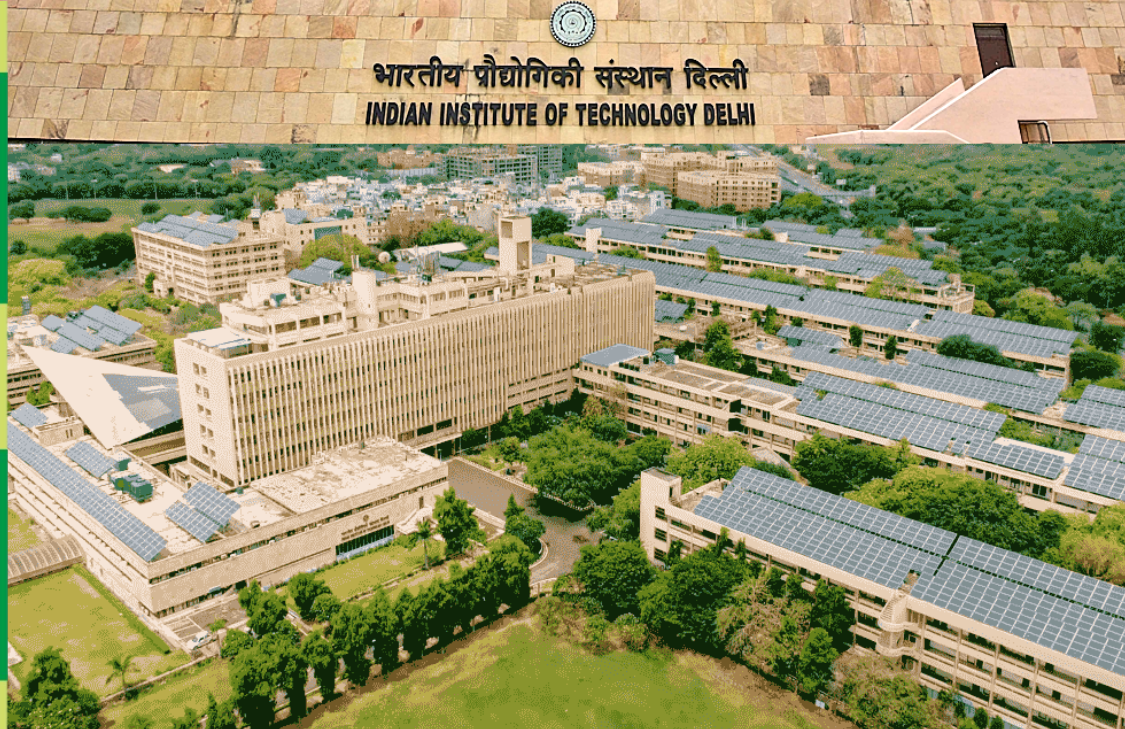
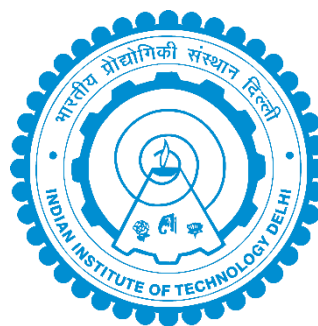




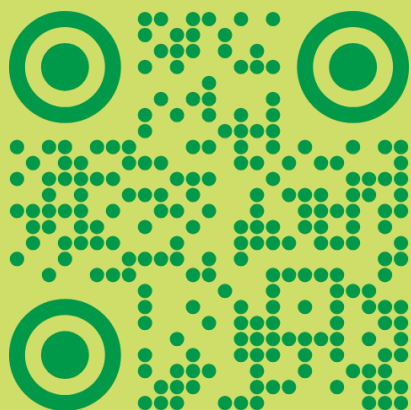
भारतीय प्रौद्योगिकी संस्थान दिल्ली
INDIAN INSTITUTE OF TECHNOLOGY DELHI

Department of Energy Science and Engineering

Indian Institute of Technology Delhi



Brochure 2025





Foreword

The genesis of this department was seeded way back in 1976 with the establishment of a national Centre for Energy Studies (CES) at the Indian Institute of Technology Delhi by the Government of India, after realizing the need for education and research in the field of energy. It was the first energy focused education and research center in the country which became Department of Energy Science and Engineering (DESE) in 2021. The current team of faculty, staff and students are working towards becoming global leaders in the ongoing energy transition.

Over the past decade, the department has made a major transition by going international, both at academic and research levels, along with mentoring the newly initiated energy programmes at the IIT Delhi - Abu Dhabi campus. DESE has overhauled its academic structure, with two new Master programmes viz., Masters of Technology in Energy and Environment Technologies and Management and Master of Technology in Renewable Energy Technologies and Management being introduced in 2019. The latter is a fully sponsored international programme for working professionals. The department has also started the first 4-year B. Tech in Energy Engineering programme in 2021. The department always had a strong presence of doctoral students which was also pivotal for the growth of DESE (earlier CES) over the past few decades. It is to be also noted that all the existing programmes have been re-structured under the New Education Policy.

The UG & PG programmes are dedicated to developing energy engineers for the future by providing them with knowledge of different perspectives of energy systems, equipping them with skills for tackling energy and environmental sector challenges as well as providing sustainable energy solutions that are accessible, available, and affordable. DESE, with almost five decades of existence, also has its alumni who have become pioneers at various levels in the energy sector.

As it goes forward, the department envisages cohesively working as a unit towards addressing various aspects of the sustainable developments goals and providing workable solutions for the various challenges faced by society in meeting its growing energy demands.

Head
Department of Energy Science and Engineering



About DESE



Milestones

1976

Centre of Energy Studies

1981-2000

Int'l Certificate Program on
Renewable Energy Systems

1981-2022

M.Tech Program in Energy Studies

1989-2014

M.Tech in Energy & Environment
Management

2019

M.Tech in Energy & Environment
Technologies and Management

M.Tech in Renewable Energy
Technologies and Management

2021

Department of Energy Science and
Engineering

2021

M.S.(Research)

2021

B.Tech. in Energy Engineering

Vision

To be a global leader in interdisciplinary energy research & education and maintain DESE's position as a preferred knowledge network for industry and commerce in the domain of energy innovation and technology.

Uniqueness

Our energy engineers come from interdisciplinary backgrounds. Hence, they possess different combinations of technical knowledge and skills to face the potential challenges of the energy sector.

Mission

To create skilled manpower in the domain of energy research and education which can transform DESE's dream to build a carbon free economy by delivering safe, clean, reliable, affordable & competitive energy.



Faculty



Banerjee, Rangan
Professor



Bhandari, Arihant
Assistant Professor



Chattopadhyay, S K
Associate Professor



Dutta, Subhendu
Assistant Professor



Goyal, Rahul
Associate Professor



Kar, Satyananda
Associate Professor



Karak, Supravat
Associate Professor



Komarala, Vamsi K
Professor & Head



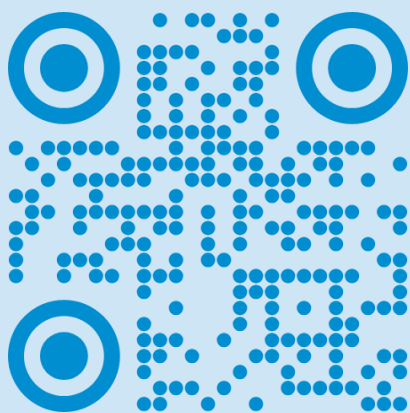
Kumar, Ravi K
Associate Professor

Total Faculty: 24

Professors: 8

Associate Professors: 10

Assistant Professors: 6





Faculty



Kumar, Vipin
Associate Professor



Mohanty, Rabindra
Assistant Professor



Narayanan, Ramesh
Professor



Panigrahy, Snehasish
Assistant Professor



Rakshit, Dibakar
Professor



Saha, Kaushik
Associate Professor



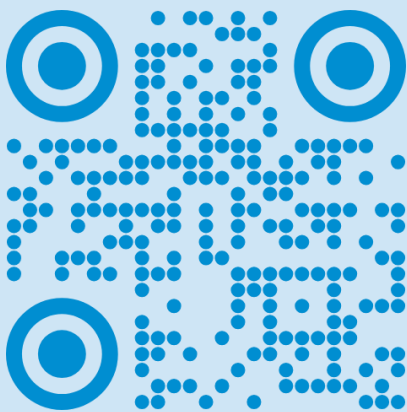
Sahu, Bhibhuti Bhusan
Associate Professor



Sahu, Debaprasad
Associate Professor



Singh, Trilok
Associate Professor





Faculty



Subramanian, K A
Professor



Tripathi, Avanish
Assistant Professor



Tyagi, S K
Professor



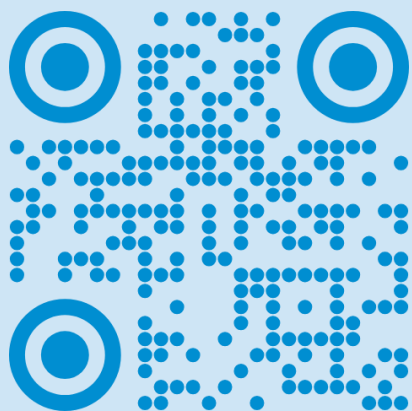
Uma, R
Professor



Verma, Ashu
Professor



Yadav, Sujeet
Assistant Professor





Academic Programs

Undergraduate

- **Bachelor of Technology (B.Tech.) in Energy Engineering**

Postgraduate

- **Master of Technology (M.Tech.) in Energy & Environment Technologies and Management**
- **Master of Technology (M.Tech.) in Renewable Energy Technologies and Management**
- **Master of Science (Research) [M.S.(R)] in Energy Science and Engineering**

Research Program

- **Doctor of Philosophy (Ph.D.)**



Research Areas

- **Biomass & Bioenergy**
- **Energy Storage**
- **Energy Management in Building**
- **Fuel Technology**
- **IC Engine & Alternate Fuel**
- **Plasma Technologies for Energy and Environment**
- **Power Systems & Power Electronics for Renewable Energy Interface**
- **Solar Photovoltaics**
- **Solar Thermal**
- **Wind & Hydro Energy**



Research Laboratories

- **Advanced Batteries Research**
- **Atmospheric Plasma Research**
- **Clean Fuel and Energy**
- **Computational Combustion**
- **Computational Materials Research**
- **ECR-Based Large-Area Negative Ion Beam Source (ELNIBS)**
- **Electrical Power and Renewable Energy Systems**
- **Energy Simulation**
- **Engines & Unconventional Fuels**
- **Fuel Energy Efficiency, Conservation & Simulation**
- **Fuel Technology**
- **Multifunctional Plasma**
- **Organic & Hybrid Electronics Device (OHEDL)**
- **Plasma Physics**
- **Power Electronics Application & Research**
- **Semiconductor Thin Film and Emerging Photovoltaic (STEP)**
- **Solar & Biomass Research**
- **Solar Concentrator**
- **Solar Photovoltaics**
- **Solar Thermal & Refrigeration**
- **Wind & Hydro Power Energy**

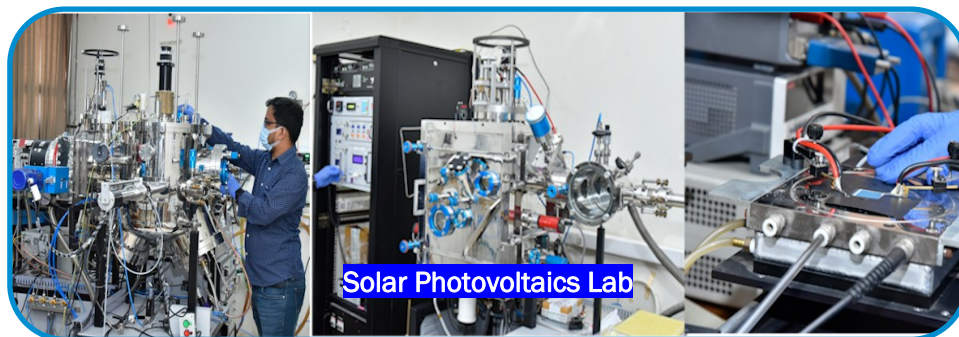


Research Labs Photographs

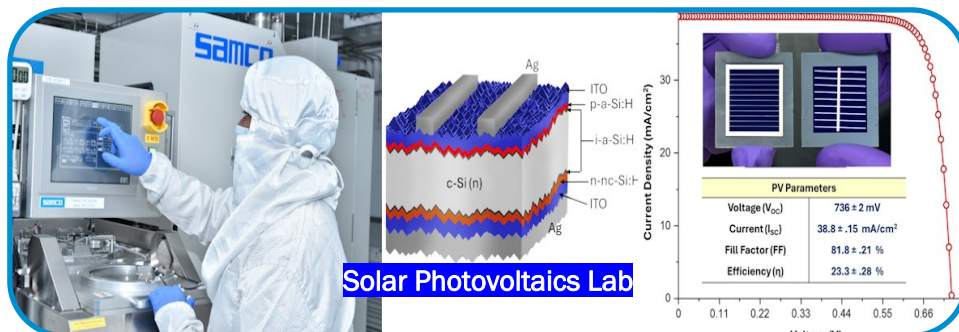




Research Labs Photographs



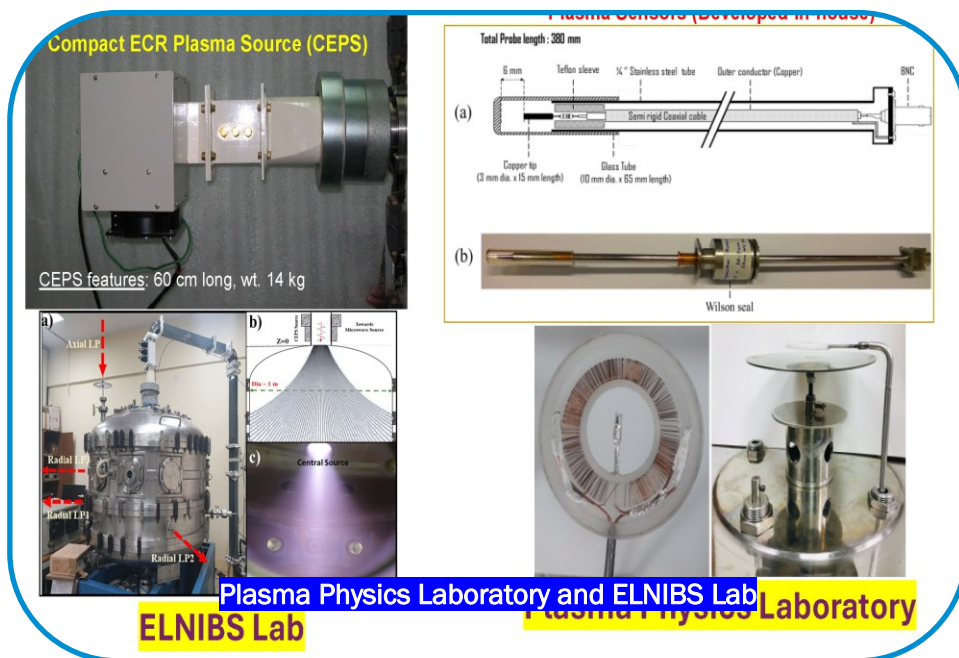
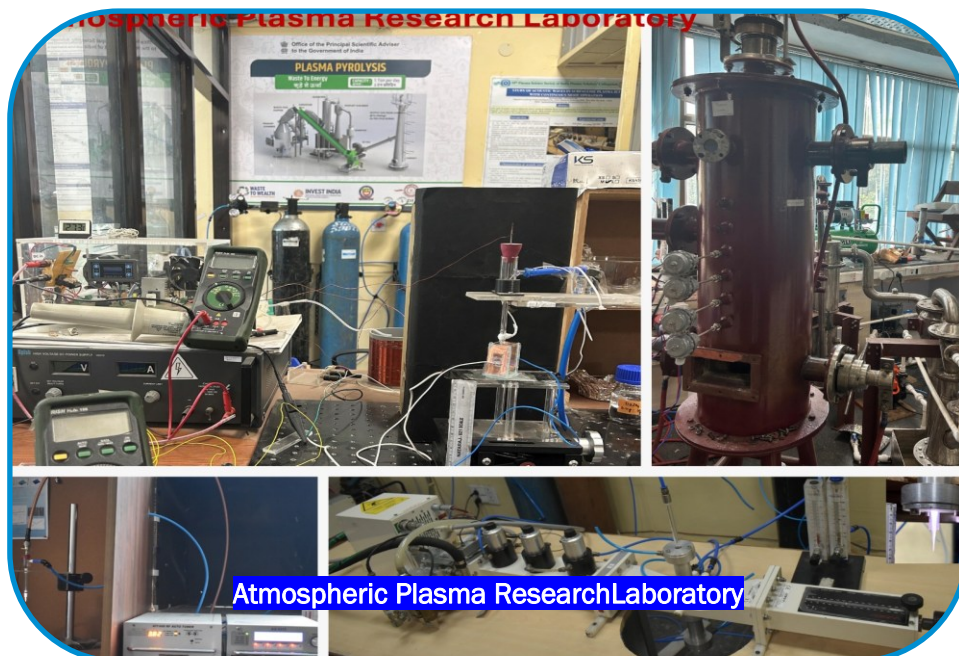
Solar Photovoltaics Lab



Organic & Hybrid Electronics Device Laboratory



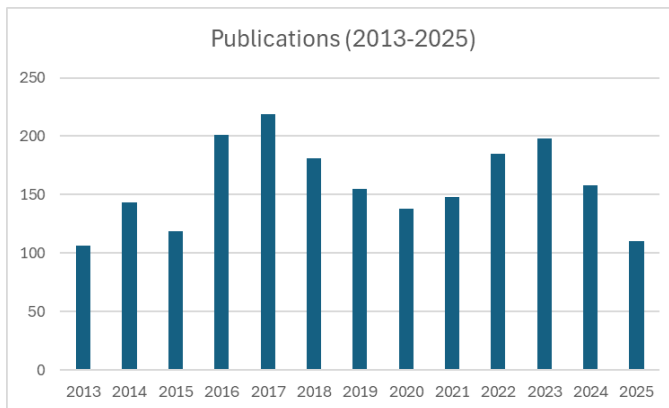
Research Labs Photographs





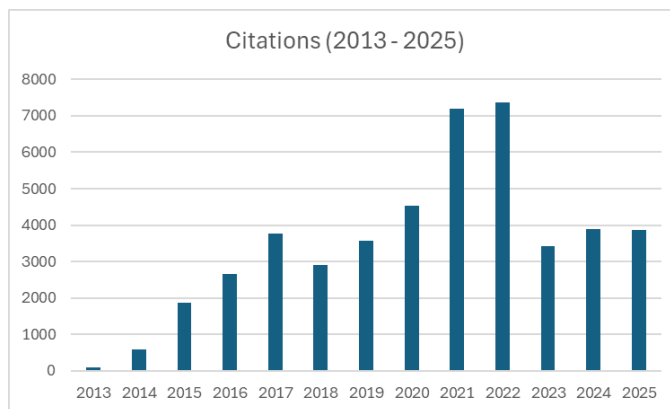
Publications

Total Number of Publications from 2013 to July 2025 are 2061

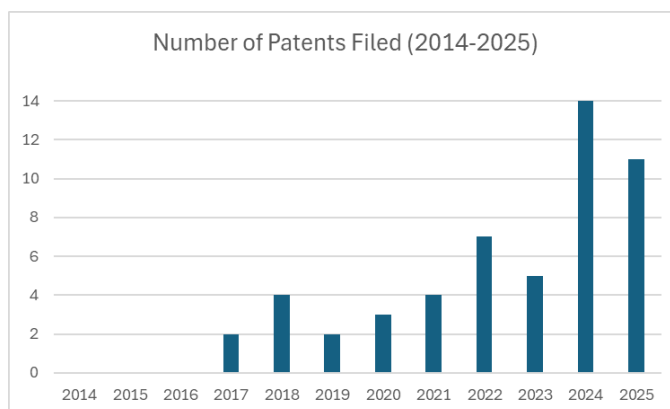


Citations

Total Number of Citations received by 2061 publications (2013 to July 2025) are 45,714



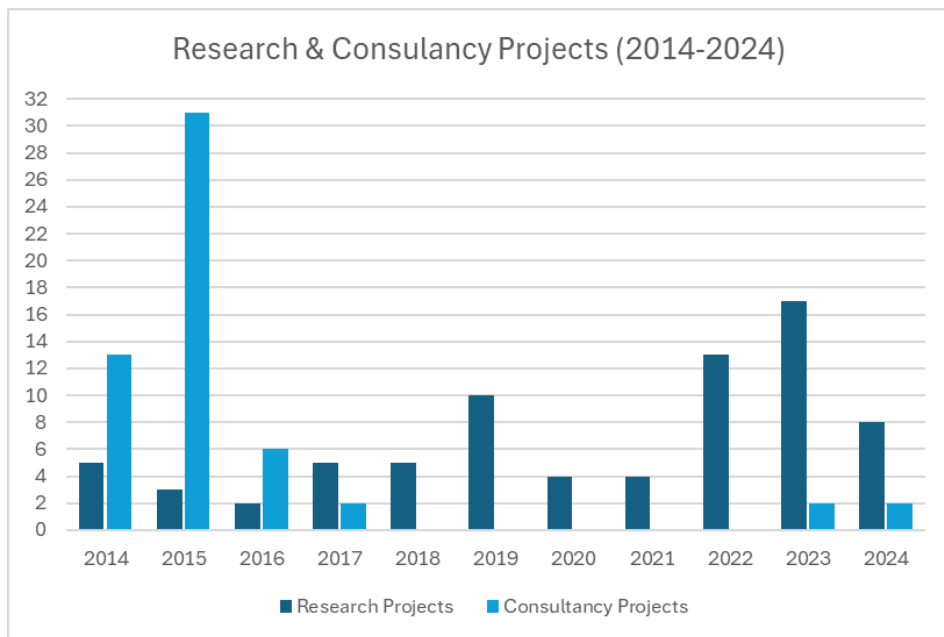
Patents



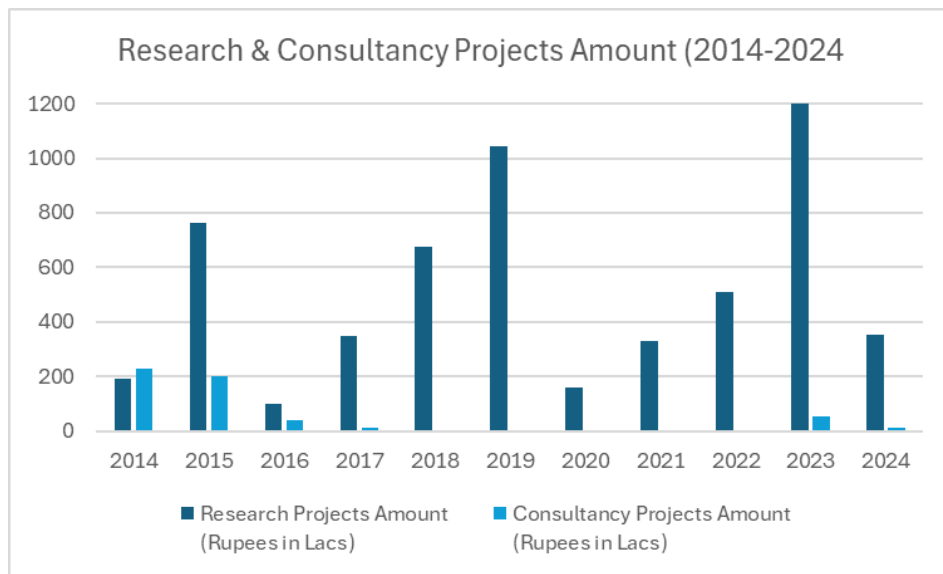


Research & Consultancy Projects

Total 76 Research Projects & 56 Consultancy Projects (2014 to 2024)



Total Research Projects worth 66.92 Crores & Consultancy Projects worth 5.42 Crores (2014 to 2024)



External Funding Agencies





International Collaborators

- Argonne National Laboratory, U.S.A.
- Brno University, Czech Republic
- Coventry University, United Kingdom
- Hebrew University Jerusalem, Israel
- Institute of Photonics, Jena, Germany
- Kyushu University, Japan
- Nagoya University
- Nagoya University, Japan
- Southern University of Denmark, Denmark
- Stanford University, U.S.A.
- Sungkyunkwan University, Korea
- Sungkyunkwan University, South Korea
- The University of Auckland, New Zealand
- The University of Queensland, Australia
- University of Galway, Ireland
- University of Jyväskylä, Finland
- University of Perugia, Italy
- University of Science and Technology of China

National Collaborators

- Delhi Technological University
- Indian Institute of Technology
- Indian Institute of Technology, Bhilai
- Institute for Plasma Research, Gandhinagar, Gujarat
- Maulana Azad National Institute of Technology, Bhopal
- National Institute of Solar Energy, Gurugram
- National Physical Laboratory
- Netaji Subhas University of Technology, Delhi
- Northern Regional Load Dispatch Centre
- University of Jammu



Recent Evolution of Department

- Recruited faculty members in the following fields (Total 18 joined from 2014 onwards)
 - Energy Storage
 - Energy Management in Buildings
 - Wind and Hydro
 - High Fidelity Simulation of Heterogeneous Combustion
 - Power System and Power Electronics for Renewable Energy Interface
 - Fuel and Propellant technologies
 - Biomass and Bioenergy
 - Waste to Energy
- B.Tech. in Energy Engineering (2021)
(Student strength 40 per batch)
- ESN M.Tech. Programme (2019)
(Student strength 34 per batch)
- ESR M.Tech. International Programme (2019)
(Student strength 35 per batch)
- M.S.(Research) Programme (2021)
(Student strength 6 per year)



Notable Research and Key Achievements

- Development of a large area hydrogen plasma source for neutral beam heating in fusion devices
- ECR based plasma thrusters for deep space propulsion
- Demonstration of a plasma gasification plant for waste decomposition at Jafrabad, Delhi
- Development of scalable devices for large area PECVD application
- Developed high efficiency silicon heterojunction solar cells through Solar Challenge Award
- Demonstration of biomass-based cookstove having emissions lower than LPG stove
- Development of biomass based activated carbon absorbent for cooling applications
- Developed a highly efficient porous burner
- Developed an inexpensive in-house optical magnification system for enhanced visualization of fuel spray structures
- Developed a flashing spray modeling approach implemented in engine combustion code
- Developed large scale prototype sodium-sulfur batteries
- Development of self-powered ultrafast photodetector for secure optical communication
- Developed several multilevel inverter topologies, modulation, and control strategies customized for renewable energy, defense and industrial applications
- Development of small-scale wind turbines with improved performance and efficiency
- Demonstration of a 5 kW AC-DC hybrid multiport converter (MPC)
- State-of-the-art Perovskites solar cell manufacturing facility for BIPV applications



Faculty Profile



Prof. Banerjee, Rangan

Research Interest

Energy Management & Energy Efficiency, Demand Side Management, Energy Modelling, Energy Planning and Policy, Technology assessment and forecasting

Education

- **Ph.D.** from IIT Bombay in 1991, Topic: Thin-film Heterojunction Solar Cells
- **B.Tech.** from IIT Bombay, in 1986, Stream: Mechanical Engineering

Work Experience

- **Director**, IIT Delhi, February 2022 to Present
- **Professor**: IDP in Energy Systems Engineering, IIT Bombay (Mar. 2003 to present)
- **Associate Professor**: IDP in Energy Systems Engineering, IIT Bombay (June 1997 - Mar. 2003)
- **Visiting Faculty**: Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, PA, USA (1997, 1998, 1999 & 2003 Summer)
- **Assistant Professor**: IDP in Energy Systems Engineering, Joined IIT Bombay (Oct. 1993 - Jun. 1997)
- **Assistant Professor**: Indira Gandhi Institute of Development Research, Mumbai (Oct. 1992 - Oct. 1993)
- **Senior Engineer**: Engineers India Ltd., (R&D) Gujarat (Aug. 1991 - Oct. 1992)
- **Research Associate**: Tata Energy Research Institute, Delhi (May 1990 - Jul. 1991)
- **Research Associate**: Centre for Applied Systems Analysis in Development, Pune (Dec. 1986 - Jul. 1987)
- **Management Trainee**: Cadbury's India (Jun. 1986 - Dec. 1986)

Awards & Honors

- Steering Committee Member, TU Munich Global SEED center and Living Lab Project, 2024.
- Member, International Advisory Board 'The Economics of Energy Innovation and Systems Transition' (EEIST), UK BEIS - Global project- led by Univ of Exeter, 2020 to 2023.
- Global Jury, Mission Innovation Champions, 2018-2019.
- Member - 3rd India-China Dialogue on Energy, Climate and Urbanization held at Beijing, China, 21-23

Publications & Patents

- **International Journals**: 100+, **Conference Proceedings**: 100+,
- **Google Scholar Citations**: 7775, **H - Index**: 46
- **Patent Filed**: National - 3

Ph.D. Supervision

- **Completed**: 25, **Ongoing**: 11

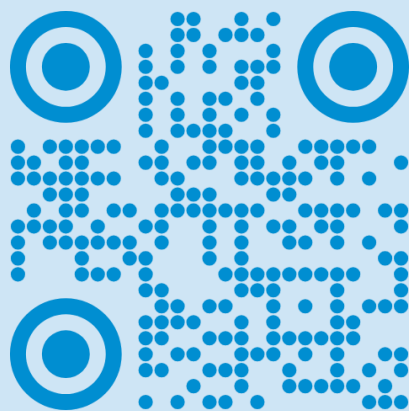
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<https://www.esi.iitb.ac.in/~rb>



Faculty Profile



Prof. Bhandari, Arihant

Research Interest

Energy conversion and storage, Multiscale modelling, Li-ion batteries, Atomistic simulations, Density Functional Theory, Electrochemistry, high-performance computing

Education

- **Ph.D.** from IIT Kanpur (2013-2019)
Topic: Computational modelling of battery materials & interfaces
- **B.Tech.** from IIT Kanpur (2009-2013)
Stream: Mechanical Engineering

Work Experience

- **Assistant Professor:** DESE, IIT Delhi, From December 2024
- **Post Doctoral Research Fellow:** at the University of Southampton as a part of the Multiscale Modeling (MSM) project of the Faraday Institution, (2019-2024)

Awards & Honors

- Academic Excellence award for the year 2009-2010 and 2010-2011 at IIT Kanpur, which is awarded to the top 10% students in a batch.
- Sri Binay Kumar Sinha Award for the best B. Tech. Project (which has industrial applicability and solves a problem affecting the common people) among all departments at IIT Kanpur.
- Best oral presentation in the International Meeting on Energy Storage Devices, 2018, held at IIT Roorkee.
- Award Best poster award in Paris International School on Advanced Computational Materials Science (PISACMS) 2023 held from August 28th to September 1st, 2023.

Publications & Patents

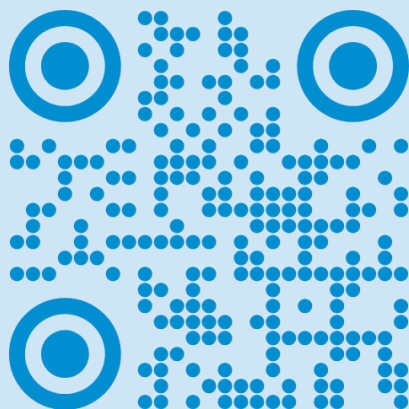
- **International Journals:** 22
- **Google Scholar Citations:** 665
- **H - Index:** 13, **i-index:** 14
- **Patent Filed:** National - 1

Contact Details

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[https:// web.iitd.ac.in/~arihant](https://web.iitd.ac.in/~arihant)



Faculty Profile



Prof. Chattopadhyay, S. K.

Research Interest

DC microgrid for renewable integration, power electronic converter for solar PV system, modulation and control of power electronic converters.

Education

- **Ph.D.** from IIT Kharagpur, India, 2016
Topic: Topology, Modulation and Control of Multilevel Inverters for Renewable Energy Applications
- **M.Tech.** in Industrial Electrical Systems from NIT Durgapur, India, in 2006

Work Experience

- **Associate Professor:** DESE, IIT Delhi, March. 2025 to Present
- **Assistant Professor:** DESE, IIT Delhi (June. 2018 - March 2025)
- **Post-Doctoral Fellow:** IIT Kharagpur, India (2016-2018)
- **Scientist:** ABB Corporate Research Centre, Chennai (2015-2016)
- **Sr. Design Engineer-Power Electronics:** Larsen & Toubro Ltd. (2008-2010)
- **Design Engineer-Power Electronics:** Larsen & Toubro Ltd. (2007-2008)
- **Post Graduate Engineer Trainee:** Larsen & Toubro Ltd. (2006-2007)

Awards & Honors

- **Honor:** Associate Editor- IEEE Journal JESTIE (Impact Factor-4)

Publications & Patents

- **Journals:** International 17
- **Conference:** International 34
- **Google Scholar Citations:** 943; **h-Index:** 14; **i10-index:** 21
- **Patents:** 3 granted, 7 filed

Ph.D. Supervision

- **Completed:** 3
- **Ongoing:** 7

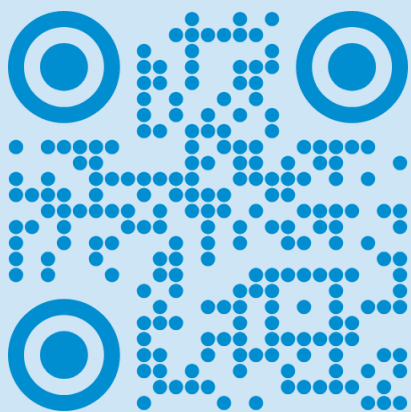
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INDIA



<https://dese.iitd.ac.in/faculty-profile/5>



Faculty Profile



Prof. Dutta, Subhendu

Research Interest

Power Circuit Topology, Control Strategy Design and Efficiency Improvement of Power Electronic Converters for Solar PV and Fuel Cell Applications.

Education

- **Ph.D.** from IIT Bombay in 2019.
Topic: Grid Connected Single Phase Transformer less Power Electronic Interfaces for Solar Photovoltaic Systems.
- **M.Tech** from Jadavpur University, WB, in 2012.
- **B.Tech.** from West Bengal University of Technology, WB, in 2009.

Work Experience

- **Assistant Professor:** DESE, IIT Delhi, January 2020 - till date.
- **Assistant Professor:** Dept. of EE, IIT (BHU), July - November 2020.
- **Project Manager:** NCPRE, IIT Bombay April 2019 - June 2020.
- **Assistant Professor:** Dept. of EE, CEMK, WB, July 2012 - December 2013.

Awards & Honors

- Senior Member IEEE (USA) from 2023.
- Excellence in Ph.D. Research Award in 2020.

Publications & Patents

- International Journals: 5
- Conference Proceedings: 8
- Google Scholar Citations: 229
- H - Index: 5
- Patent Filed: National - 1, International - 0

Ph.D. Supervision

- Completed: 0
- Ongoing: 5

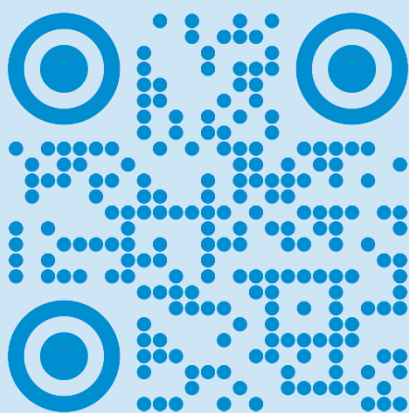
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INDIA



<https://subdut87.wixsite.com/subhendu>



Faculty Profile



Prof. Goyal, Rahul

Research Interest

Off-design and Transient Operations of Hydraulic Machines, Wind Turbines, Wind Energy Forecasting, CFD and FSI analysis

Education

- **Ph.D.** from IIT Roorkee and LTU Sweden in 2017
Topic: Investigations on Hydraulic Turbine Transient Operations
- **M.Tech.** from IIT Roorkee in 2013
Stream: Hydro-Mechanical
- **B.Tech.** in Mechanical Engineering from U.P.T.U Lucknow, in 2008

Work Experience

- **Associate Professor:** DESE, IIT Delhi, Nov. 2024 to Present
- **Assistant Professor:** DESE, IIT Delhi, June 2019 to Nov. 2024
- **Assistant Professor:** Mechanical, NIT Patna, Nov. 2018 to June 2019
- **Post-Doctoral Fellow:** LEGI, Grenoble-INP, France, 2018
- **Research Associate:** MIED, IIT Roorkee, 2017
- **Visiting Researcher,** NTNU Norway, 2015

Awards & Honors

- Member/Expert of Indo-US Renewable Energy Technology Action Platform (RETAP)-MNRE, TA 3: Offshore/Nearshore Wind Energy
- Nominated as member/expert, R&D Council of NIWE, MNRE (GoI)
- Principle Member of IS/IEC 61400-26-1:2019, Wind Turbines Sectional Committee (ETD-42) of the Bureau of Indian Standards (BIS)

Publications & Patents

- **International Journals:** 32
- **Conference Proceedings:** 26
- **Google Scholar Citations:** 1146
- **H - Index:** 17
- **Patent Filed:** National - 1, International - 0

Ph.D. Supervision

- **Completed:** 1
- **Ongoing:** 8

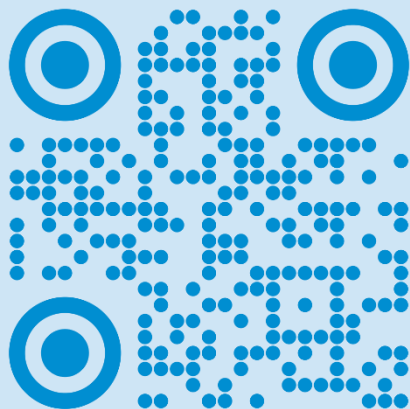
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INDIA



<https://hwpliitd.wixsite.com/my-site>



Faculty Profile



Prof. Kar, Satyananda

Research Interest

Thermal plasma (Waste to energy, CO₂ conversion to fuel), non-thermal plasma (Biomedical applications, waste-water treatment, food technology applications)

Education

- **Ph.D.** from Institute for Plasma Research, Gandhinagar in 2011
Topic: Excitation of electrostatic waves in plasma
- **M.Sc.** in Physics from Utkal University, Bhubaneswar, in 2004

Work Experience

- **Associate Professor:** DESE, IIT Delhi, August 2022 to Present
- **Assistant Professor:** DESE, IIT Delhi, October 2016 to August 2022
- **Post Doctoral Fellow:** Department of Mechanical Science and Engineering, Nagoya University, 2014-2016
- **Post Doctoral Fellow:** Institute for Plasma Research, Gandhinagar, 2011-2013

Awards & Honors

- VBL Research Fellowship
- DAIKO Foundation Research Fellowship

Publications & Patents

- **International Journals:** 37
- **Conference Proceedings:** 06
- **Google Scholar Citations:** 469
- **H - Index:** 12

Ph.D. Supervision

- **Completed:** 4
- **Ongoing:** 6

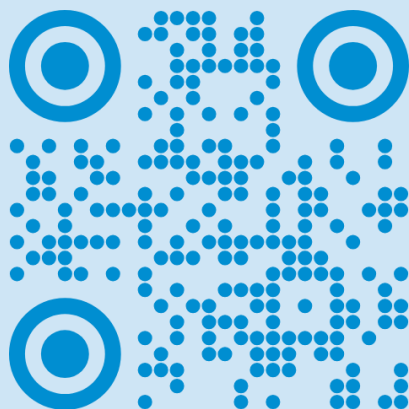
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INDIA



<https://web.iitd.ac.in/~satyananda>



Faculty Profile



Prof. Karak, Supravat

Research Interest

Organic electronics, Organic/Perovskite/Hybrid Photovoltaics, Quantum materials and devices, Photodetectors, Wearable sensors

Education

- **Ph.D.** from IIT- Kharagpur in 2011
- **M.Sc.** in Physics from IIT- Kharagpur in 2007
- **B.Sc.** in Physics from Vidyasagar University in 2005

Work Experience

- **Associate Professor:** DESE, IIT Delhi, 2022 to Present
- **Assistant Professor:** DESE, IIT Delhi, 2016 to 2021
- **Post Doctoral Fellow:** Nagoya University, Japan 2015-2016
- **Post Doctoral Fellow:** University of Massachusetts, USA 2012-2015

Awards & Honors

- JSPS invitational fellow
- Visiting faculty, Nagoya University, Japan
- Early Career Research Award
- University Gold Medal

Publications & Patents

- **International Journals:** 74
- **Conference Proceedings:** 30
- **Google Scholar Citations:** 1381
- **H - Index:** 19
- **Patent Filed:** International - 5

Ph.D. Supervision

- **Completed:** 7
- **Ongoing:** 6

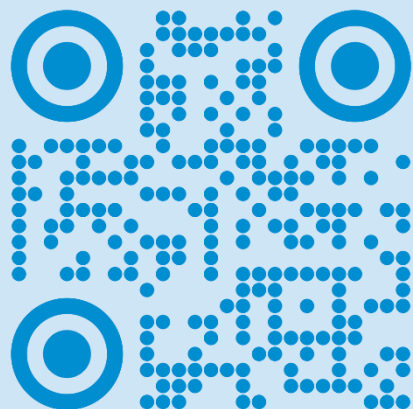
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INDIA



<https://supravatk.wixsite.com/ohedl>



Faculty Profile



Prof. Komarala, Vamsi K

Research Interest

Silicon Hetero-Junction Solar Cells Fabrication and Characterization.

Education

- **Ph.D.** from IIT Delhi in 2004
Topic: Thin-film Heterojunction Solar Cells
- **M.Tech** from Jadavpur University, Kolkata, in 1999
Stream: Energy Science and Technology
- **M.Sc.** in Physics from Sri Venkateswara University, Tirupati, in 1996

Work Experience

- **Professor:** DESE, IIT Delhi, 2019 to Present
- **Associate Professor:** DESE, IIT Delhi, 2014 to 2019
- **Assistant Professor:** DESE, IIT Delhi, 2010 to 2014
- **Research Associate:** Dept. of Physics, University of Arkansas, USA, 2007-2010
- **Post Doctoral Fellow:** School of Physics of Trinity College Dublin, 2004-2007

Awards & Honors

- Solar Challenge Award for Developing High Efficiency Silicon Heterojunction Solar Cells.
- International Photovoltaic Science and Engineering Advisory Committee member

Publications & Patents

- International Journals: 85
- Conference Proceedings: 12
- Google Scholar Citations: 2528
- H - Index: 29
- Patent Filed: 5

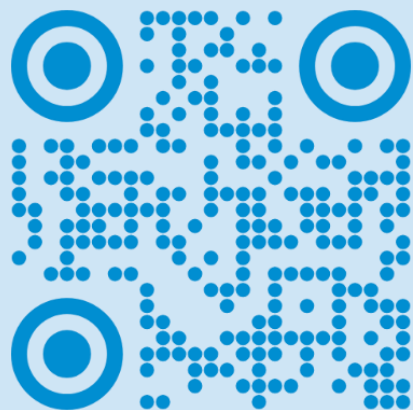
Ph.D. Supervision

- Completed: 10
- Ongoing: 5

Contact Details

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[https:// web.iitd.ac.in/~vamsi](https://web.iitd.ac.in/~vamsi)



Faculty Profile



Prof. Kumar, Ravi K.

Research Interest

Solar energy forecasting, Solar thermal energy systems, Concentrating solar power, thermal energy storage, desalination, Solar Industrial process heating, Hydrogen energy

Education

- **Ph.D.** from IIT Madras in 2012
Topic: Energy efficient receivers for line focus CSP system
- **M.Tech** from Government College of Technology, Coimbatore, Tamil Nadu in 2006

Work Experience

- **Associate Professor:** DESE, IIT Delhi, April 2022 to Till Date
- **Assistant Professor:** DESE, IIT Delhi, November 2016 to March 2022
- **Scientist:** ABB CRC, Bengaluru, March 2014 to October 2016
- **Associate Scientist:** ABB CRC, Bengaluru, July 2013 to February 2014
- **Post-Doctoral Fellow:** ABB CRC, Bengaluru, July 2012 to June 2013

Awards & Honors

- **Award:** Extra Miler Award at ABB CRC, Bengaluru, 2014

Publications & Patents

- **International Journals:** 70
- **Conference Proceedings:** 50
- **Google Scholar Citations:** 2436
- **H Index:** 21; **I index:** 36
- **Patents:** Granted – 6, Filed – 3

Ph.D. Supervision

- **Completed:** 6
- **Ongoing:** 10

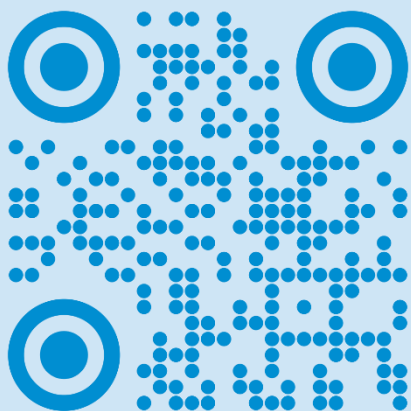
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<https://dese.iitd.ac.in/faculty-profile/10>



Faculty Profile



Prof. Kumar, Vipin

Research Interest

Sodium-Sulfur Batteries, Sodium-Ion Batteries, Dual-ion Batteries, Battery Diagnostics, Supercapacitors, and Flexible Energy Harvesting Devices

Education

- **Ph.D.** from NTU Singapore 2016
Topic: Molybdenum Oxide-based Electrochemical Energy Storage Devices
- **M. Tech** from IIT Delhi 2011
Stream: Solid-State Materials, Physics
- **M.Sc.** in Physics from CCS University, Meerut, 2007

Work Experience

- **Associate Professor:** DESE, IIT Delhi, November 2024 to Present
- **Assistant Professor:** DESE, IIT Delhi, May 2020 to November 2024
- **Assistant Professor:** SBS, IIT BBS, June 2019 to March 2020
- **Scientist-I:** IMRE, ASTART, Singapore, July 2017 to May 2019
- **Postdoctoral Fellow:** NTU Singapore, March 2016 to June 2017
- **Research Associate:** NTU Singapore, June 2015 to February 2016

Awards & Honors

- Gold Medal, CCS University
- Inspire Faculty Award, DST
- Teaching Excellence Award, IIT Delhi

Publications & Patents

- **International Journals:** 62
- **Google Scholar Citations:** 4262
- **H-Index:** 33
- **Patent Filed:** National - 17, International (Granted) - 4

Ph.D. Supervision

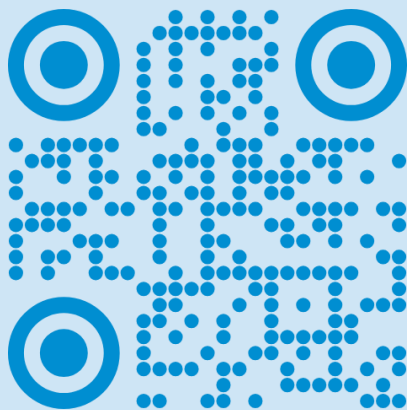
- **Completed:** 01
- **Ongoing:** 14

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<https://web.iitd.ac.in/~vkumar>



Faculty Profile



Prof. Mohanty, Rabindra

Research Interest

Power systems protection and operation with renewable energy integration, time-domain protection, microgrids.

Education

- **Ph.D.** from IIT Kharagpur in 2018
Topic: Protection and Fault Location for DC Microgrids
- **M. Tech** from IIT Kharagpur in 2014, Stream: Power and Energy Systems
- **B. Tech.** in Electrical Engineering from Veer Surendra Sai University of Technology, Burla, Sambalpur, Odisha in 2011.

Work Experience

- **Assistant Professor:** DESE, IIT Delhi, May 2023 to present.
- **Assistant Professor:** EE, IIT (BHU) Varanasi, May 2022 to May 2023.
- **Assistant Professor:** EEE, BITS Pilani, June 2021 to May 2022.
- **Post Doctoral Fellow:** Chalmers University of Technology, Sweden, 2018-2021.
- **Senior R&D Engineer:** ABB India, Bangalore, 2018.
- **Senior Engineer:** Adani Power Limited, 2011-2012.

Awards & Honors

- POWERGRID-IEEE India Council Excellence Award 2023.
- INAE Young Engineer Award 2022, Indian National Academy of Engineering (INAE), New Delhi, India.
- POSOCO Power Systems Award 2019 (currently, Grid India Power System Award) for Ph.D. Thesis in doctoral category, New Delhi, India.
- POSOCO Power Systems Award 2015 (currently, Grid India Power System Award) for M.Tech. Thesis, New Delhi, India.
- INAE Young Associate, New Delhi, INDIA (Since 2022)
- Senior Member, IEEE, USA (since 2023)

Publications & Patents

- **International Journals:** 16
- **Conference Proceedings:** 18
- **Google Scholar Citations:** 811
- **H - Index:** 11, **i10-index:** 13

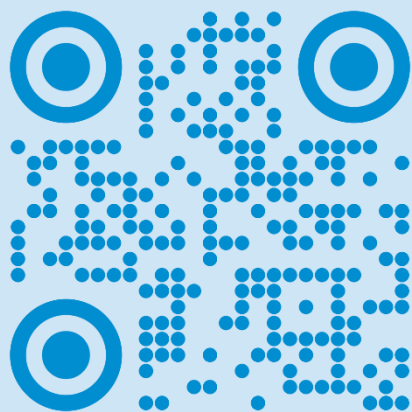
Ph.D. Supervision

- **Ongoing:** 4

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<https://sites.google.com/view/assistant-professor-iit-delhi>



Faculty Profile



Prof. Narayanan, Ramesh

Research Interest

Plasma Sources (ECR / μ -wave / RF / DC) and their characterization for various applications of national and societal importance, tokamak plasmas, time-series analysis, waste-to-energy and plasma chemistry

Education

- **Ph.D.** from Saha Institute of Nuclear Physics (regd. from Jadavpur University) in 2007, Topic: Investigations of high energy electrons and their implications in the SINP tokamak
- **Post M.Sc.** from Saha Institute of Nuclear Physics in 1999
Stream: Physics
- **M.Sc.** from University of Calcutta in 1998, Stream: Physics
- **B. Sc.** in Physics (Hons) from University of Calcutta in 1996

Work Experience

- **Professor:** DESE, IIT Delhi, December 2022 to date
- **Associate Professor:** DESE, IIT Delhi, December 2016 to December 2022
- **Assistant Professor:** DESE, IIT Delhi, December 2011 to December 2016
- **Assistant Professor (On contract):** DESE, IIT Delhi, May 2010 to November 2011
- **Post Doctoral Fellow:** Instituto Nacional de Pesquisas Espaciais [I.N.P.E.], SJC, SP, Brazil, May 2008 to April 2010
- **Post Doctoral Fellow:** Institute for Plasma Research, August 2007 to April 2008

Publications & Patents

- International Journals: 25
- Conference Proceedings: 79
- Google Scholar Citations: 319
- h-index: 9

Ph.D. Supervision:

- Completed: 5
- Ongoing: 5

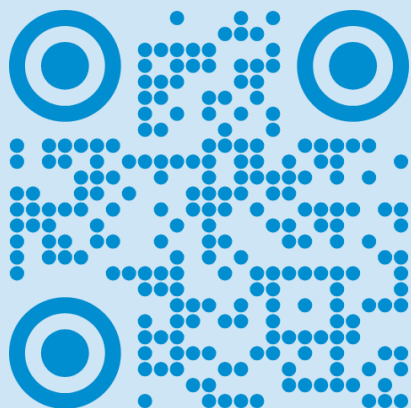
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<https://plasmalabiitd.in/>



Faculty Profile



Prof. Panigrahy, Snehasish

Research Interest

Combustion, Chemical Kinetics, Renewable Energy, Radiation, Fluids and Thermal Engineering, Computational Fluid Dynamics

Education

- **Ph.D.** from IIT Guwahati in 2018
Topic: Combustion in Porous Inert Burners
- **M.Tech** from IIT Guwahati in 2014
Stream: Mechanical Engineering
- **B.Tech** Veer Surendra Sai University of Technology (Formerly UCE), Burla, in 2012

Work Experience

- **Assistant Professor:** DESE, IIT Delhi, April 2022 to present
- **Senior Research Scientist:** Collins Aerospace, Cork, Ireland, January 2022 to April 2022
- **Post-Doctoral Research Associate:** National University of Ireland, Galway, August 2018 to December 2021

Publications & Patents

- **International Journals:** 28
- **Conference Proceedings:** 11
- **Google Scholar Citations:** 1667
- **H - Index:** 23
- **Patent Filed:** National - 1

Ph.D. Supervision

- **Ongoing:** 5

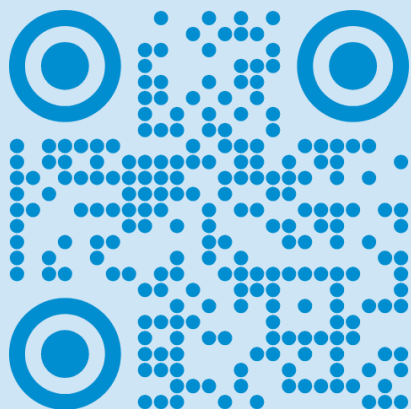
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Faculty Profile



Prof. Rakshit, Dibakar

Research Interest

Energy Storage Devices, Building Energy Efficiency, Batteries, Oil & Gas Technologies, Hydrogen Technologies, Energy Transition & Policies

Education

- **Ph.D.** from The University of Western Australia in 2012
Topic: Thermodynamic analysis of two-phase fluids
- **M.S.(R)** from IIT Madras in 2004
Topic: Multi-criteria optimization of conjugate convection
- **B.E. (Honors)** from Pt. RSSU in Mechanical Engineering in 2000

Work Experience

- **Professor:** IIT Delhi Abu Dhabi, UAE, June 2024 to Present
- **Professor:** DESE, IIT Delhi, December 2023 to Present
- **Associate Professor:** DESE, IIT Delhi, March 2019 to December 2023
- **Assistant Professor:** DESE, IIT Delhi, September 2014 to March 2019
- **Research Fellow:** CSIRO, New South Wales, Australia, 2013-2014
- **Research Associate:** Curtin University, Perth, Australia, 2011-2013
- **CFD Engineer:** Cummins Inc., India, 2005-2007

Awards & Honors

- Visiting Research Fellow, NTU Singapore
- Visiting Research Fellow, NCUT Taiwan
- Endeavor International Postgraduate Research Scholarship, Australia

Publications & Patents

- **International Journals:** 125+; **Conference Proceedings:** 85+
- **Google Scholar Citations:** 3797
- **H - Index:** 35
- **Patent Filed:** National: 2 filed

Ph.D. Supervision

- **Completed:** 13
- **Ongoing:** 15

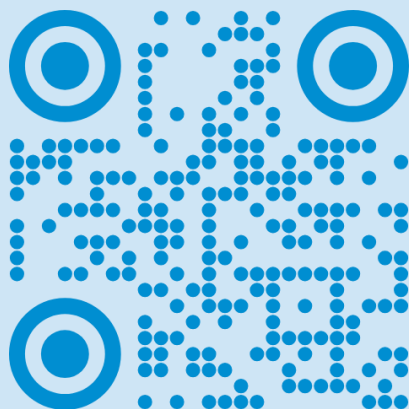
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Faculty Profile



Prof. Saha, Kaushik

Research Interest

Spray applications in Energy & Environment Sector.

Education

- **Ph.D.** from University of Waterloo, Canada, in 2014
Topic: Modeling of Cavitation in Diesel Injectors
- **M.S** from University of Connecticut, USA in 2009
Topic: Modeling thermos-physical evolution of ceramic particles and ceramic solution droplets in microwave excited plasma
- **B. Tech** in Mechanical Engineering from Jadavpur University in 2007

Work Experience

- **Associate Professor:** DESE, IIT Delhi, November 2024 to Present
- **Assistant Professor:** CES/DESE, IIT Delhi, June 2018 to November 2024
- **Assistant Professor:** Mechanical Engineering, Bennett University, India, December 2017 to May 2018
- **Post Doctoral Fellow:** Argonne National Laboratory, USA, 2014-17

Awards & Honors

- **Awards:** 3

Publications & Patents

- **International Journals:** 23
- **Conference Proceedings:** 34
- **Google Scholar Citations:** 781
- **H - Index:** 15

Ph.D. Supervision

- **Completed:** 3
- **Ongoing:** 5

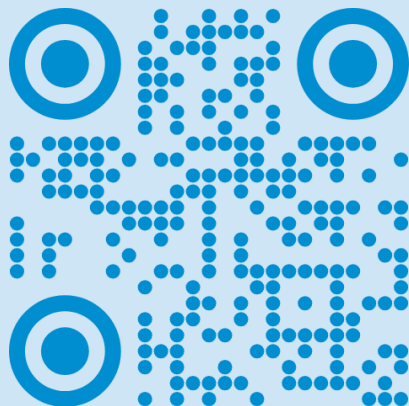
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Faculty Profile



Prof. Sahu, Bibhuti Bhusan

Research Interest

Plasma devices and plasma monitoring tools, Plasma processes for energy, optical and bio-materials, plasma technologies for energy, healthcare and electronic devices

Education

- **Ph.D.** from IIT- Delhi in 2008
- **M.Sc.** in Physics from Utkal University, Bhubaneswar, 1999
- **B.Sc.** in Physics from Utkal University in 1997

Work Experience

- **Associate Professor:** DESE, IIT Delhi, November 2020 to Present
- **Designated Professor:** Nagoya University, Japan
October 2019 to November 2020
- **Research Professor:** Sungkyunkwan University, South Korea
January 2014- June 2019
- **Senior Researcher: National Fusion Research Institute (NFRI),**
South Korea October 2012- December 2013
- **Assistant and Associate Professor:** Dronacharya College of Engineering,
Gurgaon Sept 2009-Sept 2012
- **Project Scientist:** IIT Delhi Sept 2007-Sept 2009

Awards & Honors

- Member of International Scientific Committee (AEPSE since 2021)
- Award: Best faculty award for the academic year 2010 – 2011 at DCE, Gurgaon, India
- Society Membership: Plasma Science society of India (PSSI), Life member since 2007

Publications & Patents

- **International Journals:** 60
- **Conference Proceedings:** 04
- **Google Scholar Citations:** 1243
- **H - Index:** 22
- **Patent Filed:** Indian - 2

Ph.D. Supervision

- **Ongoing:** 5

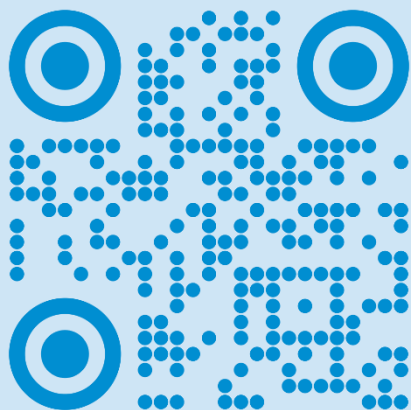
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Faculty Profile



Prof. Sahu, Debaprasad

Research Interest

Low Temperature plasma, Plasma Thruster, Negative Ion Plasma, ECR Plasma and Plasma Spectroscopy

Education

- **Ph.D.** from IIT Kanpur in 2013
Topic: Physics of negative ion containing plasma
- **M.Sc.** from IIT Roorkee, in 2006
Stream: Physics
- **B.Sc.** in Physics (Hons) from Calcutta University, in 2004

Work Experience

- **Associate Professor:** DESE, IIT Delhi, July 2023 to present
- **Assistant Professor:** DESE, IIT Delhi, August 2016 to June 2023
- **Post Doctoral Fellow:** DESE, IIT Delhi, June 2015 to July 2016
- **Assistant Professor:** SAS, VIT Vellore, July 2014 to May 2015
- **Lecturer,** RGUKT Basar, October 2013 to June 2014

Publications

- **International Journals:** 17
- **Conference Proceedings:** 2
- **Google Scholar Citations:** 170
- **H - Index:** 9

Ph.D. Supervision

- **Completed:** 2
- **Ongoing:** 5

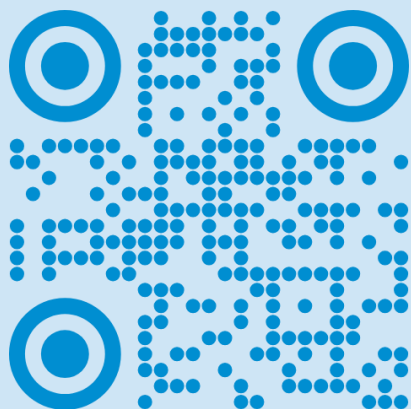
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Faculty Profile



Prof. Singh, Trilok

Research Interest

Perovskite based thin films solar cells for building integrated PV applications, green hydrogen and Recycling of End-of-Life solar panels.

Education

- **Ph.D.** from IIT Delhi in 2012
- **M.Tech.** from SGSITS, Indore, MP, in 2007
- Stream: Opto-Electronics (Optical Communications)

Work Experience

- **Associate Professor:** DESE, IIT Delhi, May 2023 to Present
- **Visiting Professor:** Hankyong National University, South Korea, May -June 2024
- **Visiting Professor:** Hankyong National University, South Korea, June-July 2025
- **Assistant Professor:** SES&E, IIT Kharagpur, March 2018 to May 2023
- **Researcher:** Toin University of Yokohama Japan, 2017-2018
- **JSPS Fellow:** Toin University of Yokohama, Japan, 2015-2017
- **Post-Doctoral Fellow:** University of Cologne, Germany, 2011-2015

Awards & Honors

- **Award:** Japan Society for the Promotion of Science (JSPS)
- **Award:** Faculty excellence award 2022, IIT Kharagpur for excellence in Teaching, Research and Administration
- Appeared in top 2% scientist list (2020, to 2024) from Stanford

Publications & Patents

- **International Journals:** 80, **Conference Proceedings:** 10
- **Google Scholar Citations:** 3700, **H - Index:** 30
- **Patent Filed:** National – 5 (01 granted), International - 0

Ph.D. Supervision

- **Completed:** 8
- **Ongoing:** 10

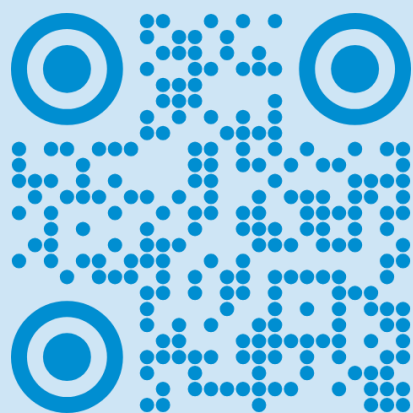
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Faculty Profile



Prof. Subramanian, K. A.

Research Interest

Internal Combustion Engines, Hydrogen Energy, and Fuel Cells

Education

- Ph.D. from IIT Madras, 2002
- M.E. from Anna University, 2018, First Class with Distinction, 1998
- B.E. from Bharthiyar University, 1995, First Class with Distinction, 1995

Work Experience

- **Professor:** DESE, IIT Delhi, at present
- **Assistant and Associate Professor:** CES/DESE, IIT Delhi, 2006 to 2018
- **Scientist-C:** Indian Institute of Petroleum, Dehradun, 2001-2006

Awards & Honors:

- The top 2% scientists rated Stanford University for the past five years, from 2020 to 2024.
- Best paper award from ISME (2024), Best poster Award from Sustainable Energy Theme (2022), Best Research Paper Award from 11th International Energy, Energy and Environment Symposium (2019), Best Poster Award from ISFL-2018, Best Poster Award from SBP2021, Best industry award given by FITT for Ph.D. thesis.

Publications & Patents

- **International Journals:** more than 90
- **Conference:** More than 110
- **Google Scholar Citations:** 7703
- **H-Index:** 47
- **I-10 Index:** 99
- **Patent Awarded:** 02

Ph.D. Supervision

- **Completed:** 18; **Ongoing:** 09
- **M.Tech. Supervision:** 85 Completed; **Ongoing:** 05
- **B.Tech. Project supervision:** 06 Completed; **Ongoing:** 06

Book Publications

- K. A. Subramanian, Biofueled Reciprocating Internal Combustion Engines, CRC Press, 2017
- (ii) M.K.G. Babu and K. A. Subramanian, Alternative Transportation Fuels: Utilization in Combustion Engines, CRC Press, 2013

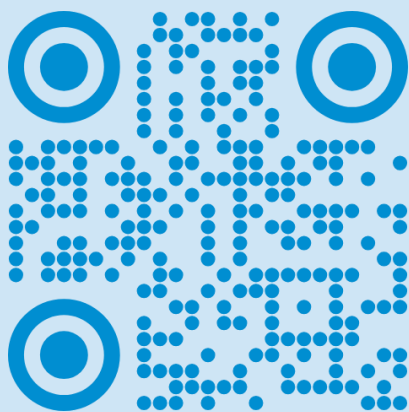
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Faculty Profile



Prof. Tripathi, Avanish

Research Interest

Power electronics, Electric transportation, wind & solar power generation, high-power & high-speed motor drives, pulse width modulation techniques.

Education

- **M.S. & Ph.D.** from IISc Bangalore in 2017
Topic: Low switching frequency PWM for IM drives
- **B. Tech.** in Electrical Engineering from IIT(BHU), Varanasi in 2009

Work Experience

- **Assistant Professor:** DESE, IIT Delhi, October 2022 to Present
- **Assistant Professor:** EE, IIT Roorkee, June 2020 to October 2022
- **Validation Engineer:** Texas Instruments, Bangalore, 2019 to 2020
- **Assistant Manager:** Delta Electronics, Bangalore, 2017 to 2019

Awards & Honors

- Employee of the Quarter, Delta Electronics, Bangalore - 2019

Publications & Patents

- **International Journals:** 9
- **Conference Proceedings:** 25
- **Google Scholar Citations:** 350
- **H - Index:** 8
- **Patent Filed:** National - 3

Ph.D. Supervision

- **Ongoing:** 4

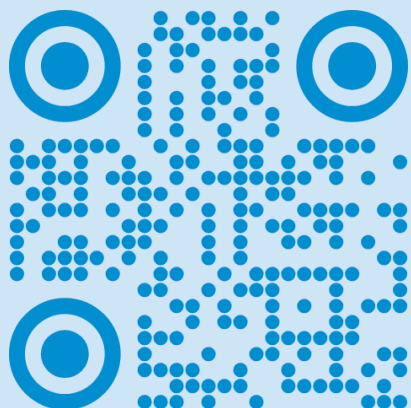
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Faculty Profile



Prof. Tyagi, S. K.

Research Interest

Solar-Biomass Hybrid Systems; Processed Biomass to Smoke-free Cooking/ Heating Systems; Biomass to Value Added Products; Impacts of Pollutants to Human Health & Environment; Biomass-Coal Cofiring in Thermal Power Plants; Underground Structures for Army Applications.

Education

- **Ph.D.** from CCS University, Meerut, 2002
Topic: Application of Finite Time Thermodynamics & Second Law Evaluation of Thermal Energy Conversion Systems
- **M.Sc.** in Physics from CCS University, Meerut, in 1995

Work Experience

- **Professor:** DESE, IIT Delhi, Nov. 2024 to Present
- **Associate Professor:** DESE, IIT Delhi, April 2017 to Nov. 2024
- **Scientist E/Director:** SSS-National Institute of Renewable Energy, Kapurthala, Punjab (March 2011 to April 2017)
- **Assistant Professor:** SMVDU, Katra (Nov. 2008 - March 2011)
- **Invited Scientist:** Korea Institute of Energy Research, 2007-2008
- **Post-Doctoral Fellow:** The Hong Kong Polytechnic University, Hong Kong (2005-2007)
- **Post-Doctoral Fellow:** Institute of Refrigeration & Cryogenics, Zhejiang University, Hangzhou, China (2004-2005)
- **Post-Doctoral Fellow:** School of Physics Xiamen University, Xiamen China (2002-2004)

Awards & Honors

- **Award:** Translational Research Award, Global Bio-India 2024
- **Honor:** Top 2% Global Scientist in Energy; 2020-2024

Publications & Patents

- **Books:** Completed - 4, On-Going - 1; Books Chapter - 11
- **Journals:** International - 170; National - 10
- **Conference:** International - 45, National - 14
- **Google Scholar Citations:** 11,239; **h-Index:** 48; **i10-index:** 122
- **Patents:** Granted - 1, Filed - 4

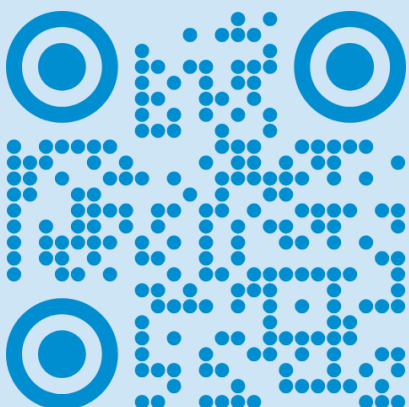
Ph.D. Supervision

- **Completed:** 15
- **Ongoing:** 7

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Faculty Profile



Prof. Uma, R.

Research Interest

Nonlinear Phenomena in Plasma Physics, Laser-Plasma, nonlinear e.m. wave interactions with Plasmas and Nonlinear Dynamical aspects of magnetic confinement.

Education

- **Ph.D.** from St. Stephen's college, Delhi in 1989
- **M.Sc.** from St. Stephen's college, Delhi in 1981
- **B.Sc.** from St. Stephen's college, in 1979

Work Experience

- **Professor:** DESE, IIT Delhi, January 2023 to Present
- **Associate Professor:** DESE, IIT Delhi, January 2014 to December 2023
- **Assistant Professor:** DESE, IIT Delhi, January 2006 to December 2014
- **Royal Commission Postdoctoral Scholarship:** Queen Mary College, London 1986-1988

Publications & Patents

- **International Journals:** 55
- **Conference Proceedings:** 17
- **Google Scholar Citations:** 451
- **H - Index:** 12

Ph.D. Supervision

- **Completed:** 25
- **Ongoing:** 0

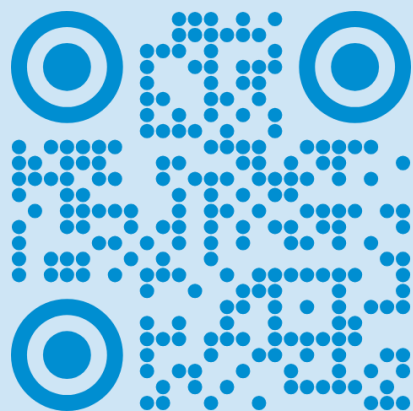
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Faculty Profile



Prof. Verma, Ashu

Research Interest

Power System Analysis and Optimization, Renewable Energy Integration, Microgrids, Decentralized Energy Solutions, Economic and Financing of Integrated Energy Systems

Education

- **Ph.D.** IIT Delhi, 2010, Transmission Network Expansion Planning
- **M.Tech** IIT Delhi, 2002, Power Systems
- **B.Tech.** in Electrical Engineering, NIT Hamirpur, 2001

Work Experience

- **Professor and Vice Provost:** Academics and Student Affairs, IIT Delhi - Abu Dhabi
- **Professor:** DESE, IIT Delhi, July 2023 to Present
- **Associate Professor:** DESE, IIT Delhi, August 2018 to July 2023
- **Assistant Professor:** DESE, IIT Delhi, July 2012 to August 2018
- **Assistant Professor:** Gautam Budh University, December 2010 to July 2012
- **Assistant Professor:** Teri University, July 2009 to December 2010

Awards & Honors

- Power Fellowship, SERB, 2024
- DST Young Scientist Award, SERB, 2013
- K.S. Prakasa Memorial Award for Highest CGPA in class in M.Tech, IIT Delhi
- Honors degree in B.Tech. and first position in class, NIT (Formerly REC) Hamirpur

Publications & Patents

- **International Journals:** 56
- **Conference Proceedings:** 50
- **Google Scholar Citations:** 2576
- **H - Index:** 25
- **Patent Filed:** National: 04, (02 awarded, 02 filed)

Ph.D. Supervision

- **Completed:** 16
- **Ongoing:** 8

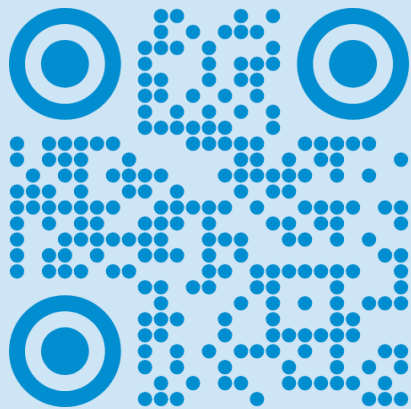
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<https://web.iitd.ac.in/~averma/>



Faculty Profile



Prof. Yadav, Sujeet

Research Interest

Combustion, High-fidelity Turbulence Modeling, Zero-carbon Fuels, CO₂ Capture and Sequestration (CCS)

Education

- **Ph.D.** from IIT (BHU) Varanasi in 2020
Topic: Computational Modeling of Oxy-fuel Combustion
- **M.Tech.** from IIT (BHU) Varanasi in 2014
Stream: Metallurgical Engineering
- **B.Tech.** in Mechanical Engineering G.B.T.U., Lucknow, in 2012

Work Experience

- **Assistant Professor:** DESE, IIT Delhi, October 2024 to till now
- **Post Doctoral Fellow:** Kyushu University Japan, Dec 2021 to Sept 2024

Publications & Patents

- **International Journals:** 15
- **Conference Proceedings:** 8
- **Google Scholar Citations:** 577
- **H - Index:** 9

Ph.D. Supervision

- **Ongoing:** 1

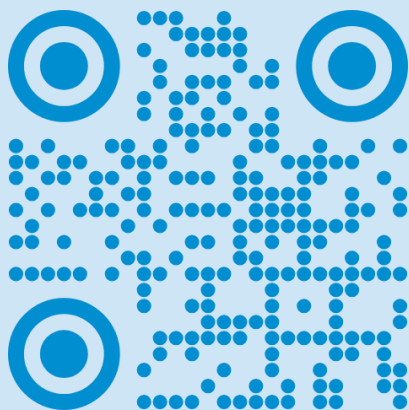
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<https://scholar.google.com/citations?user=CLHIKywAAAAJ&hl>



Energy Society



FACULTY ADVISOR



DR. KAUSHIK SAHA



“The future is eclectic. Don't throw away any idea because others think it is not cool. To fight global warming, climate change and environmental pollution, don't ban any ideas or technologies.”



Best Departmental Society Award



Energy Society has been crowned **the Best Departmental Society of IIT Delhi** for the tenure 2024-25, and we couldn't be more charged up! This recognition was proudly received during CAIC Night on 13th May 2025.





Recruiters



Deloitte.

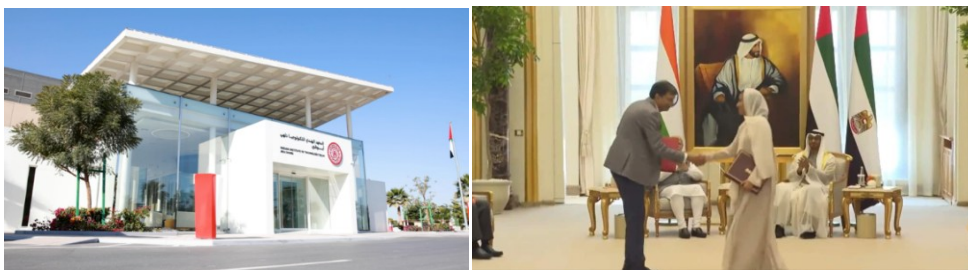


micron





IIT Delhi - Abu Dhabi



The first international campus of the Indian Institute of Technology Delhi (IIT Delhi) in Abu Dhabi began operations in January 2024. Profs. Ashu Verma, T.C. Kandpal, and K. A. Subramanian contributed significantly to the initial planning and curriculum development of the **Inaugural M.Tech. program in Energy Transition and Sustainability** that started in January 2024. Prof. Ashu Verma has been involved from the beginning (January 2023) as chairperson of the Committee for developing the structure and curriculum of academic programmes, and research verticals, for the area of Sustainable Energy, Environment and Climate Change and has been participating in planning and operationalising various activities of the new campus. She was appointed as Dean of Coordination (based in Delhi) in January 2024 and later seconded to the Abu Dhabi campus from July 2024, and was appointed as Vice Provost, Academics and Student Affairs. Profs. K. A. Subramanian, Vamsi K Komarala, Ramesh Narayanan, Kaushik Saha, Dibakar Rakshit, Rabindra Mohanty, Avanish Tripathi, have been deeply involved in the curriculum development of the **B.Tech. Program in Energy Engineering**, which started in September 2024, and Sare actively engaged in various ongoing activities such as laboratory and research developments, M.Tech., Ph.D. admissions, and faculty recruitments on a time-to-time basis.

Prof. Dibakar Rakshit has been seconded to the Abu Dhabi campus since July 2024, and Prof. K. Ravi Kumar from August 2025. Prof. Dibakar Rakshit serves as Deputy Provost, External Engagement, looking after various industrial and educational external engagement and outreach activities of the campus. In addition to the administrative and research responsibilities, DESE faculty is involved in teaching B.Tech. and M.Tech. programs and supervising Ph.D. (Energy and Sustainability) students at the Abu Dhabi Campus.

In near future some more faculty members from our department are expected to take part in the academic and research activities at the IIT Delhi – Abu Dhabi campus.



Contact Us

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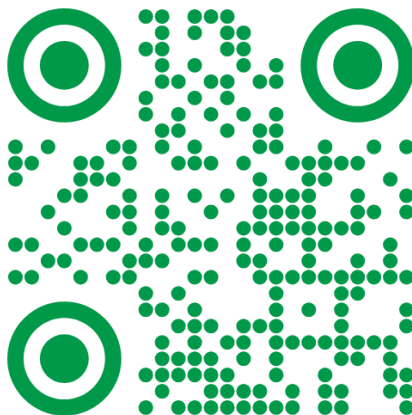
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First Graduating Batch of B.Tech., Convocation 2025



First Graduating Batch of M.S. (R), Convocation 2025



M.Tech. (ESN) Batch 2025, Convocation 2025



M.Tech. (ESR) Batch 2025, Convocation 2025