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h - Index: 31

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Citation (Premium): 3665

Education

PH.D. (Faculty of Engineering & Technology) — Dec. 2006
Punjab Technical University Jalandhar & IIP (CSIR) Dehradun, INDIA

M.TECH. (Surface Science & Tribo-Engineering) — June 1994
National Institute of Technology (NIT), Jamshedpur INDIA

M.SC. (Physics with Specialization in Electronics) — June 1990
Department of Physics, Ranchi University Ranchi, INDIA

B.SC. (Hons.) (Physics Honours, Chemistry and Maths) — May 1985
Department of Physics, LNMU KMNR Darbhanga, INDIA

Research Interests

- Polymer Synthesis through Cationic, Anionic, Group Transfer Polymerization, Ziegler Natta, Free Radical, Oxidative and Step Growth Polymerization aimed towards Phase, Luster, Shape, Size, and Structural Modifications.
- Synthesis and Fabrication of Polymer Derived Organic and Inorganic Binary/Ternary Nanostructured Active Materials (ETL/ EML/ HTL) for their Applications in Organic Sensors, Organic PVs and Organic LEDs.
- Synthesis and Fabrication of Polymer Derived Organic-Inorganic Nanostructured Composites for their Applications in the Dielectric Capacitors, Ultracapacitors and Electrochemical Capacitor's Electrodes.
- Synthesis and Fabrication of Organic Semiconductors π-Bonded Molecules/ Polymers as Conducting Organic Materials for their Applications in BJTs, JFETs, OFETs, OLEDs, OPVs and OSCs as well.
- Synthesis and Fabrication of Green Supercapacitor Electrode Materials from Porous Carbonic, Bio-Wastes, Agriculture-Wastes, Non-Edible Forest Agro-Products and Industrial Effluents for Ultracapacitors.
- Synthesis and Fabrication of the MXenes, CNTs and SVPs Derived Electrode Materials for Metallic Ion (Li-Ion & Na-Ion) Batteries to be used in Energy Storage Devices and Energy Storage Technology.
- Synthesis and Fabrication of the Green Precursors for Renewable and Sustainable Energy Materials aimed towards their Applications in the Energy Storage Devices and Energy Storage Technology as well.
- Electrical, Electronic, Thermal and Photophysical Investigation of Polymer Derived Nanocomposite Materials for their Applications in Organic Sensors, Photovoltaic Cells and Organic Light Emitting Diodes.

Professional Experience

Teaching (Ph.D., M.Tech. & B.Tech. Level) ~24 Years

- April 2021- To Continue: Associate Professor, Indian Institute of Technology, IIT (ISM) Dhanbad (JH) India 04 Years
- May 2010 - March 2021: Assistant Professor, Indian Institute of Technology, IIT (ISM) Dhanbad (JH) India 11 Years
- September 2004-April 2010: Assistant Professor, Haryana Engineering College, Yamunanagar (HR) India 06 Years
- December 2001-August 2004: Senior Lecturer, Institute of Engg. & Emerging Technology Solan (HPTU) Shimla India 03 Years

Research (IIT, NIT, University & CSIR Lab.) ~30 Years

- May 2010-To Continue: Nanostructured Composite Material Laboratory (NCML) IIT (ISM) Dhanbad, India 15 Years
- September 2004-April 2010: Research Coordinator Haryana Engineering College Yamunanagar (HR) India 06 Years
- November 2001-October 2002: Res. Scientist, Chemical Engg. National Institute of Technology Jalandhar India 01 Years
- January 1994-February 2001: Research Associate, Indian Institute of Petroleum (CSIR Lab.) Dehradun, India 08 Years

Recognitions/ Awards/ Fellowships

- Elsevier's Top 2% Researchers from Indian Scientist Award Conferred by Elsevier Society (192934)) 2024
- World's Top 2% Research Scientist Award Conferred by Stanford University, United Kingdom (UK) 2022
- Institute IMT Research Award (Indra Mohan Thapar Research Award) to the NCML Research Group 2022
- Prime Minister Research Fellowship Award, Govt. of India, New Delhi to the NCML Research Group 2020
- CEFIPRA Award (Raman-Charpak Fellowship, France) Lille University to the NCML Research Group 2019
- Institute IMT Research Award (Indra Mohan Thapar Research Award) to the NCML Research Group 2018
- Senior Contributing Editor Award, Colour Publication (Corporate Journal) Old Prabha Devi Mumbai 2005
- CSIR Research Associate Award, Indian Institute of Petroleum (IIP-CSIR Lab.) Mohkampur Dehradun 1995
- Jharkhand State Merit Fellowship, Department of Physics, Ranchi University (RU) Ranchi (Jharkhand) 1986

Research Projects & Consultancies

- DST-SERB: Robust Supercapacitive Performance of Nanostructured Matrix for Battery Replacement ~Rs. 29.97 L
- FRS (IIT-ISM): An Investigation on the Electrical and Electronic Properties of the Conductive Polymers ~Rs. 7.00 L
- TEQIP-III Project: Carbon Based Nanocomposites for Electrical, Electronic and Optoelectronic Devices ~Rs. 2.00 L
- SERB (SEMAD-2019): Sustainable Energy Material & Devices, Brain Storming STC, DST New Delhi ~Rs. 3.00 L
- ONGC (REMTAI-2016): Renewable Energy Materials in Academia & Industry, T. Bhawan, Dehradun ~Rs. 1.86 L
- MNRE (ANREMT-2015): Advances in New & Renewable Energy Material & Technology, New Delhi ~Rs. 5.00 L
- MSTRCS (NAIR-2008): Nanotechnology Applications in Industry & Research, Haryana Chandigarh ~Rs. 3.45 L

Deputation Abroad (Academic Visits)

- ❖ Faculty of Science (REN-2023), United Science Group (USG), Mercure (CDG) Paris, FRANCE October 2023
- ❖ Faculty of Science (AFM-2017), N. Campus University of California, Los Angeles (UCLA) USA August 2017
- ❖ Faculty of Science (EMR-2015), Complutense Public University, Madrid (CUM) Alcala SPAIN February 2015
- ❖ Faculty of Science (GSTF-2013), National University of Singapore (NUS) Forum SINGAPORE February 2013

Ph.D. Supervisions (Sole Guidance)

PH.D. Awarded: Twelve (12)

Dr. Jayanta Bauri: Investigation on Optoelectronic Features of gC_3N_4 and PCz-Based Nanocomposites As Emissive Layer Material for Blue OLED Application. Awarded: 2025

Dr. Sanjeev Kumar: Stannic Oxide Based Conducting Polymer Nanocomposites as Emissive Layer Materials for OLED Application. Awarded: 2024

Dr. Debashish Nayak: Conductive Polymer Based ZnS Composites as Hole Transport and missive Layers for Polymer Light Emitting Diodes Awarded: 2024

Dr. Gobind Mandal: Investigations on Conductive Polyaniline Derived Nanocomposites as Electron Transport Layer Materials for OLED Applications. Awarded: 2024

Dr. (Mrs.) Bela Purty: Carbonic and Non- Carbonic Filler Reinforced Polymeric Composite as Electrode Materials for Supercapacitor Applications. Awarded: 2021

Dr. Rajinder Singh Gill: Organic-Inorganic Hybrid Materials for their Application as Active Layer in Solar Cells. Awarded: 2021

Dr. Ajeet Kumar Verma: Investigation on Polymeric Nanohybrid Materials for the Optoelectronic Device Applications. Awarded: 2021

Dr. Mandira Majumder: Polypyrrole and Polyindole based Electrode Materials for Supercapacitor Applications. Awarded: 2021

Dr. Rohit Kandulna: Conductive Polymer-based Nanocomposites as Electron Transport Layer for the Organic Light Emitting Diodes. Awarded: 2020

Dr. Anukul Kishor Thakur: Organo-Inorganic Nanohybrid Electrode Materials for the Supercapacitor Applications Awarded: 2017

Dr. Pranabi Maji: An Investigation on PMMA based Polymeric Nanocomposites for the Energy Storage Applications. Awarded: 2017

Dr. Malati Manjhi: An Investigation on the Polyaniline (PANI) based Nanocomposites for Energy Storage Applications. Awarded: 2017

PH.D. Ongoing: Six (06)

Mr. Sarfaraz Ansari: Transition Metal Oxides (TMOs) based Polymeric Nanohybrid Materials for Supercapacitor Application. Pursuing 2019

Mr. Swagata Banerjee: Solid State Batteries (SSBs) for Energy Storage Devices and Environmental Protection Pursuing 2022

Mr. Batistalang Myrthong: Conducting Polymer-based Nanocomposite Materials for the Supercapacitor Application Pursuing 2022

Mr. Sandeepan Dutta: Polymeric Nanocomposites as Electrode Materials for the Supercapacitor Application. Pursuing 2023

Mr. Abhishek Kumar: Polymer Derived Conducting Nanocomposite Materials for the Optoelectronic Device Applications. Pursuing 2023

Mr. Pappu Kumar: Bio Resource Carbon Materials as Potentially Efficient Electrode for Supercapacitor Applications. Pursuing 2024

Research Collaborations (International)

- Fachbereich Physik, Universitat de Hamburg, UHH-MIN Jungiusstraße 9-11, 22607 Germany
- Faculty of Physics and Astronomy, College of Science; King Saud University (KSU), Saudi Arabia
- Faculty of Chemistry, University of Lille, CNRS France; Supercapacitor (Electrochemical Energy)
- Faculty of Engineering, Malaya University, KLMPR Malaysia; Surface Science & Interfacial Engg.
- Lodz University of Technology OPUS, NCN (OSF) Poland, Organic Optoelectronics (LED/QLED)

Research **Collaborations (National)**

- Department of Chemistry, Indian Institute of Technology-Banaras Hindu University (BHU) Varanasi
- Chemical & Material Science Division, Indian Institute of Petroleum (IIP) Mohkampur, Dehradun
- Functional Materials Group Department of Physics, National Institute of Technology (NIT) Rourkela
- Energy-Environment Centre, Department Chemical Engg. National Institute of Technology Jalandhar
- Centre of Excellence (Energy Storage) Department of Energy Scie. & Engg. Central University Ranchi
- Department of Physics, Muzaffarpur Institute of Technology Laxmi Chowk Brahmapura, Muzaffarpur
- Centre for Advanced Research in Polymeric Materials Laboratory (CARPM Lab.), CIPET Bhuvneshwar

Most Recent Research (SCI) Publications

Molecular Structure	2025	https://doi.org/10.1016/j.molstruc.2024.140471
Materials Research Bulletin	2025	https://doi.org/10.1016/j.materresbull.2024.113277
Future Batteries	2024	https://doi.org/10.1016/j.fub.2024.100010
Optical Materials	2024	https://doi.org/10.1016/j.optmat.2024.116120
Materials Science and Engineering-B	2024	https://doi.org/10.1016/j.mseb.2024.117650
Materials Science and Engineering-B	2024	https://doi.org/10.1016/j.mseb.2024.117271
Materials Science and Engineering-B	2024	https://doi.org/10.1016/j.mseb.2023.117118
Journal of Molecular Structure	2024	https://doi.org/10.1016/j.molstruc.2023.136199
Spectrochimica Acta Part-A	2023	https://doi.org/10.1016/j.saa.2023.123099
Optical Materials	2023	https://doi.org/10.1016/j.optmat.2023.114379
ACS Omega	2023	https://doi.org/10.1021/acsomega.3c03732
Optics & Electron	2023	https://doi.org/10.1016/j.ijleo.2023.171393
Spectrochimica Acta Part-A	2023	https://doi.org/10.1016/j.saa.2022.122162
Journal of Energy Storage	2023	https://doi.org/10.1016/j.est.2022.106446
Physical Chemistry Chemical Physics	2023	https://doi.org/10.1039/D3CP02637J
Physical Chemistry Chemical Physics	2023	https://doi.org/10.1039/D2CP03847A
Materials Science in Semiconductor Process.	2023	https://doi.org/10.1016/j.mssp.2022.107205
Journal of Materials Science	2023	https://doi.org/10.1007/s10853-023-08572-7
Microelectronics Reliability	2023	https://doi.org/10.1016/j.microrel.2023.114959
Spectrochimica Acta Part-A	2023	https://doi.org/10.1016/j.saa.2023.123099
Journal of Energy Storage	2022	https://doi.org/10.1016/j.est.2021.103912
Materials Science in Semiconductor Process.	2022	https://doi.org/10.1016/j.mssp.2021.106322
Polymer Bulletin	2022	https://doi.org/10.1007/s00289-021-03971-9
Optical Materials	2022	https://doi.org/10.1016/j.optmat.2022.112736
Inorganic Chemistry Communications	2022	https://doi.org/10.1016/j.inoche.2022.109824
Materials Science in Semiconductor Process.	2022	https://doi.org/10.1016/j.mssp.2022.107000

For viewing complete list of the research publications, please click the link → List of the Publications

Academic & Research Outputs

PH.D. Degree Awarded-12 (Twelve); PH.D. Currently Ongoing- 06 (Six); Total PH.D. Supervission-18 (Eighteen)
SCI Journals: 88; Corporate Journals-48; Conf. Proceedings-26; Book-1; Book Chapters-7; Patents-2
B.Tech. Project Dissertation Thesis-4; M.Tech. Project Dissertation Thesis-2, M.Sc. Project D. Thesis: 24

Professional Memberships

- Indian Technical Education Society (ITES) Life Member, New Delhi
- American Chemical Society (ACS) Omega, United States of America (USA)
- Global Science & Technology Forum (GSTF) Life Member, Singapore
- Tribology (AFs/ AWs/ EPs) Society of India (TSI), Life Member, Hyderabad
- Electrochemical Society of India, Life Member, Indian Institute of Science, Bangalore
- Laser Spectroscopy Society of India, Life Member, Banaras Hindu University, Varanasi

Administrative Responsibilities

- Department Faculty Recruitment Committee, Department of Physics, IIT (ISM) Dhanbad (JH)
- Hostel Superintendent (Hostel Warden), Topaz Residential Hostel, IIT (ISM), Dhanbad (JH)
- Faculty In-Charge, B. Tech. (Preparatory), Department of Physics, IIT (ISM), Dhanbad (JH)
- Faculty In-Charge, Preparatory (SC/ST/EWS) Department of Physics, IIT (ISM) Dhanbad (JH)
- University Flying Squad, B.E./B.Tech Semester Exams., Kurukshetra University Kurukshetra (HR)
- Centre Superintendent, B.E./ B.Tech. Semester Exams., Kurukshetra University, Kurukshetra (HR)
- Research Coordinator, Centre for Advanced Technology (CAT) Haryana Engineering College (HR)

Invited Talks/Guest Speakers

- Biomass/ Nature - Inspired Viable Electrode Materials for Electrochemical Energy Devices, AC2PM IIT Patna (08.12.2024)
- Nature-Inspired Carbon Electrode Materials as Green Precursors for Green Supercapacitors, E2M IIT Indore (12.07.2024)
- Mounting Horizon of Green Energy Material for Energy Storage Devices; REN-2023, Micrurus Paris, France (25.10.2023)
- Recent Advances in Energy and Information Storage Systems; Webinar, ATAL-FDP-2020, GEC Bikaner (RJ) (01.09.2020)
- The Journey of Energy and Information Storage Modes; Webinar, CSIR-SRTP-2020, ACBS Shirmour (HP) (05.07.2020)
- Challenges and opportunities in polymeric nanohybrid material for EOES devices; Web-AKSU Satna (MP) (03.07.2020)
- Geothermal energy: A reliable source of renewable and alternate energy system; (FDP-TEQIP) GEC Bikaner (18.12.2019)
- University education and research contribution to the energy security; ARES (FDP-TEQIP-III) GEC Bikaner (19.12.2019)
- Global Perspectives in Energy & Information Storage Materials & Devices; (ICC-2019), DOC-GEC Bikaner (15.10.2019)

- Energy & Information Storage Devices: Perspective in Materials & Technologies; (TEQIP) ABVIET Shimla (16.08.2019)
- Nano-Bio Materials & Bioluminescent Properties: Optics-Organisms; Appl. Physics (FDC-4), IIT Dhanbad (02.06.2018)
- Polymers for Electronic & Optoelectronic Devices: Recent Advances; Appl. Physics (FDC-3), IIT Dhanbad (01.05.2017)
- Polymeric Electronic Materials and High Frequency Energy Harvesting; Electronics (FDC-2), IIT Dhanbad (07.01.2017)
- Nano Filler Reinforced Polymeric Binary/Ternary Nanocomposites; Department of Physics, IIT Patna, BR (28.12.2016)
- Non-linearity in Carbon & Polymer Based Composite Materials; Physics (NDCA-2016) NIT Durgapur, WB (13.07.2016)
- Polymeric Contamination in Water-Mechanism of Remedial Action; Chemical Engineering, NIT Jalandhar, (21.06.2016)
- Polymeric Composite Materials & Laser Technology Applications; Appl. Physics (LTAE-16), ISM Dhanbad, (24.05.2016)
- Geothermal Energy: Green and Renewable Source of Energy; Applied Physics (FDC-1),IIT-ISM Dhanbad, (24.03.2016)
- Polymeric Nanocomposite Materials: Market & Technology; Mechanical Engineering, IIT-ISM Dhanbad, (21.09.2015)
- Dielectric Spectroscopy of Conductive Polymeric Materials; Applied Sciences, MMMUT Gorakhpur (UP) (27.03.2015)
- Polymeric Nanocomposite Materials & Energy Conversion Device; Physics, Jubilee College, Hazaribagh, (09.01.2015)
- Nanomaterials and Nanotechnology: The Current R & D Status; Department of Physics, IIT Roorkee, (22.02.2008)
- Functional Nanomaterials & its Applications in Electronic Devices; Department of Physics, IIT Roorkee, (26.05.2005)
- Recent Advances in Laser Technology and its Useful Applications; Applied Science, NITTTR Chandigarh, (16.03.2004)

Reviewer for Peer View SCI Journals

- Journal of Energy Storage (EST) Elsevier Publication
- Journal of Optical Materials (OM) Elsevier Publication
- Diamond & Related Materials Elsevier Publication
- Applied Energy Materials (AEM) ACS Publication
- Journal of Scientific Report (SCREP) Nature Publication
- Journal of Chemical Engg. (JCHE)) Springer Publication
- Journal of the SN Applied Science, Elsevier Publication
- Journal of Polymer Bulletin (JPBLT) Springer Publication

- Journal of Applied Surface Science, Elsevier Publication
- Journal of Material Letters (JMTLET) Elsevier Publication
- Journal of Ceramic International (JCI) Elsevier Publication
- Journal of Synthetic Metals (SYNMET) Elsevier Publication
- Journal of Polymer Research (JPOL), Springer Publication
- Bulletin of Electrical Engineering (BEE)) Springer Publication
- Journal of Electro-analytical Chemistry. Elsevier Publication
- Journal of Alloys and Composite (JALCOM) Elsevier Publication
- Journal of Material Research Bulletin (MRB) Elsevier Publication
- Journal of Material Science Electronics (MSE) Elsevier Publication
- Journal of Processing and Application of Ceramics (PAC) Publication
- Journal of Nanostructures in Chemistry (JNSC), Springer Publication
- Journal of ACS Applied Energy, American Chemical Society Publication
- International Journal for Light and Electron Optics, Elsevier Publication
- International Journal for Physics & Chemistry of Solid, Elsevier Publication