Prof. Kusum Kumari
Professor,
Department of Physics and Astronomical Sciences,
Central University of Jammu,
Bagla Suchani, Jammu, J&K 181143, INDIA
Phone: 9622282935, 9502052625
Email: kusum.phy@cujammu.ac.in,
kusumiitd@gmail.com

Professional Work Experience:

Position	University/Institute	Duration
Professor	Department of Physics and Astronomical Sciences, Central University of Jammu, J&K, India	21.08.2023-till date
Associate Professor Assistant Professor (Grade I) Assistant Professor (Grade II)	Department of Physics, National Institute of Technology Warangal, Warangal, India	17th July 2022-20.08.2023 27th March 2018-17th July 2022 21st Oct 2013- 26th March 2018
Postdoctoral Fellow	Ulsan National Institute of Science and Technology, Ulsan, South Korea	March 2013- Oct 2013
Assistant Professor (adhoc)	Department of Physics, Miranda House, University of Delhi, New Delhi, India	June 2011- Jan 2012
Postdoctoral Research Associate	Institute for Physics, Technical University of Chemnitz, Chemnitz, Germany	Sept 2010 - March 2011

Education:

Degree	University / Institution	Year	Specialization	% of Marks/ CGPA
Ph.D.	IIT Delhi, INDIA	2010	Physics	Degree Awarded
M.Tech.	IIT Delhi, INDIA	2005	Solid State Materials	CGPA-9.2 (at point scale of 10)
M.Sc.	Dayalbagh Educational Institute, Agra, INDIA	2002	Physics (Splz. in Electronics)	80.8%
B.Sc.-B.Ed. (IV yr. Integrated)	Regional Institute of Education, Ajmer, INDIA	2000	Physics, Maths, Chemistry, English, and Education	71.3%

Research Interests:

- Organic Semiconductors, Polymer Nanocomposites, Semiconductor Quantum Dots and 2D layered materials such as Graphene, MoS_2, MXenes
- Energy materials and solar energy harvesting devices (Organic Solar Cells and Hybrid Organic-Inorganic Perovskite Solar Cells)
- Energy storage devices: Supercapacitors

Awards and Honors:

1. **INSA -Visiting Scientist Award (2023)**
2. **USA Postdoctoral Fellowship at University of Texas El Paso (2023-24)**
3. **Bhaskara Advanced Solar Energy Fellowship 2018 award** by Indo-US Science and Technology Foundation and Department of Science and Technology, Government of India. (Worked as Visiting Scientist at Renewable and Sustainable Energy Institute, University of Colorado, Boulder, USA, for 3 months)
4. **Postdoctoral Fellowship** at UNIST, South Korea (2013-15)
5. **Senior Research Fellowship** (2005-2010 at IIT Delhi)
6. **Junior Research Fellowship** (2003-2005 at IIT Delhi)
7. **GATE 2003**

Teaching (Courses Taught):

- Engineering Physics (B.Tech- I Year),
- Nanomaterials and Technology (Open Elective - B.Tech- IV Year),
- Solid State Physics (M.Sc.Tech- I year)
- Analytical Instrumentation (M.Sc.Tech-III Yr.)
- Nanostructured Materials (Ph.D)
- Advanced Materials Characterization Techniques (Ph.D)

Sponsored Research Projects:

S.No.	Project Title	Funding Agency	Amount (INR)	Duration
1.	Development of electron and Hole transport layers for polymer solar cells	RSG grant, NIT Warangal	5 Lakhs	2 Years (2013-2015)
2.	Interface Engineering with CVD grown MoS2 ultra-thin layers for the Improvement of Perovskite Solar Cell Performance	DST-SERI 2016	37.53 Lakhs	3 Years (2017-2020)
3.	Development of Highly Efficient Perovskite Solar Cells using Chemical Vapor Deposited Graphene and Graphene Nanocomposites as Electron Transport Layers	DST (SERB)-EMEQ 2016	28.60 Lakhs	3 Years (2017-2020)
4.	Development of Perovskite Solar Cells via Interface Engineering using Transition Metal Dichalogenide based Ultra Thin Layers	BASE 2018 by IUSSTF and DST.	12,000 USD (10 lakhs)	31st May 2018-30th August 2018

Research Lab Established under the sponsored project funding:

- **Thin Film Solar Photovoltaic Research Laboratory** with facilities such as Solar Simulator with I-V measurement, Thermal CVD, Programmable Spin Coating Unit, Vacuum oven, Thermal Evaporator, Ultrasonicater, O_2 plasma Cleaner etc.

Research Experience:

Experimental Techniques:

Hands-on experience in synthesis of nanomaterials, deposition of thin films, semiconductor opto-electronic device fabrication and characterization.

A. *Synthesis:*

- Synthesized high quality and well aligned (vertically) carbon nanotubes by Microwave Plasma Enhanced CVD method, and studied their Field Emission Characterization.
- Expertise on growing high quality 2D materials such as Graphene, MoS_2, and certain perovskite materials by Thermal-CVD technique.
- Deposited *CdS* thin film by Spray Pyrolysis Technique and studied their luminescent properties.
- Nanopatterning of silicon substrates by photolithography and e-beam lithography.
- Synthesis of CdSe quantum dots via wet chemical technique for studying their electrical behavior.
- Synthesized electrode materials for flexible supercapacitors.

B. *Device Fabrication:*

- Hybrid Polymer-quantum dots based Solar cells, Polymer bulk-heterojunction solar cells, Organic-Inorganic Perovskite Solar cells.
- Fabricated Perovskite solar cells demonstrating Power conversion efficiencies up to 13-14%, in ambient air conditions with a working lifetime of 1000 hours.
- Developed Organic solar cells using ternary/ binary polymer blends with Power conversion efficiencies up to 10 %, with working lifetime of 500 hours in ambient air conditions.
- Developed flexible supercapacitors with improved electrochemical performance.

C. *Materials Characterization and Device Measurements:*

- A comprehensive understanding of materials characterization techniques (structural, optical and electrical) such as XRD, UV-Vis absorption, Photoluminescence, TRPL, FESEM, TEM, AFM, Raman Spectroscopy, and Impedance spectroscopy analysis.
- Charge transport properties studies of organic semiconductors and polymer-quantum dot composites.
- A sound understanding of the fundamental principles underpinning the operation of solar cells.

Other Research Skills:

- ❖ High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including the presentation of research outcomes at national and international conferences.
- ❖ A good number of publications in reputed peer-reviewed international journals, and completed scientific R&D projects as the main Project Investigator, submitted project reports & grant applications.
- ❖ A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

Ph.D Thesis Guidance:

S. No.	Student Name	Status	Fellowship
1	Mr. Lalsingh Guguloth	**Completed**	Institute Fellow
2.	Mr. M. Nagaraju	**Completed**	CSIR Fellow
3.	Mrs.V. P. Madhurima	**Thesis submitted**	Inspire Fellow
4.	Mr.Ramesh Banoth	Preparing for Synopsis	Institute Fellow
5.	Ms.Mahalakshmi	ongoing	CSIR-SRF Fellowship
6.	Mr. Rohit	ongoing	Institute Fellow
7.	Mr. Devender	ongoing	Inspire Fellow

M.Sc.Tech. (Engineering Physics) Dissertation Supervised:

S.No.	Name of the Student	Title of Thesis	Year of Award
1.	Sravan Selem	Optical imaging	2015
2.	Manjunayak	Composite materials	2016
3.	Raju G.	Fiber Bragg Grating for Pressure and Temperature sensing	2017
4.	Nagmani	Interferometers	2017
5.	V. DURGA PRASAD NAIK	SPECTROSCOPIC STIDIES ON TELLURITE GLASSES	2018
6.	Karan	Graphene oxide for Supercapacitor application	2019
7.	Mohammad Yaseen	Polarization Effects in the Airy Beam Generated using a Spatial Light Modulator	2020
8.	Kirti Ranjan Das	DESIGNING OF DUAL FOV LWIR THERMAL IMAGING SYSTEM USING FLIP-IN/FLIP-OUT MECHANISM	2021
9.	Deepanshu	WINDOWS APPLICATION FOR OCT DEVICE USING VISUAL STUDIO AND C# PROGRAMMING	2021
10.	Ashish Prasad Maharana	AN APPROACH FOR TESTING EXTRACT-TRANSFORM-LOAD PROCESS IN DATA WAREHOUSE SYSTEMS AND DERIVING INSIGHTS FROM DERIVED FOR BANKING USE CASE	2022
11.	Prachi Sharma	Improving homogeneity of light blade in curvature profiles".	2023
12.	Shubham Raj	Slim Projector Module for Low Beam	2023

International Conferences/workshop organized:

1. Secretary of the International (Virtual) Conference on Women Empowerment in Science and Technology (ICWEST 2021) conducted by the Women Cell of the National Institute of Technology Warangal, on the occasion of International Women's Day from 8th to 10th March 2021.
2. Coordinator for the One-Week Workshop on "Teaching and Learning of Functional Materials and Devices through Hands-on Experience (TLFMD-2020)" organized by the Department of Physics in association with the Teaching Learning Centre, National Institute of Technology Warangal during 9th – 14th March, 2020.
3. Executive member of the Diamond Jubilee celebrations on a high note with the International Alumni Meet and National Conference on "Transforming NITW as a World Class Technical Institute – Role of Alumni, during 10th to 12th October 2019.

Institutional & Departmental activities:

1. Executive member of the Technical team for the Diamond Jubilee celebrations Events.
2. Faculty Advisor for Physics Association to conduct Student activities during Technozion and Spring Spree.
3. Organizing Committee member in Technozion, Spring Spree and Convocations.
4. Member of anti-ragging team for Girls Hostel.
5. Audited the Central Stores Records.
6. DSC Member for two Ph.D. students in MME Department.
7. Director's Nominee for Ph.D Interviews in the Department of Physics.
8. Faculty Advisor for Physics Association, (2018-2022).
9. Faculty Advisor, B. Tech. I yr. (2017-2019). And Faculty advisor, M. Sc. (Tech.) III yr. (2019-20).
10. Seminar In-Charge, M.Sc.Tech. (Engineering Physics) - I Yr. (during 2016, 2017, 2019, and 2020).
11. Member of Department Purchase Committee.

National and International Collaborations:

1. Dr. Mahesh Kumar, Professor, Department of Electrical Engineering, IIT Jodhpur, INDIA.
2. Dr. Satyender Kumar, Professor, Special Centre for Nanoscience, JNU New Delhi, INDIA.
3. Dr. Kuldeep Singh, Senior Scientist, Central Electrochemical Research Institute, Chennai, INDIA.
4. Dr. Ayan Roy, Professor, Materials Research Centre, IIT Kharagpur, INDIA.
5. Dr. Mukesh Kumar, Associate Professor, Department of Physics, IIT Ropar, INDIA.
6. Prof. Sean E. Shaheen, Professor, Renewable and Sustainable Energy Institute (RASEI), University of Colorado Boulder, Colorado, USA.
7. Dr. V S Reddy Channu, SMC Corporation, College Station, Texas, USA.

8. Prof. Leela Mohana Reddy, Dept. of Mechanical Engineering, Wayne State University, USA.
9. Prof. Rambabu, Dept. of Physics, A&M university, Taxas, USA.
10. Prof. Rudolf Holze, Institut fuer Chemie, Technische Universitaet Chemnitz, Chemnitz, Germany.
11. Prof. Quinton L. Williams, Department of Physics and Astronomy, Howard University, USA.
12. C. V. Ramana**,** Department of Mechanical Engineering, University of Texas at El Paso,Texas, USA.

Papers Published in International Journals (SCI):

1. **Kusum Kumari**, Suresh Chand, Pankaj Kumar, Shailesh N. Sharma, V. D. Vankar, Vikram Kumar, "Effect of CdSe quantum dots on hole transport in poly(3-hexylthiophene) thin films" Applied Physics Letter, 92, 2008, 263504-263506. **(Impact Factor= 4)**
2. **Kusum Kumari**, Umesh Kumar, Shailesh N. Sharma, Suresh Chand, Rita Kakkar, V. D. Vankar, Vikram Kumar, "Effect of surface passivating ligand on structural and optoelectronic properties of polymer:CdSe quantum dot composites" Journal of Physics D: Applied Physics, 41, 2008, 235609(9pp). **(Impact Factor= 3.4)**
3. **Kusum Kumari**, Suresh Chand, V. D. Vankar, Vikram Kumar, "Enhancement in hole current density in poly(3-hexylthiophene): cadmium selenide quantum dot composite thin films" Applied Physics Letters , 94, 2009, 213503-213505. **(Impact Factor= 3.9)**
4. Manisha Bajpai, **Kusum Kumari**, Ritu Srivastava, M. N. Kamalasanan, R.S. Tiwari, Suresh Chand, "Electric Field and Temperature dependence of hole mobility in PDY-132 thin films" Solid State Communication , 150, 2010, 581-584. **(Impact Factor= 2)**
5. Umesh Kumar, **Kusum Kumari**, Shailesh N. Sharma, Mahesh Kumar, V. D. Vankar, Rita Kakkar, Vikram Kumar, "Role of surface modification of colloidal CdSe quantum dots on the properties of hybrid organic-inorganic nanocomposites" Colloid and Polymer Science, 288, 2010, 841-849. **(Impact Factor= 2.43)**
6. Shailesh N. Sharma, **Kusum Kumari**, Suresh Chand, V. D. Vankar, Rita Kakkar, Vikram Kumar, "A novel non TOPO route for the Synthesis of colloidal CdSe quantum dots with high luminescence and stability" proceedings of the Physics of Semiconductor Devices (IWPSD) 2007 (page 1-4).
7. Kunwar Pal Singh, **Kusum Kumari**, and Manoj Kumar, "Ion current rectification in a fluidic bipolar nanochannel with smooth junction" Applied Physics Letters, 99, 2011, 113103-113105. **(Impact Factor= 4)**
8. Kunwar Pal Singh, **Kusum Kumari**, and Manoj Kumar, "Field-effect control of electrokinetic ion transport in a nanofluidic channel" Journal of Applied Physics, 110, 2011, 084301-084309. **(Impact Factor= 2.78)**
9. V.S. Reddy Channu, B. Rambabu, **Kusum Kumari**, Rudolf Holze, VO_2(B) @ Carbon cathodes for Lithium ion batteries, Colloids and Surfaces A: Physicochemical and Engineering, 481, 2015, 314-318. **(Impact Factor= 5.51)**
10. V.S. Reddy Channu, B. Rambabu, **Kusum Kumari**, Rudolf Holze, Rajmohan R. "High performance lithium insertion negative electrode materials for electrochemical devices" Applied Surface Science, 387, 2016, 839-845. **(Impact Factor= 7.39)**

11. Vijendra Singh Bhati, Sapana Ranwa,Saravanan Rajamani,**Kusum Kumari**,Ramesh Raliya, Pratim Biswas, and Mahesh Kumar, " Improved Sensitivity with Low Limit of Detection of a Hydrogen Gas Sensor Based on rGO-Loaded Ni-Doped ZnO Nanostructures", ACS Appl. Mater. Interfaces, 2018, 10 (13), pp 11116–11124. **(Impact Factor= 10.38)**
12. Venkata S. Reddy Channu, B. Rambabu, **Kusum Kumari**, Rajmohan R. Kalluru, and Rudolf Holze, "SnO2/PANI nanocomposite electrodes for supercapacitors and lithium ion batteries", Electrochem. Energy Technol. 2018; 4:32–38. **(Impact Factor= 3.1)**
13. V.P. Madhurima, Pramod H. Borse, **Kusum Kumari**, T.N. Rao, P.K. Jain, Improved photocatalytic activity of carbon-based polymeric semiconductor for efficient decontamination of wastewater: Effect of reaction atmosphere and pyrolysis temperature, Optical Materials 110 (2020) 110523 (p1-14). **(Impact Factor= 3.754)**
14. Lalsingh Guguloth, Kuldeep Singh, V. S. Reddy Channu and **Kusum Kumari**, Enhancement in performance of ternary blendpolymer solar cells using a PEDOT:PSS–graphene oxide hole transport layer via Fo¨rster resonance energy transfer and balanced charge transport, *Materials Advances* 1 (2020) 2872-2887. **(Impact Factor= 4.5)**
15. Lalsingh Guguloth, Kuldeep Singh, V. S. Reddy Channu and **Kusum Kumari**, Improved performance of ternary blend polymer solar cells via work function tuning and suppressed interface recombination using hybrid PEDOT:PSS-graphene oxide hole transport layer, Applied Surface Science 540 (2021) 148266 (p1-15). **(Impact Factor= 7.39)**
16. Nagaraju Macherla, Kuldeep Singh, M.S. Santosh, **Kusum Kumari,** Ram Gopal Reddy Lekkala, Heat assisted facile synthesis of nanostructured polyaniline/reduced crumbled graphene oxide as a high-performance flexible electrode material for supercapacitor, Colloids and Surfaces A: Physicochemical and Engineering, 612 (2021) 125982. **(Impact Factor= 5.51)**
17. P. V. Raja Shekar, D. Madhavi Latha, **Kusum Kumari**, V. G. K. M. Pisipati, Optimal parameters for fiber Bragg gratings for sensing applications: a spectral study, SN Applied Sciences (2021) 3:666. **(Impact Factor= 2.2)**
18. Lalsingh Guguloth, P. V. Raja Shekar, V. S. Reddy Channu and **Kusum Kumari**, Effect of reduced fluorinated graphene oxide as ternary component on synergistically boosting the performance of polymer bulk heterojunction solar cells, Solar Energy, 225 (2021) 259-265. **(Impact Factor= 7.18)**
19. Nagaraju Macherla, Kuldeep Singh, Manjula Nerella, **Kusum Kumari** and Ram Gopal Reddy Lekkala, Improved performance of flexible supercapacitor using naphthalene sulfonic acid-doped polyaniline/sulfur-doped reduced graphene oxide nanocomposites, International Journal of Energy Research, 46(5) (2022) 6529- 6542. **(Impact Factor= 5.16)**
20. Nagaraju Macherla, Ram Gopal Reddy Lekkala, Kuldeep Singh, **Kusum Kumari**, Electrochemical analysis of polyaniline graphene oxide composites for high performance supercapacitors, AIP Conference Proceedings **2265** (2020) 030673.
21. Nagaraju Macherla, Kuldeep Singh, **Kusum Kumari,** Ram Gopal Reddy Lekkala, A robust approach for designing efficient nanostructured N-doped reduced graphene oxide/Polyaniline electrode materials for flexible supercapacitor, Polymers for Advanced Technologies, 33 (7): 2184- 2199. doi:10.1002/pat.5670. **(Impact Factor= 3.7)**
22. P. V. Raja Shekar, D. Madhavi Latha, **Kusum Kumari**, G. Raju, Spectral response of apodized fiber Bragg gratings as strain and temperature sensor, International Journal of Modern Physics B, 36, No. 29, 2250207 (2022). **(Impact Factor= 2.5)**
23. V.P. Madhurima, **Kusum Kumari**, and P.K. Jain, A facile single-step cost-effective approach to achieve in-situ expanded g-C3N4 for enhanced photodegradation performance" Polymers for Advanced Technologies, (2022) 34, 2, 578-586. **(Impact Factor= 3.7)**

24. Ramesh Bonavath, C. V. Ramana and **Kusum Kumari**, Surface engineering of mesoporous-TiO_2 electron transport layer for improved performance of organic-inorganic perovskite solar cells via suppressing interface defects, enhancing charge extraction and boosting carrier transport" Colloids and Surfaces A: Physicochemical and Engineering 676 (2023) 132075. **(Impact Factor= 5.51)**
25. V. P. Madhurima, Kusum Kumari, and P. K. Jain, Synthesis and study of carbon nanomaterials through arc discharge technique for efficient adsorption of organic dyes, Diamond and Related Materials, 2023. (Article in Press)
26. Nagaraju Macherla, Rohit, Manjula Nerella, Kuldeep Singh, C. V. Ramana, Kusum Kumari and Ram Gopal Reddy Lekkala, Biowaste derived hierarchical porous carbon as a high-performance electrode material for symmetric supercapacitor, International Journal of Energy Research, 2023. (Under Review)
27. Ramesh Bonavath, C. V. Ramana and Kusum Kumari, Enhanced Performance of Perovskite Solar Cells via incorporating CVD grown MoS2 nanoflakes as electron interlayer. Applied Surface Science 2023 (Under Review)
28. P. V. Raja Shekar, D. Madhavi Latha, Kusum Kumari, Strength and deformation characteristics of L-lysine monohydrochloride dihydrate crystals, Solid State Sciences, 2022. (Revision Submitted).
29. V. P. Madhurima, Kusum Kumari, and P. K. Jain, Unravelling the uniqueness of white graphene anchored on g-C3N4 for ultrafast detoxification of wastewater" Journal of Photochemistry and Photobiology A: Chemistry, 2023 (under review).
30. V. P. Madhurima, Balaji Padya, Kusum Kumari*, and P. K. Jain, Construction of 2D/2D GNP/g-C3N4 hybrid photocatalyst for synergistic charge separation and rapid photodegradation of organic pollutant" Colloids and Surfaces A: Physicochemical and Engineering, 2023. (under review).

Conferences/Workshops attended:

1. **Kusum Kumari**, Umesh Kumar, Shailesh N. Sharma, Suresh Chand, V. D. Vankar, Vikram Kumar, "Hybrid Organic Inorganic Composites: Size and Stability Studies" International Conference on Advanced Materials (IUMRS-ICAM) organized by the Materials Research Society of India in Bangalore, India, during 8th13th October, 2007.
2. Shailesh N. Sharma, **Kusum Kumari**, Suresh Chand, V. D. Vankar, Vikram Kumar, "A novel non TOPO route for the Synthesis of colloidal CdSe quantum dots with high luminescence and stability" International Workshop on the Physics of Semiconductor Devices (IWPSD), IIT Bombay, India, during 17th20th December, 2007.
3. **Kusum Kumari**, Umesh Kumar, Shailesh N. Sharma, Suresh Chand, V. D. Vankar, Vikram Kumar, "Structural and Optical Properties of Hybrid Organic Inorganic Composites" International conference cum workshop on Nanoscience and Nanotechnology organized by Ansal Institute of Technology, Gurgoan, India, during 17th21st December, 2007.
4. **Kusum Kumari**, Suresh Chand, V. D. Vankar, Vikram Kumar, "Charge Transport Studies of Polymer:CdSe Nanocomposites" International Conference on Luminescence and its Applications (ICLA2008), National Physical Laboratory, New Delhi, India, during 12th 17th February, 2008.
5. **Kusum Kumari**, Suresh Chand, V. D. Vankar, Vikram Kumar, "Effect of polarization on hole transport in CdSe quantum dots / poly(3- hexylthiophene) composite thin films"

International Conference, ANM-2008, University of Aveiro, Portugal, during 8-11 August 2008.

6. **Kusum Kumari**, Suresh Chand, V. D. Vankar, Vikram Kumar, "P3HT/MEHPPV: CdSe nanocomposite based solar cell devices" XVth International Workshop on the Physics of Semiconductor Devices (IWPSD), Solid State Physics Laboratory & Jamia Millia Islamia, New Delhi, India, during 15th19th December, 2009.
7. **Kusum Kumari**, Suresh Chand, V. D. Vankar, Vikram Kumar," Charge transport mechanism in polymer thin films" International Conference on Nanomaterials and Nanotechnology (ICNANO-2011), University of Delhi, Delhi, India, during 18-21 December, 2011.
8. **Kusum Kumari**, Jungo, H. S. Shin, "MoS_2 based Field effect Transistors" Ninth International Conference on advanced smart materials and smart structures technology held at Ulsan National Institute of Science and Technology (UNIST), Ulsan, South Korea, during July 18-21, 2013.
9. Workshop on "Recent Trends in Device Materials" Dept. of Physics, NIT Warangal, TEQUIPII, held during 09th 11th Nov. 2013.
10. Workshop on "Innovations in Electrochemical Science and Technology" Dept. of Chemistry, NIT Warangal, held during 10th14th Dec. 2011.
11. One day workshop on "Advances in Applied Optics", Dept. of Physics, NIT Warangal, TEQUIPII, held on 27th August 2014.
12. **Kusum Kumari** and Suresh Chand" Enhancement in Efficiency of Hybrid Polymer Solar Cells By CdSe Quantum Dot Doping " International Conference-Prime 2016, at Honolulu, Hawaii, USA, October 2 – 7, 2016.
13. **Kusum Kumari** "Hybrid Polymer Solar Cells Enhancement in Efficiency by CdSe quantum dot" International Conference of Young Researchers on Advanced Materials (IUMRSI-CYRAM 2016), BANGALORE, INDIA, during 11-15 December 2016.
14. **Kusum Kumari** and Venkata S. Reddy Channu, "Interface Engineering for enhanced device performance of Perovskite Solar Cells", 60th Electronic Materials Research Conference, , at the University of California, Santa Barbara, USA, held 27-29 June 2018.
15. Lalsingh Guguloth, Kuldeep Kakran, and **Kusum Kumari***, "Synthesis and Characterization of Graphene Oxide, Reduced Graphene Oxide for perovskite solar cells" presented at "The International Conference on Recent Trends in Materials Science and Technology 2018 (ICMST-2018)" is being organized by Indian Institute of Space Science and Technology (IIST), jointly with Materials Research Society of India (MRSI), Thiruvanathapuram, Kerala, India, during 10 - 13th October 2018.
16. Lalsingh Guguloth, Kuldeep Kakran, and **Kusum Kumari** " Excited state carrier dynamics of Perovskite solar cells using graphene as transport layer"in International Conference on Advanced Functional materials and Devices (ICAFMD-2019) organized by Department of Physics, NIT Warangal, India, during 26-18 Feb 2019.

Reviewer of International Journals (SCI):

1. ACS Applied Optical Materials
2. RSC Chemical Society Reviews
3. RSC Chemical Communications
4. RSC Physical Chemistry Chemical Physics
5. RSC Materials Advances
6. AIP Journal of Applied Physics
7. Bulletin of Materials Science
8. Journal of Nanostructure in Chemistry
9. Engineering and Applied Science Research

Professional References:

1. **Prof. V. D. Vankar,** Ex Professor,
   Department of Physics, Indian Institute of Technology Delhi , New Delhi, India.
   Email: vdvankar@gmail.com Phone: (+91) 9810754675
2. **Prof. Vikram Kumar,** Ex Professor,
   Department of Physics, Indian Institute of Technology Delhi, New Delhi, India.
   Email: vkmr47@gmail.com Phone: (+91) 9891270409
3. **Dr. Suresh Chand,** Ex Scientist G,
   Organic and Hybrid Solar Cell Division, National Physical Laboratory, New Delhi, India.
   Email: schandnpl@gmail.com Phone: (+91) 9810750154
4. **Prof. Mahesh Kumar,** Professor,
   Department of Electrical Engineering, Indian Institute of Technology, Jodhpur, India.
   E-mail id: mkumar@iitj.ac.in Phone: (+91) 9460153010
5. **Dr. Satyendra Singh,** Associate Professor,
   Special Centre for Nanoscience, Jawaharlal Nehru University, New Delhi, INDIA
   E-mail id: satyendra@mail.jnu.ac.in Phone: (+91) 9868370772
6. **Prof. Vishnu Shanker,** Professor,
   Department of Chemistry,
   National Institute of Technology Warangal, Telangana State, INDIA
   E-mail: vishnu@nitw.ac.in Phone: (+91) 8702462651

Social Links:

- https://orcid.org/0000-0003-1768-4413
- https://scholar.google.com/citations?user=1_7UZp0AAAAJ&hl=en&authuser=1
- https://www.researchgate.net/profile/Kusum-Kumari-2