Kirori Mal College

(University of Delhi)
University of Delhi, Delhi-110007
(Phone No. - 011-7121 9084 : Email - principal@kmc.du.ac.in)

Print Date : 15-02-2026

1. Personal Profile

Title: **Dr.** First Name: **PUSHPENDRA** Last Name: **KUMAR**

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Designation: **ASSISTANT PROFESSOR** Mobile No. **----------**

Phone No. (Office) **----------** Phone No. (Residence): **----------**

Email: **pushpendrak@kmc.du.ac.in** Webpage: **----------**

Facebook: ---------- Twitter: ----------

LinkedIn: ---------- Instagram: ----------

Youtube: ---------- Research Gate Link: ----------

Google Scholar Link: **https://scholar.google.co.in/citations?user=79TBZA0AAAAJ&hl=en**

Address: **----------**

2. Educational Qualifications

Degree/ Certification	Institution	Year
Ph.D.	Indian Institute of Technology (I.I.T) Mandi, India	2017
GATE	Indian Institute of Technology Guwahati	2010

3. Career Profile & Administrative Assignments

Category	Role/ Designation	Department/ Committee	Date From - To	Remarks
CAREER PROFILE	ASSISTANT PROFESSOR	PHYSICS KIRORI MAL COLLEGE, DELHI	15.Dec.2022 - Till date	
CAREER PROFILE	POST DOCTORATE	PHYSICS Max Planck Institute for Polymer Research Mainz	01.Mar.2021 - 30.Nov.2022	Humboldt Research Fellow
CAREER PROFILE	POST DOCTORATE	CHEMISTRY Technical University of Munich	01.Dec.2019 - 28.Feb.2021	Postdoctoral Researcher
CAREER PROFILE	POST DOCTORATE	PHYSICS Division of Chemical Physics, LU	01.May.2017 - 31.Jul.2019	Postdoctoral Researcher
CAREER PROFILE	POST DOCTORATE	PHYSICS Indian Institute of Technology (I.I.T) Mandi, India	23.Jan.2017 - 25.Apr.2017	Research Associate
ADMINISTRATIVE ASSIGNMENTS	MEMBER	PORTAL COMMITTEE Kirori Mal College, University of Delhi	01.Jul.2024 - Till date	

ADMINISTRATIVE ASSIGNMENTS	MEMBER	MEDIA COMMITTEE Kirori Mal College, University of Delhi	01.Jul.2024 - Till date	
ADMINISTRATIVE ASSIGNMENTS	MEMBER	CAREER DEVELOPMENT CELL Kirori Mal College, University of Delhi	01.Jul.2024 - Till date	
ADMINISTRATIVE ASSIGNMENTS	MEMBER	SC/ST CELL Kirori Mal College, University of Delhi	01.Jul.2024 - Till date	
ADMINISTRATIVE ASSIGNMENTS	MEMBER	SPORTS COUNCIL Kirori Mal College, University of Delhi	01.Jul.2024 - Till date	
ADMINISTRATIVE ASSIGNMENTS	MEMBER	LIBRARY COMMITTEE Kirori Mal College, University of Delhi	01.Jul.2024 - 30.Jun.2025	
ADMINISTRATIVE ASSIGNMENTS	MEMBER	CANTEEN COMMITTEE Kirori Mal College, University of Delhi	01.Jul.2024 - Till date	
ADMINISTRATIVE ASSIGNMENTS	MEMBER	ALUMNI COMMITTEE Kirori Mal College, University of Delhi	01.Jul.2024 - Till date	
ADMINISTRATIVE ASSIGNMENTS	CONVENER	OTHERS Kirori Mal College, University of Delhi	01.Jul.2024 - 30.Jun.2025	Department of Physics 'Library Committee'
ADMINISTRATIVE ASSIGNMENTS	MEMBER	OTHERS Kirori Mal College, University of Delhi	01.Jul.2024 - 30.Jun.2025	Department of Physics 'Seminar Committee'
ADMINISTRATIVE ASSIGNMENTS	MEMBER	LA-VOICE Kirori Mal College, University of Delhi	01.Jul.2024 - 30.Jun.2025	Departmental IQAC Committee

4. Other Profiles

Other Profile Name/ Description

SUBJECTS TAUGHT

Light and Matter (Theory and Practical)

Waves and Optics (Theory and Practical)

Solid State Physics (Theory and Practical)

Thermal Physics and Statistical Mechanics (Theory)

Electricity and Magnetism (Practical)

Mechanics (Practical)

Analog Systems and Applications (Practical)

VAC: Digital Empowerment

SEC: Essential of Python

CERTIFICATE COURSE/ SHORT TERM COURSE ORGANIZED

2- day Hands on workshop on Arduino Programming

AREAS OF INTEREST/ SPECIALIZATION

Ultrafast Spectroscopy

Terahertz (THz) Spectroscopy

Optical Nonlinear Spectroscopy

Fourier Transform Spectroscopy

Multiphoton Micro-spectroscopy

Photo-impedance Spectroscopy of Photoactive Devices

Photo-physics of Perovskites Materials and Devices

Interfacial Charge and Energy Transfer Processes in Organic/ Inorganic hybrid Systems

AWARDS AND DISTINCTIONS

Alexander von Humboldt Research Fellowship Award by the Alexander von Humboldt Foundation, Germany, March 2020.

Best Presentation Award in 20th International Conference on Ultrafast Optics and Applications “ICOU 2018” Mumbai, India February 22 - 23, 2018.

Best Paper Award in 20th International Conference on Ultrafast Optics and Applications “ICOU 2018” Mumbai, India February 22 - 23, 2018.

Certificate for Appreciation as a session chair in 20th International Conference on Ultrafast Optics and Applications “ICOU 2018” Mumbai, India February 22 - 23, 2018.

Postdoctoral Research Fellowship at Division of Chemical Physics, Lund University, Sweden, May 2017- May 2019.

SERB National Post-Doctoral Fellowship awarded by Science and Engineering Research Board (SERB), Department of Science & Technology, Govt. of India, January 2017.

Scholarship: Senior research fellow (SRF), Department of Higher Education, Ministry of Human Resource Development (MHRD), Govt. of India, October 2012-June 2016.

Scholarship: Junior research fellow (JRF), Department of Higher Education, Ministry of Human Resource Development (MHRD), Govt. of India, October 2010- 2012.

Graduate Aptitude Test for Engineering (GATE) in Physics 2010.

OTHERS

Research Projects

Exploring Ultrafast Charge Carrier Dynamics in Lead-Free "Green" Perovskite Materials: A Search for Novel Optoelectronics (May 2021- November 2023)

Project no. P.S. POLY 7559

Research Collaboration:

Prof. Mischa Bonn and Dr. Hai Wang

Max-Planck Institute for Polymer Research Mainz, Mainz Germany.

Designing and conducting ultrafast experiments on photoelectric systems (December 2019- February 2020)

Research Collaboration:

Prof. Jurgen Hauer,the laboratory for dynamic spectroscopies,

Technical University of Munich, Munich Germany.

Two-photon induced photocurrent and fluorescence measurements of photoactive devices for optoelectronic applications (May 2017- August 2019)

Research Collaboration:

Prof. (Assoc.) Khadga Jung Karki and Prof. Tonu Pullerits

Division of Chemical Physics, Lund University Sweden.

Carrier multiplication in electronically coupled nanocrystals and harvesting (January 2017- April 2017)

Research Collaboration:

Prof. Suman Kalyan Pal, Indian Institute of Technology (I.I.T.) Mandi, India

RESEARCH COLLABORATIONS

Alexander von Humboldt Research Foundation, Germany

Max Planck Institute for Polymer Research, Mainz, Rhineland Pflaz, Germany

Technical University of Munich, Munich, Germany

Chemical Physics, Lund University Sweden, Lund, Sweden

Indian Institutes of Technology (I.I.T), Mandi, India

OTHERS

Reviewer

Reviewer for international journal Wiley-VCH, ‘Physica Status Solidi (b) – Basic Solid-State Physics'

OTHERS

Conference/Workshops/Talk

Attended

One day workshop "Electronic Materials: Preparation, Characterization and Applications" at IIT Mandi on 20th April, 2024.

The Virtual Conference “Coordination Networks: Building Blocks for Functional Systems (COORNETs) WebCon 2021” at TUM Garching, Germany on 19th - 20th January 2021.

Invited Talk

Talk on “Visualization of excitonic and free charge recombination in MAPbBr3 perovskite by two-photon phase modulated photoluminescence spectroscopy” Chemical Physics Science Day Bosjökloster, Sweden May 24, 2019.

Talk on “Photoimpedence Spectroscopy and its Applications” in Chemical Physics Lund University Sweden, April 5, 2018.

Talk on "Photoimpedance Spectroscopy of Planar and Nano Textured Solar Cells" in Optics Meeting, Solid State Physics, Lund University Sweden, November 17, 2017.

Oral Presentation

Seminar on “Nonlinear Spectroscopy using Modulated Light Fields” in Chemical Physics Lund University Sweden, February 21, 2019.

Photoimpedance Spectroscopy Analysis of Planar and Nano-Textured Thin-Film Silicon Solar Cells in 20th International Conference on Ultrafast Optics and Applications“ICOU 2018” Mumbai, India February 22 - 23, 2018.

Sensitization of ZnO QD by Adsorbed Novel Coumarine Dye for DSSC Applications: Spectroscopic and First-Principles Studies in 27th International Conference on Photochemistry, ICC JEJU, Jeju Island, South Korea, June 28 – July 3 2015.

Charge Transfer in MK-2 Dye Sensitized Quantum Dots for Type-II Sensitized Solar Cell in the Research Fair, Anusandhan, IIT Mandi, June 2014.

Defect associated energy transfer from semiconductor nanocrystals to an adsorbed dye in IIT Mandi, May 1, 2013.

Poster Presentation

Pushpendra Kumar; Exploring ultrafast charge carrier dynamics in perovskite materials in the department retreat at the Max Planck Institute for Polymer (MPIP) research Mainz, Germany, May 2-4, 2022.

Pushpendra Kumar and Khadga Jung Karki; Two-photon excitation spectroscopy using phase modulation in the NanoLund Annual Meeting 2018 in NanoLund, Lund University Sweden, October 4, 2018.

Pushpendra Kumar and Khadga Jung Karki; Phase modulated two-photon excitation spectroscopy reveals low lying electronic states of 1, 5 Diphenyl-1, 3, 5-hexatriene in the Nordic Femto 13. South Campus, University of Copenhegen Denmark, August 16-17, 2018.

Zhengjun Wang, Pushpendra Kumar, Shiwen Lei, Andreas Jakobsson, Khadga Karki and Tönu Pullerits; Optimized sampling and Reconstruction of LH2 spectroscopy in Swedish e-Science Academy 2017, Umeo University Sweden, October 11-12, 2017.

OTHERS

COUNTRY VISITED: 12

Germany, Sweden, Denmark, Austria, France, Switzerland, Norway, Finland, Russia, Ukraine, Bahrain and South Korea

5. Research Guidance

Year	Guide For	Title of the Dissertation/ Thesis	Scholar Name	Status

6. Research Projects

Year	Title of Project	Sponsorship Agency	Duration	Amount Sanctioned	Date of Sanction
2020	Exploring Ultrafast Charge Carrier Dynamics in Lead-Free “Green” Perovskite Materials: A Search for Novel Optoelectronics	Alexander von Humboldt Research Foundation, Germany	2021-2023		01.Nov.2020
2025	Optical and Electrical Characterization of Two-Dimensional Lead-Free “Green” Perovskite Materials	KMC_Research Council	2025-2026		10.Jun.2025

7. Publications

Category	Publication Name	Title	Name of Author	Reference Link/ DOI Link	Pu (M Ye
JOURNAL PAPER (International)	Temperature-Dependent Intensity Modulated Two-Photon Excited Fluorescence Microscopy for High Resolution Mapping of Charge Carrier Dynamics	ACS Phys. Chem Au	Qi Shi, Pushpendra Kumar , and Tönu Pullerits (Joint Author)	https://doi.org/10.1021/acsphyschemau.3c00013	Ju 20
JOURNAL PAPER (International)	Elucidating the Free Carrier and Exciton Ultrafast Dynamics in 2D Perovskites with Alternating Cations in the Interlayer Space	The Journal of Physical Chemistry Letters/American Chemical Society	Bapi Pradhan, Peiran Wang, Biplob Barman, Sumea Klokic, Heinz Amenitsch, and Pushpendra Kumar* (Corresponding Author)	https://doi.org/10.1021/acs.jpclett.5c01894	Oc 20

JOURNAL PAPER (International)	Recent advances of multiphoton absorption in metal–organic frameworks	J. Mater. Chem. C	Sebastian J Weishäupl, David C Mayer, Yang Cui, Pushpendra Kumar, Harald Oberhofer, Roland A Fischer, Jürgen Hauer, Alexander Pöthig (Joint Author)	DOI https://doi.org/10.1039/D2TC00191H	Ap 20
JOURNAL PAPER (International)	Highly mobile hot holes in Cs2AgBiBr6 double perovskite	Science Advances	Heng Zhang, Elke Debroye, Wenhao Zheng, Shuai Fu, Lucia D Virgilio, Pushpendra Kumar, Mischa Bonn, Hai I Wang (Joint Author)	DOI: 10.1126/sciadv.abj9066	De 20
JOURNAL PAPER (International)	Kinetics of near-infrared-to-visible upconversion in rubrene: An initial excitation of triplets	Physical Review B	Pushpendra Kumar, Durga Prasad Kandel, Adhikari Rajendra, Rahaman Ahibur, J. Karki Khadga (First Author)	https://doi.org/10.1103/PhysRevB.104.L140308	Oc 20

JOURNAL PAPER (International)	New Nonlinear Optical Crystal of Rhodamine 590 Acid Phthalate	ACS Omega	Bamini Nariyangadu, Tenzin Choedak, Ezekiel Joy Padma Malar, Junsheng Chen, Erling Thyrhaug, Pushpendra Kumar, Jinming Zhou, Vidyalakshmi Yechuri, Suman Kalyan Pal, Sven Lidin, Kejalakshmy Namassivayane Thangadhorai, Khadga J. Karki, Tönu Pullerits (Joint Author)	https://doi.org/10.1021/acsomega.0c02303	Au 20
JOURNAL PAPER (International)	Enhanced Radiative Recombination of Excitons and Free Charges Due to Local Deformations in the Band Structure of MAPbBr3 Perovskite Crystals	J. Phys. Chem. C	Pushpendra Kumar, Qi Shi, Khadga Jung Karki (First Author)	https://doi.org/10.1021/acs.jpcc.9b01968	Ma 20
JOURNAL PAPER (International)	Two-photon excitation spectroscopy of 1, 5--Diphenyl-1, 3, 5-hexatriene using phase modulation	J. Phys. Commun.	Pushpendra Kumar, Khadga Jung Karki (First Author)	DOI 10.1088/2399-6528/aafc0a	Ma 20

JOURNAL PAPER (International)	Phonon Coupling with Excitons and Free Carriers in Formamidinium Lead Bromide Perovskite Nanocrystals	J. Phys. Chem. Lett.	Supriya Ghosh, Qi Shi, Bapi Pradhan, Pushpendra Kumar, Zhengjun Wang, Somobarta Acharya, Suman Kalyan Pal, Tonu Pullerits, Khadga Jung Karki (Joint Author)	https://doi.org/10.1021/acs.jpclett.8b01729	Ju 20
JOURNAL PAPER (International)	Variations in the Composition of the Phases Lead to the Differences in the Optoelectronic Properties of MAPbBr3 Thin Films and Crystals	J. Phys. Chem. C	Qi Shi, Supriya Ghosh, Pushpendra Kumar, Laura C Folkers, Suman Kalyan Pal, To?nu Pullerits, Khadga J Karki (Joint Author)	https://doi.org/10.1021/acs.jpcc.8b06937	Se 20
JOURNAL PAPER (International)	Variation in the Photocurrent Response Due to Different Emissive States in Methylammonium Lead Bromide Perovskites	J. Phys. Chem. C	Qi Shi, Supriya Ghosh, Abdus Salam Sarkar, Pushpendra Kumar, Zhengjun Wang, Suman Kalyan Pal, To?nu Pullerits, Khadga J Karki (Joint Author)	https://doi.org/10.1021/acs.jpcc.8b00542	Fe 20
JOURNAL PAPER (International)	Role of ZnS Segment on Charge Carrier Dynamics and Photoluminescence Property of CdSe@CdS/ZnS Quantum Rods	J. Phys. Chem. C	Pushpendra Kumar, Rajeev Ray, Patrick Adel, Franziska Luebkemann, Dirk Dorfs, Suman Kalyan Pal (First Author)	https://doi.org/10.1021/acs.jpcc.7b12223	Fe 20

JOURNAL PAPER (International)	Photoimpedance Spectroscopy Analysis of Planar and Nano-Textured Thin-Film Silicon Solar Cells	World Academy of Science, Engineering and Technology International Journal of Physical and Mathematical Sciences	P Kumar, D Eisenhauer, MMK Yousef, Q Shi, ASG Khalil, MR Saber, C Becker, T Pullerits, KJ Karki (Corresponding Author)	doi.org/10.5281/zenodo.1316460	Ma 20
JOURNAL PAPER (International)	Quenching of the Excitonic Emission of ZnO Quantum Dots Due to Auger-Assisted Hole Transfer to CdS Quantum Dots	J. Phys. Chem. C	Supriya Ghosh, Mihir Ghosh, Pushpendra Kumar, Abdus Salam Sarkar, and Suman Kalyan Pal (Joint Author)	https://doi.org/10.1021/acs.jpcc.6b11011	No 20
JOURNAL PAPER (International)	Ultrafast multiexponential electron injection dynamics at a dye and ZnO QD interface: a combined spectroscopic and first principles study	Phys. Chem. Chem. Phys.	Pushpendra Kumar and Suman Kalyan Pal (First Author)	DOI: 10.1039/C6CP04610J	Se 20
JOURNAL PAPER (International)	Femtosecond insights into direct electron injection in dye anchored ZnO QDs following charge transfer excitation	Phys. Chem. Chem. Phys.	Pushpendra Kumar, Sunil Kumar, Subrata Ghosh, Suman Kalyan Pal (First Author)	DOI: 10.1039/C6CP01721E	Ju 20
JOURNAL PAPER (International)	Exploring an Emissive Charge Transfer Process in Zero-Twist Donor-Acceptor Molecular Design as a Dual-State Emitter	J. Phys. Chem. C	Sunil Kumar, Punita Singh, Pushpendra Kumar, Renu Srivastava, Suman Kalyan Pal, Sobrata Ghosh (Joint Author)	https://doi.org/10.1021/acs.jpcc.6b01351	Ma 20

JOURNAL PAPER (International)	Ab Initio Assessment of the Structural and Optoelectronic Properties of Organic–ZnO Nanoclusters	J. Phys. Chem. A	Pushpendra Kumar, Suman Kalyan Pal (First Author)	https://doi.org/10.1021/acs.jpca.5b04109	Se 20
JOURNAL PAPER (International)	Global analysis of quenching of the time-resolved emission of ZnO nanocrystals by adsorbed rhodamine B on the basis of Tachiya theory	J. Photochem. Photobiol. A	Pushpendra Kumar, Torbjörn Pascher, M. Tachiya, Suman Kalyan Pal (First Author)	https://doi.org/10.1016/j.jphotochem.2014.09.011	Se 20
JOURNAL PAPER (International)	Role of decoupled defect transitions of ZnO nanocrystals in energy transfer	J. Photochem. Photobiol. A	Pushpendra Kumar, Suman Kalyan Pal (First Author)	https://doi.org/10.1016/j.jphotochem.2013.12.021	Ja 20
JOURNAL PAPER (International)	Materials for optical, magnetic and electronic devices	J. Mater. Chem	Sebastian J Weishäupl, David C Mayer, Yang Cui, Pushpendra Kumar, Harald Oberhofer, Roland A Fischer, Jürgen Hauer, Alexander Pöthig, CG Sanjayan, MS Jyothi, R Geetha Balakrishna (Joint Author)	https://pubs.rsc.org/en/content/articlepdf/2022/tc/d2tc90095e	Ap 20

8. Books

Category	Book Name	Title	Name of Author	ISSN/ ISBN Number

9. Faculty Achievements

Year	Category of Achievement	Role	National/ International etc.	Name	Date From-To

2023	FACULTY DEVELOPMENT PROGRAM ATTENDED	ASSISTANT PROFESSOR	National	4-Week Faculty Induction/Orientation Programme for “Faculty in Universities/Colleges/Institutes of Higher Education”	20.Jan.2023 - 18.Feb.2023
2023	REFRESHER COURSE ATTENDED	ASSISTANT PROFESSOR	National	Online two-week refresher course in "Physics"	27.Feb.2023 - 13.Mar.2023
2023	WORKSHOP/ SEMINAR/ CONFERENCE ATTENDED	ASSISTANT PROFESSOR	College	2- day Hands on workshop on Arduino Programming	24.Mar.2023 - 25.Mar.2023
2024	SEMINAR ATTENDED	ASSISTANT PROFESSOR	College	Funding Schemes for Teachers in Higher Education	09.Mar.2024 - 09.Mar.2024
2024	WORKSHOP/ SEMINAR/ CONFERENCE ATTENDED	ASSISTANT PROFESSOR	National	One Day Workshop on Electronic Materials: Preparation, Characterization and Applications	20.Apr.2024 - 20.Apr.2024
2024	FACULTY DEVELOPMENT PROGRAM ATTENDED	ASSISTANT PROFESSOR	University	NEP Orientation & Sensitization Programme	07.May.2024 - 16.May.2024
2025	WORKSHOP/ SEMINAR/ CONFERENCE ATTENDED	ASSISTANT PROFESSOR	University	Two-Day Workshop on Design Thinking and Start-up	06.Mar.2025 - 07.Mar.2025
2025	REFRESHER COURSE ATTENDED	ASSISTANT PROFESSOR	National	Essentials of Research Methodology under NEP 2020 (Interdisciplinary)	01.Jul.2025 - 14.Jul.2025
2025	WORKSHOP/ SEMINAR/ CONFERENCE ATTENDED	ASSISTANT PROFESSOR	National	Workshop on " Study of Plasma-Embedded Highly Charged Ions under the influence of External Magnetic and Electric Fields"	17.Mar.2025 - 17.Mar.2025

Dr. PUSHPENDRA KUMAR