



Faculty Details Proforma

Title	Dr.	First Name	Omwati	Last Name	Rana	Photograph
Designation	Assistant Professor					
Address	Department of Physics, Daulat Ram College, 4 Patel Marg , Delhi-110007					
Email– ID	omwatirana@dr.du.ac.in					
Web Page	-					
Educational Qualification						
Degree	Institution					Year
Ph.D: Physics	National Physical Laboratory, Delhi and Jamia Millia Islamia Central University , Delhi, India					2014
NET-JRF	CSIR-UGC					2007
M.Sc(Physics)	University of Delhi					2007
B.Sc(H) Physics	University of Delhi					2004
Career Profile						
◆ Assistant Professor(Permanent), Daulat Ram College, University of Delhi from 03 October, 2022 to till date. ◆ Assistant Professor(Adhoc), Daulat Ram College, University of Delhi from 22 August, 2013 to 03 October, 2022. ◆ Senior Research Fellow, CSIR-National Physical Laboratory Delhi, from 27 June 2011-26 June 2013 ◆ Junior Research Fellow, CSIR-National Physical Laboratory Delhi, from 26 June 2008-26 June 2011						
Administrative Assignments						
Name of Institute	Designation	Status	Time period		Experience	
Daulat Ram college	Teacher In Charge(Department of Physics)	Completed	2017-18, 2024-25		2 years	
Daulat Ram college	Admission Committee member	Completed	2017-18, 2018-19, 2019-20, 2020-21, 2021-22,2022-23, 2023-24, 2024-25		5 years	
Daulat Ram college	Teaching Program Committee Member	Completed	2017-19, 2021-2022, 2023-2024		3years	
Daulat Ram college	Fine Art Committee member	completed	2017-18		1 year	
Daulat Ram college	Physics Association Incharge	completed	2017-18, 2022-2023		2 year	
Daulat Ram college	Prize Committee member	Ongoing	2017-18, 2024-2025		1 year	
Daulat Ram college	Discipline Committee member	Completed	2017-18		1 year	
Department of Physics & Astrophysics, University of Delhi	Mechanics (Hons. Core, Prog.) Subject groups member, LOCF (CBCS) Undergraduate Physics courses revision 2019	Completed	2017-18		1 year	
Daulat Ram college	Library committee member	completed	2017-19, 2022-23		3 years	
Daulat Ram college	Member of Fresher sport meet	completed	2018-19,2024-25		2 year	

Daulat Ram college	Member of Music and Dance society	completed	2018-19	1 year
Daulat Ram college	Member of NSS	completed	2019-21	2 years
Daulat Ram college	Member of Students Amenities Committee	Completed	2020-2021, 2021-2022, 2022-2023, 2025-26	4 Years
Daulat Ram college	Admission grievance committee member	Completed	2021-2022, 2022-2023	2Year
Daulat Ram college	Hostel committee member	Completed	2021-2023, 2023-2024	3 year
Daulat Ram college	Purchase Committee Member	Ongoing	2017-2018, 2024-2025	2 years
Daulat Ram College	Prospectus Committee	Completed	2016-17, 2024-2025	2 Years
Areas of Interest/Specialization				
Topic of research for Ph.D: Transport and Interface study of hole transporting organic semiconductors.				
Interest area of Research: Organic semiconductors, OLEDs, OFETs and OPVs Devices				

Subjects Taught
Solid State Physics, Mechanics, Electronics, Digital Systems and Applications ,Microcontroller, Communication System, Electromagnetic Theory, Quantum Mechanics and Programming with Python , Electricity and Magnetism
Research Academic Project Guidance: 5 students (4th Year students) completed
1. Academic Project title “Studies of 2D Materials and Perovskite Heterostructure for Memory Device Application” . 2. Academic Project title” Investigation of Cu based 2D materials for Photosensor Application” . 3. Academic Project title“Analysis for deriving colometric parameters using array spectrometer” 4. Academic Project title“Analysis for deriving photometric parameters using Array spectroradiometer” 5. Academic Project title“Mapping and cancellation of Earth's magnetic field for laser cooling of atoms”
Publications Profile
● Megha Rana, Riya Malik, Mandvi Chauhan, Mayank Sharma, Ruchita Joshi, Omwati Rana, Suraj P. Khanna, Ritu Srivastava and C. K. Suman, "Structural Engineering of SnS₂ Nanoflowers for Neuromorphic Applications" J Mater Sci: Mater Electron (2026) 37:327, https://doi.org/10.1007/s10854-026-16751-w , Published online 6 Feb 2026, accepted the manuscript on 2 Feb 2026. ● Ravinder Singh, Omwati Rana, Yogesh Kumar Sharma, Shiv Shankar Gaur “Numerical Approximation Methods and Comparison with RK-4 Method for a Linear Differential Equation with Initial condition using Scilab 6.1.1. <i>Current Natural Science & Engineering Journal</i> (CNS&E Journal) Volume 1(6), December 2024, pp(471-479). https://doi.org/10.63015/5c-2447.1.6 ● Ravindra Singh, Ashok Kumar Shukla, Polly Biswas, Omwati Rana, Shiv Shankar Gaur, Amit Pratap Singh, “Effect of magnetic field on radially polarized laser induced electron acceleration in vacuum”, <i>AIP Conference Proceedings 2754, 100017 (2023)</i> https://doi.org/10.1063/5.0161072 ISBN: 978-0-7354-4634-2 ISSN:0094-243X ● Ravindra Singh, Dr. Ashok Kumar Shukla1 , Rakesh Yadav, Krishan Kant Singh Gautam , Polly Biswas , Omwati Rana , Shiv Shankar Gaur, Priyanka Verma, “Computational Treatment for The Solution of a Set of Coupled Differential Equations for any Physical System Using Scilab and Generating Scilab Codes”, <i>Journal of Physics.: Conf. Ser. 2223</i> (2022) 012002 ICIAS-2021, doi:10.1088/1742-6596/2223/1/012002. Available pdf at: https://iopscience.iop.org/article/10.1088/1742-6596/2223/1/012002/pdf ● Ravindra Singh, Ashok Kumar Shukla, Shiv Shankar Gaur, Rakesh Yadav, Krishan Kant Singh Gautam, Omwati Rana, Polly Biswas “The Study of A System of Non-Homogeneous Equations Using Matrix Exponential Method and Analysis with Scilab Software 6.1.1”, <i>Journal of Physics.: Conf. Ser. 2223</i> (2022) 012001 ICIAS-2021, doi:10.1088/1742-6596/2223/1/012001. Available pdf at: https://iopscience.iop.org/article/10.1088/1742-6596/2223/1/012001/pdf ● R. Singh, A. K. Shukla, S. S. Gaur, P. Verma, P. Biswas and O. Rana, “Comparison of the results of differential equation by

ordinary method and euler's method using scilab", *Vidyabharati International Interdisciplinary Research Journal (Special Issue)*, pp.126-128 August, 2021, ISSN 2319-4979.

Available pdf at: <http://www.viirj.org/specialissues/SP12/Part%202.pdf>

- Dr. Ravindra Singh, Dr. Ashok Kumar Shukla, Dr. Shiv Shankar Gaur, Dr. Priyanka Verma, Polly Biswas, **Dr. Omwati Rana**, "The Matrix Formulations and Algebraic Equations Using Scilab", *National Journal of Environmental and Scientific Research, Vol-2, Issue-7, pp. 56-71, July 2021, E-ISSN-2582-5836*. Available pdf at: <https://www.njesr.com/file.axd?file=/Dr.Ravindra.pdf>
- **Omwati Rana**, Ritu Srivastava, M.N.Kamalasanan, M.Husain, M.Zulfequar "Interface modification for enhancing the conduction mechanisms in 2,2',7,7'-tetrakis(N,N-diphenylamine)-9,9'-spirobifluorene (Spiro-TAD) Nano layers for optoelectronic applications" *International Journal of Recent Technology and Engineering (IJRTE)* ISSN: 2277-3878, Volume-7, Issue-6S, March 2019 Available pdf at: <https://www.ijrte.org/wp-content/uploads/papers/v7i6s/F03730376S19.pdf>
- Kalpana Agrawal, **Omwati Rana**, Nidhi Singh, Ritu Srivastava and S. S. Rajput, "Low voltage organic permeable base N-type transistor" *Applied Physics Letters* 109, pp 163301(1-4) (2016) (AIP) ISSN: 0003-6951.
- **Omwati Rana**, Kalpana Agrawal, S.S.Rajput, M. Zulfequar, M. Husain, M. N. Kamalasanan and Ritu Srivastava "Impedance Spectroscopy Study of 2, 2, 7, 7' -Tetra Kis-(N,N-Di-4-Methoxy phenyl amino)-9,9'-Spirobifluorene Thin Films" *International Conference on Condensed Matter & Applied Physics (ICC-2015) AIP Conf. Proc. 1728, 020247 (2016)*; doi: 10.1063/1.4946298 (AIP) ISSN: 2301-3516.
- R. Srivastava, **Omwati Rana**, Razi Ahmed, C.K. Suman, M. Zulfequar, M. Husain and M. N. Kamalasanan "Improved Performance of Organic LEDs with Modified Metal-Organic Interface" *International Conference on Materials Science and Technology (ICMST 2012) IOP Conf. Series: Materials Science and Engineering* 73 (2015) 012046 doi:10.1088/1757-899X/73/1/012046 (IOP)
- **Omwati Rana**, R. Srivastava, M.N. Kamalasanan, M.Zulfequar and M.Husain "Improvement in electroluminescence efficiency of Organic Light emitting diode using Metal-organic Interface Modification" *Annual International Conference on Optoelectronics, Photonics & Applied Physics (OPAP 2013)*, ISSN 2301-3516, p 49-51, doi:10.5176/2301-3516_OPAP13.40.
- **Omwati Rana**, R. Srivastava, G. Chauhan, M.Zulfequar, M.Husain, P.C.Srivastava and M.N.Kamalasanan "Modification of metal-organic interface using F4-TCNQ for enhanced hole injection properties in optoelectronic devices" *Physica Status Solidi A*, Vol. 12, 2012, p 2539-2545. (Wiley)
- G. Chauhan, R. Srivastava, A. Kumar, **Omwati Rana**, P.C.Srivastava and M.N.Kamalasanan "Dependence of charge carrier mobility of 4,4',4"-tris(N-3-methylphenyl-N-phenylamino) triphenylamine on doping concentration of tetrafluoro-tetracyano-Quinodimethane" *Organic Electronics*, Vol.13, 2012, p 394-398. (Elsevier)
- R. Grover, R. Srivastava, **Omwati Rana**, A. K. Srivastava, K. K. Maurya, K. N. Sood, D.S.Mehta and M.N.Kamalasanan "Electroluminescence from hybrid organic-inorganic LEDs based on thermally evaporated CdS thin films" *Journal of Luminescence* Vol. 132, 2012, p 330-336. (Elsevier)
- R.Grover, R.Srivastava, **Omwati Rana**, D.S.Mehta and M.N.Kamalasanan "New Organic Thin-Film Encapsulation for Organic Light Emitting Diodes" *J of Encapsulation and Adsorption Sciences*, Vol. 1, 2011, p 23-28. ISSN: Print: 2161-4865, Online: 2161-4873
- **Omwati Rana**, R. Srivastava, R. Grover, G. Chauhan, S. S. Bawa, M. Zulfequar, M. Husain and M. N. Kamalasanan "Charge Transport Study of 2,2',7,7'-Tetrakis(N,N-di-4-methoxyphenyl amino)-9,9'-spirobifluorene Using Impedance Spectroscopy" *Jpn. J. Appl. Phys.* Vol. 50, 2011, p 061601(1-5). (IOP science) ISSN: Online: 1347-4065 / Print: 0021-4922
- **Omwati Rana**, Ritu Srivastava, Rakhi Grover, M. Zulfequar, M. Husain and M.N.Kamalasanan "Charge transport studies in thermally evaporated 2,2',7,7'-tetrakis-(N,N-di-4-methoxyphenylamino)-9,9'-spirobifluorene (spiro-MeOTAD) thin film" *Synthetic Metals* Vol. 161, 2011, p 828-832. (Elsevier)

BOOK CHAPTERS

- Abhishek Kumar Srivastava, C.K. Pandey, **Omwati Rana**, Pratigya Tripathi, Shilpi Srivastava, Manisha Bajpai "Synthesis, Properties, and applications of lead-free perovskites", in book, entitled "Sustainable Lead Free Perovskite Materials: Unique Potential of Applications in New Generation Devices" published by Springer Nature Switzerland AG, Gewerbestrasse 11, 6330 Cham, Switzerland, Chapter 2, pp59-79, ISSN 0303-4216, ISSN 1437-0859 (electronic) ISBN 978-3-032-24872-5, ISBN 978-3-032-24873-2 (eBook) <https://doi.org/10.1007/978-3-032-24873-2>.
- Dr. Ravindra Singh, **Dr. Omwati Rana**, Polly Biswas and Dr. Shiv Shankar Gaur, "Fourier Coefficients and Analysis of

Generation of Square Wave Function, Triangle Wave Function & Sawtooth Wave Function Using Scilab”, *Wisdom of the Scientific Research International Book of Multidisciplinary Studies* Published By: Rubicon Publications 4/4A Bloomsbury Square, Bloomsbury Square, London, WC1A 2RP, England, Chapter 5, pp.31-39 Edition: 1st Publication Year: 2021 E-Book ISBN: 978-1-913482-30-5 Paperback ISBN: 978-1-913482-29-9 Book DOI: <https://doi.org/10.33545/rp.book.31>

- Dr. Ravindra Singh, **Dr. Omwati Rana**, Polly Biswas & Dr. Shiv Shankar Gaur, **“Generating Multiple Waves and Addition of Multiple Waves Using Scilab X-COS”, *Research Trends In Multidisciplinary Subjects, Volume-4*, RED'SHINE Publication Pvt. Ltd 88-90 REDMAC, Navamuvada, Lunawada, Gujarat-389230 Website: www.redshine.co.in , Chapter 8, pp.78-97, November, 2021 (First Edition), ISBN: 978-93-91479-24-4, ISBN-10: 9-39-147924-3, DIP: 18.10.9391479243, DOI: 10.25215/9391479243. Available on kindle amazon**

Total Publications: 18 and Book Chapters: 3

Conference paper presented

- Asmita Bhatt , **Omwati Rana** , V. K. Jaiswal , Shibu Saha , Parag Sharma poster presentation on **“Evaluation Of Photodetectors Response With Reference To That Of Human Eye”**in the International conference on **“Frontier in Advanced Materials, Nanotechnology, Computing and Artificial Intellegent Devices (FAMN-CAID-2026)”** for Environment and Sustainable Development organised by National Seminar Committee & Internal Quality assurance Cell (IQAC) of Motilal Nehru College, University of Delhi during March 13-15,2026.
- Khushi Tiwari, Asmita Bhatt, **Omwati Rana**, V. K. Jaiswal, Shibu Saha, Parag Sharma, poster presentation on **“Derivation of Colorimetric Parameters from the scale of Spectral Irradiance”**in the International conference **FAMN-CAID-2026**”organised by National Seminar Committee & Internal Quality assurance Cell (IQAC) of Motilal Nehru College, University of Delhi during March 13-15,2026.
- Gayatri, Dixita Konwar, **Omwati Rana**, Sanyam Jain, Rajiv K. Singh poster presnted on **“Non-Linear Optical Properties And Charge Carrier Dynamics Of Carbazole”** presented in International Conference on Hybrid Materials: Foundation to Frontiers (ICHM 2026) organized by the Department of Physics, Graphic Era Deemed to be University, Dehradun in collaboration with CSIR–National Physical Laboratory, New Delhi, during 19–21 March 2026.
- Dixita Konwar, Gayatri, **Omwati Rana**, Sanyam Jain, Rajiv K. Singh, poster presented on **“Unravelling The Influence of Solvent Polarity on the nonlinear optical Properties of Coumarin”** in ICHM-2026, Dehradun.
- Mandvi Chauhan, Megha Rana, Riya Malik, **Omwati Rana**, Ritu Srivastava, C.K. Suman poster presented on **“Studies of Cobalt doped SnS₂ Nanoflowers for Neuromorphic Device Applications,”** in ICHM-2026, Dehradun.
- Ruchita Joshi, Megha Rana, Riya Malik, **Omwati Rana**, Ritu Srivastava, C.K. Suman, **“Studies of Ni-Doped CuO Nanosheets/FAPbI₃ Heterojunction for Enhanced Optoelectronic Photodetector Applications”** presented in in ICHM-2026, Dehradun.
- Dixita Konwar, Gayatri , **Omwati Rana**, Sanyam Jain, Rajiv K. Singh, **"Non -Linear Optical Properties And Charge Carrier Dynamics Of Coumarin"** poster presented in Shodh Udaan: unergraduate research odyssey, A national Level Science Exhibition of UG Research on 7 october ,2025 organised by Acharya Narendra Dev College, University of Delhi.
- Asmita Bhatt, **Omwati Rana**, V. K. Jaiswal, Shibu Saha, Parag Sharma, paper entittle **"Evaluation Of Photodetectors Response With Reference To That Of Human Eye"**, poster presented in Shodh Udaan: unergraduate research odyssey, A national Level Science Exhibition of UG Research on 7 october ,2025 organised by Acharya Narendra Dev College, University of Delhi.
- **Omwati Rana**, Ritu Srivastava, M.N.Kamalasanan, M.Husain, M.Zulfequar paper entitle **“ Interface modification for enhancing the conduction mechanism in 2,2',7,7'-tetrakis(N,N-diphenylamine)-9,9'-spirobifluorene(Spiro-TAD) Nano layers for optoelectronic applications”** presented in" 4th International conference on Nano Technology (Nano summit 2018) held from 21-22 Sept, 2018 in Dubai.(Oral presentation).
- **Omwati Rana**, Kalpana Agrawal, S.S.Rajput, M. Zulfequar, M. Husain, M. N. Kamalasanan and Ritu Srivastava paper entitle **“Impedance Spectroscopy Study of 2, 2, 7, 7' –Tetra Kis-(N,N-Di-4-Methoxy phenyl amino)-9,9'-Spirobifluorene Thin Films”** conference **“International Conference on Condensed Matter &Applied Physics (ICC-2015)”** held from 30-31 oct, 2015 organised by Department of Physics, Govt of Engineering College, Bikaner, India (Poster presentation)
- **Omwati Rana** , M. Zulfequar , M. Husain and M.N.Kamalasanan and Ritu Srivastava paper entitle **“ Comparative study of OLEDs fabricated by using spiro compounds as HTLs”** conference **“ 17th International workshop on the physics of semiconductors devices (IWPSD-2013)”** conference held from 10-13 Dec, 2013 in Amity University, India. (Poster presentation)
- **Omwati Rana**, Ritu Srivastava, M. Zulfequar , M. Husain and M. N. Kamalasanan paper entitle **“Improvement in electroluminescence efficiency of organic light-emitting diodes using Metal-Organic Interface modification”** conference **“Annual International Conference on Optoelectronics, Photonics & Applied Physics (OPAP 2013)”** held on 4th– 5th February 2013 in Singapore.(Oral presentation).

Research Projects (Major Grants/Research Collaboration)

SDP/Seminars/Workshops Organized

Session.	Nature of Activity	Institution/Department	Period		Role as
			From	To	Coordinator/Convener/Resource Person/Organizing Member
2025-26	Two days skill development program on MS office fundamentals and Google Tools	Physics Department , DRC	11 Aug, 2025	12 Aug.,2025	Coordinator
2025-26	Two days workshop on Electronic Component Recognition	Physics Department , DRC	11 Aug, 2025	12 Aug.,2025	Co-Convener
2024-25	one week In-House Skill Development program on “Designing an Arduino-Powered Motion Detection System”	Physics Department , DRC	15 th Jan, 2025	23 th Jan, 2025	Resource Person
2024-25	SDP on Enhancing Learning Through ICT Tools for 1st year students	Physics Department , DRC	13 th Sept.,2024-	14 th Sept.,2024	Resource Person
2024-25	“Lecture and Free Preventive Health Check-Up Program for Young Girls”	Daulat Ram College	14 November and follow up 19 Dec. 2024	-	Coordinator
2024-25	SDP on “Designing an Arduino-Powered Motion Detection System”	Physics Department, Daulat Ram College, DU	15th January, 2025	23th January, 2025	Resource Person
2024-25	Biggest Stellar Pathways - Planetary Parade	Daulat Ram College, DU	6 Feb., 2025	-	Coordinator
2024-25	Lecture on “Navigating The World – Physics Behind Satellite Navigation”	Physics Department , DRC	13 th Feb 2025	-	Organising Member
2023-24	“One-Week National Faculty Development Program (FDP)” “ Basic Skill in Experimental Physics ”	University of Delhi (Skill Enhancement Course Committee), Daulat Ram College, University of Delhi (Department of Physics) and Guru Angad Dev Teaching Learning Centre, a Centre under PMMMNMTT, Ministry of Education, Government of India.	17th July, 2023	23rd July, 2023	Coordinator
2023-24	Workshop on “Learning ICT Tools” (Online)	Vidya Vistar Scheme, Govt. Girls College Magra Poojla, Jodhpur, Govt. College, Chauhtan, Daulat Ram College,	16 Oct., 2023	-	Resource Person
2021-22	Organize:” e-SDP on Enhancing Learning Through ICT Tools “for 1st year students”	Physics Department, DRC	24th Nov 2021	25th Nov’21	Resource Person
2021-22	Workshop on “Enhancing Programming Skills With Python and XCOS”	Physics Department, Daulat Ram College, Delhi University	13th Jan 2022	14th Jan’22	Resource person & organizing member

Association with Professional Bodies

Life Member of Indian Association of Physics Teachers (IAPT) membership no.1373L8733.

Other Activities**Faculty Development/Induction Programme/ Symposium/Workshop Attended as participant:**

Year	Event	Place	Period	Sponsoring/Organising Agency	
			From	To	
2024-25	Two week Refresher Course on Research Methodology “Embarking on NEP: Research Methodology for Scientific Excellence”	Hybride Mode (Daulat Ram College, DU)	24 June , 2025	07 July, 2025	UGC-MMTTC Malaviya Mission Teacher Training Centre, SGTB Khalsa, College and Daulat Ram College, DU
2022-23	One week Online National FDP Topic:Python: Essentials, Programming and Analytics	Zoom Platform	27 Oct 2022	03 Nov 2022	University of Delhi and Guru Angad Dev Teaching learning Centre, SGTB Khalsa College and PMMMNMTT of Ministry of Education
2022-23	4-Week Faculty Induction Programme (FIP)	Online Mode	20 Jan 2023	18 Feb 2023	Ramanujan College, DU and PMMMNMT of Ministry of Education
2022-23	Two- Week Refresher Course: Physics	Online Mode	27 Feb 2023	13 March2023	Ramanujan College, DU and PMMMNMT of Ministry of Education