



DESHBANDHU COLLEGE
(UNIVERSITY OF DELHI)
KALKAJI, NEW DELHI - 110019
Faculty Details Proforma for College Website

Title	Dr.	First Name	Manju	Last Name	Rani	Photograph
Designation	Associate Professor					
Address	59-A, Kohinoor Apartments, Kalkaji Extension, New Delhi-110019					
Phone No. Office					
Residence					
Mobile	9891063861					
Email	mrani@db.du.ac.in					
Web-Page					
Educational Qualifications						
Degree	Institution				Year	
Ph.D.	University of Delhi				2022	
M.Phil.	
PG	C.C.S. University, Meerut				2002	
UG	C.C.S. University, Meerut				2000	
Any other qualification	CSIR-NET in Physical Sciences				2004	
Career Profile						
Organization	Designation		Duration		Role	
Deshbandhu College, University of Delhi	Associate Professor		Since 01 July, 2020 till Date		Teaching and Research	
Deshbandhu College, University of Delhi	Assistant Professor		14 Nov, 2005 - 30 June, 2020		Teaching and Research	
Administrative Assignments						
<ul style="list-style-type: none"> • Member, Organizing Committee, DBC@70 Program, 2022 • Convener, IQAC Committee for Signages and Signboards • Member, IQAC, Deshbandhu College • Co-Ordinator, Equal Opportunity Cell, Deshbandhu College • Member, Women Development Cell, Deshbandhu College • Member, Extension Lecture Committee, Building and Infrastructure Committee, Deshbandhu College (2019-2020) • Member, Union Advisory Committee, Garden Committee, Deshbandhu College (2018-19) • Member, Financial Assistance Committee, Extension Lecture Committee, Deshbandhu College (2017-18) • Convener, Special Category Enabling Committee for assistance belonging to reserved categories relating to UG Admissions, Deshbandhu College (2013-14) • Admission Incharge, B. Sc (Prog) Physical Science, Deshbandhu College (2013-14) • Member, Admission Grievance Committee, Deshbandhu College (2012-13) • Admission Incharge, B.Sc.(H) Physics, Member, Cultural Committee, Deshbandhu College (2011-12) • Admission Incharge, B.Sc.(H) Physics, Member, Union Advisory Committee, Deshbandhu College (2010-11) • Teacher-in-charge, Department of Physics, Deshbandhu College (2010-12) • Admission Incharge, B.Sc. (Prog.) Physical Sciences, Member, Cultural Committee, Deshbandhu College (2009-10) • Member, Canteen Committee, Deshbandhu College (2008-09) 						

Areas of Interest/Specialization

Solar Cells, Plasmonic Solar Cells, Material Science, Computational Electromagnetics, Renewable Energy Sources, Nuclear Physics

Subjects Taught

- Electricity and Magnetism (Theory and Lab)
- Thermal Physics (Theory and Lab)
- Mathematical Physics (Theory and Lab)
- Waves and Optics (Theory and Lab)
- Mechanics (Theory and Lab)
- Elements of Modern Physics (Theory and Lab)
- Atomic and Nuclear Physics (Theory and Lab)

Research Guidance

Publications Profile

- Manju Rani, Udaibir Singh, Jyoti Kashyap and Avinashi Kapoor (2022): Broadband light trapping in a-Si:H based plasmonic solar cells using Au core-Al₂O₃ shell composite nanospheres using FDTD method, *Materials Technology*, 37(13), 2598-2607 (2022)
- Jyoti Kashyap, Manju Rani, Udaibir Singh and Avinashi Kapoor Surface texturisation for reduction of light reflection in ZnO/Si heterojunction, *Int. J. of Sustainable Energy*, 41 (10), 1399-1407 (2022)
- Y. Kumar, P. Jain, S. Kumar, M. Rani; Quark-Gluon Plasma Fireball Formation in the Environment of Strong Magnetic Field, *J. Sci. Res.* 14 (1), 27-34 (2022)
- Manju Rani, Jyoti Kashyap, Udaibir Singh & Avinashi Kapoor (2021): Optimisation of dielectric spacer layer thickness in Ag nanospheres/ITO/c-Si structure for plasmonic solar cells using FDTD simulation, *Materials Technology*, DOI: 10.1080/10667857.2021.1940046
- Manju Rani, Jyoti Kashyap, Udaibir Singh and Avinashi Kapoor: Investigation of variable sized silver nanospheres deposited on ITO/c-Si structure as FDTD simulation model for plasmonic solar cells, *Nat. Volatiles&Essent.Oils*,2021;8(4):16052-16067, <https://www.nveo.org/index.php/journal/article/view/3511/3078>
- Manju Rani, Jyoti Kashyap, Udaibir Singh, and Avinashi Kapoor: Impact of fabrication of pyramidal structure on silicon wafer surface in ZnO/Si heterojunction; *AIP Conference Proceedings* 2220, 020179 (2020); <https://doi.org/10.1063/5.0001996>
- Jyoti Kashyap, Poonam Shokeen, Manju Rani, Udaibir Singh, and Avinashi Kapoor: Absorption enhancement by surface texturing in ZnO/Si heterojunction; *AIP Conference Proceedings* 2220, 020181 (2020); <https://doi.org/10.1063/5.0001997>
- A Saxena et al., A Study of Crop Yield pattern with Climate Change based on Physical Parameters: Temperature and Rainfall in Western Uttar Pradesh to make future predictions for better Crop Management and Yield, *DU Journal of Undergraduate Research and Innovation* 1 (1) (2015) 36-48. ISSN 2395-2334
- Partha Goswami, Manju Rani, Investigation of a CDDW Hamiltonian to Explore Possibility of Magneto-Quantum Oscillations in Electronic Specific Heat of Hole-Doped Cuprates", *Advances in Condensed Matter Physics*, Volume 2010 (2010), Article ID 928419, 11 pages, doi:10.1155/2010/928419

Conference Organization/ Presentations

- Paper presentation titled "Investigation of Plasmonic Effects of Dielectric Core-Metal Nanoshells in ITO/c-Si based Solar Cells" in International Conference on Recent Trends in Material Science organized by Kristu Jayanti College, Bengaluru in association with Indian Association for Crystal Growth, October-2021
- Paper presentation titled "Enhanced Light Trapping in ITO/c-Si based Plasmonic Solar Cells with Silica Nanospheres using FDTD Simulation" in International Conference on Innovative Research in Engineering and Technology organized by Institute of Engineering Research and Publication September-2021
- Paper presentation titled "Impact of Fabrication of Pyramidal Structure on Silicon Wafer Surface in ZnO/Si Heterojunction" in 3rd International Conference on Condensed Matter and Applied Physics organized by Govt. Engineering College, Bikaner, October-2019
- Paper presentation titled "Absorption enhancement by surface texturing in ZnO/Si heterojunction" in 3rd International Conference on Condensed Matter and Applied Physics organized by Govt. Engineering College, Bikaner, October-2019
- Paper presentation titled "Modification in morphology of Si wafer surface in ZnO/Si heterojunction" in International Conference on Physics, Society and Technology-2019 held in New Delhi (January-2019)
- National Workshop titled "Technical Terminology in Science Teaching", (October 2017) organized by Commission for Scientific and Technical Terminology at Deshbandhu College, University of Delhi
- National Symposium on "Current Trends in Genomics and Proteomics", (February-2010) organized by Department of Biochemistry, Deshbandhu College, University of Delhi
- "ICT Workshop for Capacity Building of Delhi University Faculty" organized by ILL, University of Delhi (20/01/2010 to 27/01/2010)

Research Projects (Major Grants/Research Collaboration)

- A Study of Crop Yield pattern with Climate Change based on various Physical Parameters like Temperature, Rainfall, Humidity, Greenhouse Gases Emission, etc. in Western Uttar Pradesh to make future predictions for better Crop Management and Yield, 2013-14 (Funding Agency: University of Delhi)
- Qualitative analysis of water and gaseous pollutants from different zones of NCR region and designing some tools and techniques to eradicate them by using absorption and adsorption techniques involving biodegradable materials, 2012-13 (Funding Agency: University of Delhi)

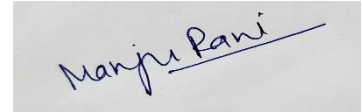
Awards and Distinctions

Best Paper presentation Award titled "Enhanced Light Trapping in ITO/c-Si based Plasmonic Solar Cells with Silica Nanospheres using FDTD Simulation" in International Conference on Innovative Research in Engineering and Technology organized by Institute of Engineering Research and Publication September-2021

Association With Professional Bodies

Other Activities

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Signature of Faculty Member