

Dr. Rekha

Assistant Professor (Adhoc)

Department of Physics, St. Stephen's College, University of Delhi

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Professional Experience

Assistant Professor (Adhoc), St. Stephen's College, University of Delhi (05 Aug 2016 – Present)

Assistant Professor (Adhoc), Ramjas College, University of Delhi (02 Feb 2016 – 21 Apr 2016)

Assistant Professor (Adhoc), Institute of Home Economics, University of Delhi (12 Aug 2015 – 18 Dec 2015)

Assistant Professor (Adhoc), Keshav Mahavidyalaya, University of Delhi (08 Jan 2015 – 22 May 2015)

Academic Qualifications

Ph.D. in Physics (Experimental Condensed Matter Physics), University of Delhi (2010–2015)

Thesis: *Thermal and Dense Electronic Excitation Induced Phase Transformations in Iron-Platinum Magnetic Multilayers*

Supervisor: Prof. S. Annapoorni, Department of Physics and Astrophysics, University of Delhi

CSIR-UGC NET-JRF, December 2008

M.Sc. Physics (Electronics), University of Delhi (Among 3 DU Toppers) (2007-2009)

B.Ed., CIE, University of Delhi (2006-2007)

B.Sc. (Hons.) Physics, Hansraj College, University of Delhi (Among 5 DU Toppers)

Research Interests

- Synthesis, characterization and optimization of iron-platinum thin films for high density data storage applications.
- Experience with RF/DC sputtering, thermal evaporation, electrochemical deposition, ion beam irradiation, XRD, VSM, TEM/SEM, RBS, AFM/MFM and ATR-SPR.

Publications

1. Effect of Pt layers on chemical ordering in FePt thin films.
Rekha Gupta, Rohit Medwal, Preeti Sharma, Ajit K. Mahapatro, and S. Annapoorni,
Superlattices and Microstructures, 64 (2013) 408–417.
2. Phase investigation in Pt supported off-stoichiometric iron-platinum thin films.
Rekha Gupta, Rohit Medwal, and S. Annapoorni,
Materials Research Bulletin, 48 (2013) 3881–3886.
3. Pt diffusion driven L10 ordering in off-stoichiometric FePt thin films.
Rekha Gupta, Rohit Medwal, Neeru Sehdev, and S. Annapoorni,
Journal of Magnetism and Magnetic Materials, 345 (2013) 60–64.
4. Structural and Magnetic Transformation in Electrochemically Synthesized FePt Thin Films on Si/Pt Electrodes.
Rekha Gupta, Rajan Goyal, Rohit Medwal, and S. Annapoorni,
AIP Conference Proceedings, 1591 (2014) 107-109.
5. Engineering strain, densification, order parameter and magnetic properties of FePt thin films by dense electronic excitations.
Rekha Gupta, Neeru Sehdev, K. Asokan, D. Kanjilal, and S. Annapoorni,
Journal of Applied Physics, 116 (2014) 083902-1-7.
6. Direct evidence of chemical ordering in the FePt nanostructured alloy using HR-TEM.
Rekha Gupta, Rohit Medwal, and S. Annapoorni,
Superlattices and Microstructures, 83 (2015) 459–465.
7. A New Route to Glucose Sensing Based on Surface Plasmon Resonance Using Polyindole.
Lalit Kumar, **Rekha Gupta**, Dhruv Thakar, Vaibhav Vibhu, and S. Annapoorni,
Plasmonics, 8 (2013) 487-494.
8. Axonic Au tips induced enhancement in Raman spectra and biomolecular sensing.
Apurve Saini, Rohit Medwal, Saurabh Bedi, Bharat Mehta, **Rekha Gupta**, Thomas Maurer,
Jerome Plain and S. Annapoorni,
Plasmonics, 10 (2015) 617-623.
9. Modelling of Pinning–Depinning Reversal Mechanism in Ion-Irradiated Co/Al₂O₃ Thin Films.
Rajan Goyal, **Rekha Gupta**, Ambika Negi, Kandasami Asokan, Dinakar Kanjilal,
Subahlakshmi Lamba, and Subramanian Annapoorni,
Physica Status Solidi A, 215 (2018) 1800141.
10. Defect Induced Ferromagnetism in Zn/ZnO Interfaces.
Mansi Dhingra, **Rekha Gupta**, and S. Annapoorni,

Crystal Research and Technology, 53 (2018) 1700293.

11. Nonstoichiometric FePt Nanoclusters for Heated Dot Magnetic Recording Media.
John Rex Mohan, Rohit Medwal, Surbhi Gupta, Kriti Gogia, Joseph Vimal Vas, **Rekha Gupta**,
Angshuman Deka, Rajdeep Singh Rawat, Annapoorni Subramanian, and Yasuhiro
Fukuma,
ACS Applied Nanomaterials, 4,7 (2021) 7079-7085.

12. Optimizing Fe₃Pt/Pt Thin Films with Ag Additives: Structural and Magnetic Analysis.
Rekha Gupta, Rajan Goyal, Rohit Medwal, and S. Annapoorni
Journal of Materials Engineering and Performance 34 (2025) 23680-23687.

13. Resilient Urban Ecosystems: Addressing Extreme Climate Conditions through
Sustainable Design and Restoration Strategies - A Case Study of Delhi
Annu Malhotra, **Rekha Gupta**
Submitted to International Conference on Regenerative Ecosystems (ICRE 2025)

Undergraduate Teaching Experience

Courses Taught (CBCS / LOCF / NEP)

Theory Courses: Electrical Circuit Analysis; Thermal Physics; Analog Electronics; Solid State Physics; Electromagnetic Theory; Mechanics; Thermal Physics and Statistical Mechanics; Waves and Optics; Heat and Thermodynamics; Technical Drawing; Engineering Design and Prototyping; Basic IT Tools; Document Preparation and Presentation Software.

Practical Courses: Waves and Oscillations; Electrical Circuit Analysis; Thermal Physics; Digital Systems and Applications; Modern Physics; Physics Laboratory V & VI; Electromagnetic Theory; Analog Systems and Applications; Nanomaterials and Applications; Solid State Physics; Electricity and Magnetism; Mechanics; Waves and Optics; Heat and Thermodynamics; Digital, Analog and Instrumentation; Technical Drawing; Engineering Design and Prototyping; Basic IT Tools; Document Preparation and Presentation Software.

Academic and Institutional Responsibilities

- Member, Departmental timetable Committee since 2019.
- Assisting in departmental stock verification and conduct of practical examinations.
- Member, IQAC Criteria 1 – Curriculum Design and Planning Sub-Committee (2021–Present).
- Assisted in documentation for the India Today College Survey (2022–2024).
- University Examination Paper Setter (2016–Present).
- Member, Subject Working Group VIII for revision of LOCF (CBCS) Undergraduate Physics curriculum (2019).
- Staff Advisor, Enactus Society (2025–Present).

- Staff Advisor, Ladies' Common Room (2023–2025).
- Staff Advisor, Incubation Center (2019–2021).
- Mentored four undergraduate students (two Physics and two Chemistry) in their Fourth-Year Dissertation / Academic Projects in 2025-26.

Academic Events, Workshops and Professional Development

1. Organizing Committee Member, Summer Research and Innovation Programme 2026, St. Stephen's College (29 June - 15 July 2026).
2. Organizing Committee Member and Resource Person, Summer Research and Innovation Programme 2025, St. Stephen's College (9–27 June 2025).
3. Organizing Committee Member, International Symposium for Space Science, Astrophysics and Cosmology 2024 (20–22 Nov 2024).
4. Organizing Member, Pedagogic Workshop on Astronomy, Astrophysics and Cosmology (6–10 Nov 2023).
5. Organizing Committee Member and Resource Person, Skill Development and Upgradation Workshop for Laboratory Personnel (8–10 Aug 2023).
6. Completed NPTEL course: Programming, Data Structures and Algorithms using Python (Sept–Nov 2020).
7. Participated in International Webinar Series on Magnetism and Materials Science (15–18 Sept 2020).
8. Organizing Member, RAD@home Astronomy Workshop (23 Feb 2019).