

Facilities Of Physics Department

Library

The Department of Physics has one Departmental Library having about 5000 text and reference books, hard copies of large no. of valuable research journals along with subscription to 30 research journals covering different fields of specializations like Materials Science, Solid State Physics, Optics & Spectroscopy, Nuclear Physics, Electronics, High Energy Physics etc.

Teaching Labs

The Department has 10 teaching labs for M.Sc. (previous) and M.Sc. (final) year students. In M.Sc. previous Lab., students perform experiments based on general topics like Optics, Lasers, Electronics, Nuclear Physics, Solid State Physics, Non-linear dynamics etc. In M.Sc. final Lab., students perform experiments linked to various specializations. For each optional paper, a separate Lab is maintained. Some of the facilities of various research labs are also made available to the students for a better exposure of the subject. Our labs are well modernized through DST/UGC and University grants.

Other Facilities

There are 6 Research and 2 Computer Labs in the Department to carry out research in the thrust areas of physics.

PLACEMENT CELL

Although there is no placement cell at the departmental level, but as per the information generally received from the students almost all the students are well absorbed in teaching, research institutes and industries.

The faculty members of the Department help the students in placement in many research institutes through their academic contacts and recommendations. Further the students are regularly updated about the latest scope of the course.

Major Teaching Lab Equipments:

S. No.	Name of Equipment
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1	Alpha Ray Spectrometer (Ortec, USA)
2	Gamma Ray Spectrometer (Nucleonix, India)
3	X-ray Structural Analysis (Lebold, Germany)
4	Compton Scattering (Lebold, Germany)
5	Rutherford Backscattering Setup (Lebold, Germany)
6	Chua's Circuit

Major Research Equipments:

S. No.	Name of Equipment
1	200 KeV Ion Accelerator system
2	UV-Vis –NIR Spectrophotometer , (Shimadzu, Japan)
3	C-V analyzer , (Kiethly, USA)
4	Ellipsometer , (Sentech, Germany)
5	Atomic Force Microscope , (Bruker, Germany)
6	XRD with Glancing Angle attachment , (Shimadzu, Japan)
7	RF and DC sputtering Unit
8	Impedence Analyzer , (Wayne Kerr electronics)
9	Vacuum Coating Unit
10	Furnance 600° C
11	Metallurgical Microscope (Lietz, Germany)
12	Microhardness Tester (UHL, Germany)

INFORMATION ON SEMINARS & CONFERENCES ORGANIZED

Department of Physics has organized following International/National Conferences/Seminars/Symposia

- International Seminar on Current Developments in Disordered Materials, January 22-24, 1996.
- Xth National Symposium on Solid State Nuclear Track Detectors, October 3-5, 1996.
- Department of Atomic Energy Solid State Physics Symposium, December 27-31, 1998.

- National Conference on Materials and their Applications (NCMA-2004), March 11-13, 2004.
- National Conference on Recent Advances in Materials Science (RAMS-2006), September 27-29, 2006.
- Awareness Workshop on the Facilities of UGC-DAE CSR, Indore, December 4-5, 2006.
- National Workshop on Nuclear and Radiochemistry, Nov. 29 to Dec. 8, 2007.
- Role of Basic Sciences: Igniting Young Minds, February 9-10, 2011.
- National Workshop on “Advanced Characterization and Simulation Techniques” March 12-17, 2012.
- 84th BRNS-IANCAS National Workshop, October 23-27, 2013.
- Training course on ‘Safety Aspects in the Research Applications of Ionizing Radiation ’RA-42’ December 02-10, 2013.
- Symposium on Recent Research Trends in Physics, March 1-2, 2014.
- Two days National Workshop on Ion Beam Induced Growth and Engineering of Materials, March 11-12, 2014.
- 2nd National Workshop on Ion Beam Induced Growth and Engineering of Materials, March 4-5, 2016.
- One Day NSM workshop on High Performance Computing (HPC), May 04, 2018.
- Two Day National Conference in Recent Advances in Condensed Matter Physics, October 12-13, 2018.

INFORMATION ON ACHIEVEMENTS

200kV Ion Beam Facility

The department of Physics, Kurukshetra University has earned a rare distinction as it is the first University in India to house a unique National ‘Ion Beam Facility’. A research project “Ion Induced Growth and Engineering of Materials” worth Rupees 8.67 Crores was sanctioned by DST, New Delhi to set up state-of-the-art ‘Low Energy Ion Accelerator’ to facilitate R & D at Department of Physics, Kurukshetra University, Kurukshetra.

This National Facility at Kurukshetra University, Kurukshetra is the ‘First’ of its kind in any University in India. This Central facility is open to users to undertake a wide variety of research in various disciplines.

The other achievements of the Department are as under:

Identification Under Special Programmes

- FIST Level – I Programme of DST, New Delhi.

The Department had been granted Rs. 53 lacs by Department of Science & Technology, New Delhi under its FIST Programme (2003- 2010) for up-gradation of Teaching and Research Labs during 10th plan. By now, research facilities to the tune of 47 lacs have been.

- SAP Programme of UGC, New Delhi

The Department has been granted Rs. 66 lacs by University Grants Commission, New Delhi under its SAP Programme (2009-2014) for up-gradation of Teaching and Research Labs during 11th plan.

Research Outcomes

Department has produced about 175 Ph.Ds & 240 M.Phils. and about 30 scholars are registered for their Ph.D. degree. Currently, the faculty members are actively engaged in the following domains of research.

Experimental Physics:

- Ion beam induced engineering and growth of materials.
- Irradiation induced modification in the properties of materials.
- Stopping power and straggling of heavy ions in polymers.
- Nano structuring of materials.
- 2D materials and Polymer electrolytes for energy harvesting and storage devices (Batteries, Supercapacitors, fuel cells, Hydrogen splitting).
- Optical filters, Sensors.
- Ion-induced fusion-fission reactions via pre-scission neutron multiplicity, fission fragment mass and angular distribution measurements.

Theoretical Physics

- Dynamics of non-equilibrium systems/ nonlinear systems, Solitons, Chaos and Intergerable Systems.
- Simulation of Solar-cells.
- Low Dimensional Nanoscopic Electron Systems.
- Heavy ion induced nuclear fusion reactions around barrier energies.
- Breakup and fusion reactions induced by weakly bound projectiles.
- Synthesis of super heavy nuclei through cold and hot fusion reactions.

- Nuclear structure near drip lines.

Several significant contributions in these fields have been made. So far about 600 research papers have been published by the faculty in the national and international journals of repute.

Faculty members are engaged in Research Collaborations both at National and International levels with the following Institutions:

National Institutions

- Inter University Accelerator Centre (IUAC), New Delhi.
- Central Electronics Engineering & Research Institute (CEERI), Pillani.
- Variable Energy Cyclotron Centre, Kolkatta.
- UGC-DAE Consortium for Scientific Research, Indore Centre, Indore.
- Bhabha Atomic Research Centre (BARC), Mumbai.
- Indian Institute of Technology, Roorkee.
- Indira Gandhi Centre for Atomic Research, Kalpakkam.
- National Physical Laboratory, New Delhi.
- NISER Bhubaneswar.
- IIT, Kanpur.
- MNIT, Jaipur.
- NIT, Kurukshetra.
- ABV-IITM, Gwalior.
- Panjab University, Chandigarh.
- University of Delhi, Delhi.
- Kumaun University, Nainital.
- Guru Nanak Dev University, Amritsar.
- H.P. University, Shimla.
- University of Mumbai, Mumbai.
- CU, Punjab Bhatinda.
- Amity University, Noida.
- Guru Jambheshwar University of Science and Technology, Hisar.
- Ch. Devi Lal University, Sirsa.
- CBLU, Bhiwani.
- IGU, Meerpur, Rewari.
- JC Bose University, Faridabad.

- Pt. B D Sharma, PGMIS, Rohtak.
- Kalpana Chawla Medical College, Karnal.
- Punjabi University, Patiala.

International Institutions

- International Centre for Theoretical Physics (ICTP), Trieste (Italy)
- University of Trieste, Trieste (Italy)
- Institute of Nuclear Research, Debracen (Hungary)
- University of Southern Denmark, Odense, Denmark
- University of Southern Mississippi, Hattiesberg, MS, USA.

Major Grants

- Rs. 8.67 crores from DST, New Delhi for research project on Ion Beam Facility (2010-2015).
- Rs. 66 lacs from UGC, New Delhi under its SAP Programme (2009-2013).
- Rs. 20 lacs from UGC, New Delhi under its BSR Scheme (2009-2011).
- Rs. 153 lacs from University/ State Govt. (2008-2011).
- Rs. 53 lacs from DST, New Delhi under its FIST Level - I Programme (2003-2008)
- Rs. 45 lacs from University (one time grant) (2005-2006)
- Rs. 16 lacs from UGC, New Delhi during 10th plan

International Awards/ Fellowships/ Academic Visits of the Faculty

Name of Awardee	Name of Award / Fellowship / Academic Visit	Year
Dr. R. K. Moudgil	Post Doctoral Fellowship by Ministry of Science & Technology, Govt. of Italy at University of Trieste, Italy	October 2000 to October 2002
Dr. Sanjeev Aggarwal	Commonwealth Fellowship Award by Association of Commonwealth Universities & British Council, London, UK. at University of Liverpool, UK	October 2001 to September 2002

Dr. Rajesh Kharab	Nuclear Physics Summer School at University of Florida, Florida USA.	July 8-21, 2007
Dr. Annu Sharma	Awarded Post-Doctoral Fellowship as an Assistant Professor by Danish Natural Science Research Council, Govt. of Denmark at University of Southern Denmark, Odense, Denmark	Nov. 2002 to Dec. 2004
	Euro-Indo Forum on Energy , Eicoon Workshop and Summer School, Helsinki, Finland	June 13-17, 2011
	Career Development Workshop for Women in Physics, The Abdus Salam International Centre for Theoretical Physics (I.C.T.P.) Trieste, Italy	September, 16- 19, 2013
	XVIII th International Krutyn summer school on Frontiers in Nanoplasmonics, Krutyn, Poland	September 27- October 3, 2015
Dr. Hardev Singh	Awarded Post-Doctoral Fellowship by DOE, USA at University of Rochester, USA.	April, 2009 – May, 2010