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Volume-7

EVALUATIVE REPORT

Department of Physics and
Materials Science and Engineering

for

ASSESSMENT AND ACCREDITATION

Submitted to

NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

BANGALORE



JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY
NOIDA

17 September, 2015

Evaluative Report of the Department

1. **Name of the Department** Physics and Materials Science and Engineering (PMSE)
2. **Year of establishment** 2001
3. **Is the Department part of a School/Faculty of the university?**

JIT is a unitary university. It has departments that include department of Physics and Materials Science and Engineering, and also a Business School.
4. **Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph. D., D. Sc., D. Litt., etc.)**
 - i. Ph.D.
 - ii. M. Tech. in Materials Science and Engineering
5. **Interdisciplinary programmes and departments involved**

None, however, curriculum of the M. Tech (MSE) programme contains courses of other disciplines like Electronics and Communication Engineering (ECE) and Mathematics.
6. **Courses in collaboration with other universities, industries, foreign institutions, etc.**

None
7. **Details of programmes discontinued, if any, with reasons**

None
8. **Examination System: Annual/Semester/Trimester/Choice Based Credit System**

Semester, along with choice based credit system
9. **Participation of the department in the courses offered by other departments**

Department offers several courses in the UG and PG programmes of other departments. Details of the courses offered are as below:

(a) Courses offered in UG programmes (B. Tech.)

S. No.	Course Title	Beneficiary Department
1.	Physics-I	CSE & IT, ECE, BioTech
2.	Physics Lab-I	CSE & IT, ECE, BioTech
3.	Physics-II	CSE & IT, ECE
4.	Physics Lab-II	CSE & IT, ECE
5.	Bio-Physical Techniques	BioTech
6.	Biomaterials Science	BioTech
7.	Materials Science	CSE & IT, ECE
8.	Nano-science and Technology	CSE & IT, ECE, BioTech
9.	Intro. to Quantum Information Theory	CSE & IT, ECE
10.	Electronic Ceramics	CSE & IT, ECE
11.	Photonics and Applications	CSE & IT, ECE
12.	Astrophysics	CSE & IT, ECE, BioTech
13.	Biophysics	CSE & IT, ECE, BioTech
14.	Plasma Physics	CSE & IT, ECE, BioTech

(b) Courses offered in PG programmes (M. Tech./ Ph.D.)

S. No.	Course Title	Beneficiary Department
1.	Semiconductor Devices and IC Technology	ECE
2.	Thin Film Technology and Applications	ECE
3.	Advanced Materials and Applications	CSE & IT, ECE
4.	Optoelectronic Materials and Devices	ECE
5.	Photovoltaic Techniques and Processes	ECE
6.	Nanotechnology	CSE & IT, ECE
7.	Engineering Ceramics and Composites	CSE & IT, ECE

10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)

	Sanctioned[#]	Filled	Actual (including CAS & MPS)
Professor	4	04	04
Associate Professors	8	02	02
Asst. Professors	22	15	15
Teaching			15*

Assistants*			
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#JIIT follows flexible cadre structure like IITs

*Full time research scholars / M. Tech. students

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	Qualification	Designation	Specialization	No. of Yrs of Experience	No. of Ph.D./ M. Tech students guided for the last 4 yrs
S C Katyal	Ph.D. (MDU Rohtak)	Professor	Materials Science (Compound Semiconductor)	33	Ph.D. Ongoing = 01
D K Rai	Ph.D. (BHU)	Professor & Head	Solid State Ionics- Materials and Devices	20	Ph.D. Awarded = 01 Ongoing = 01 M. Tech. Completed = 01
Anirban Pathak	Ph.D. (Visva Bharati, Santiniketan)	Professor	Quantum Optics and Quantum Information Theory	13	Ph.D. Awarded = 02 Ongoing = 01
S P Purohit	Ph.D.(IIT Roorkee)	Professor	Theoretical Atomic and Molecular Physics and Nanoscience	22	Ph.D. Awarded = 01 Ongoing = 01
R K Dwivedi	Ph.D. (BHU)	Associate Professor	Advanced Materials	16	Ph.D. Awarded = 03 Ongoing = 02 M. Tech. Awarded = 03
Navneet Kumar Sharma	Ph.D. (IIT Delhi)	Associate Professor	Surface Plasmon Resonance based Fiber-optic Sensors	11	Ph.D. Awarded = 01 Ongoing = 01 M. Tech. Awarded = 01
Papia Chowdhury	Ph.D. (IACS Kolkata)	Assistant Professor	Opto-chemical Sensors, OLED, Modelling and Simulation	10	Ph.D. Awarded = 01 Ongoing = 01 M. Tech. Awarded = 02

Navendu Goswami	Ph.D. (JNU)	Assistant Professor	Nanoscience and Technology	10	Ph.D. Ongoing = 02 M. Tech. Awarded = 02
Vikas Malik	Ph.D. (JNU)	Assistant Professor	Condensed Matter Physics	14	Ph.D. Ongoing = 03
Vivek Sajal	Ph.D. (IIT Delhi)	Assistant Professor	Plasma Physics	7	Ph.D. Awarded = 01 Ongoing = 03
Ravindra Kumar	Ph. D. (G B Pant Univ of Agri. & Tech., Pant Nagar)	Assistant Professor	Materials Science	8	Ph.D. Awarded = 01 Ongoing = 01 M. Tech. Awarded = 01
Manoj Kumar	Ph.D. (IIT Roorkee)	Assistant Professor	Multiferroic Materials, Functional Oxide Nanomaterials	7	Ph.D. Awarded = 02 Ongoing = 03 M. Tech. Awarded = 02
S K Awasthi	Ph.D. (Lucknow Univ)	Assistant Professor	Optics and Photonics	8	Ph.D. Ongoing = 01
Alok P S Chauhan	Ph.D. (Stony Brook Univ., USA)	Assistant Professor	Ceramics, Materials Science and Engineering	7	Ph.D. Ongoing = 01 M. Tech. Ongoing = 01
Geetika Srivastava	Ph.D. (IISc, Bangalore)	Assistant Professor	Materials Science and Engineering	5	Ph.D. Ongoing = 02 M. Tech. Awarded = 01
Amit Verma	Ph.D. (JIIT Noida)	Assistant Professor	Quantum Optics and Laser Sciences	11	Ph.D. Awarded = 01
Prashant K Chauhan	Ph.D. (IIT Delhi)	Assistant Professor	Plasma Physics	7	Ph.D. Ongoing = 01
Sandeep Chhoker	Ph.D. (IIT Delhi)	Assistant Professor	Experimental Condensed Matter Physics	6	Ph.D. Ongoing = 01
Bhubesh C Joshi	Ph.D. (Kurukshetra University)	Assistant Professor	Compound Semiconductor and Devices	6	Ph.D. Ongoing = 01 M. Tech. Awarded = 02
Swati Rawal	Ph.D. (DCE, Delhi)	Assistant Professor	Photonic Crystal Waveguides	4	Ph.D. Ongoing = 01

Anshu D. Varshney	Ph.D. (DCE, Delhi)	Assistant Professor	Photonics, PCF, Plasmonics	6	Ph.D. Ongoing = 01
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12. List of senior Visiting Fellows, adjunct faculty, emeritus professors

Nil

13. Percentage of classes taken by temporary faculty – programme-wise information

Nil

14. Programme-wise Student Teacher Ratio

UG Program: 22:1

PG Program: 5:1

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual

Technical Staff

Position	Sanctioned	Filled	Actual (including CAS & MPS)
Lab Technician	03	03	03
Lab Assistant	01	01	01

Administrative staff: Common for all departments

16. Research thrust areas as recognized by major funding agencies

Two thrust areas of research have been identified on the basis of areas recognized by major funding agencies:

1. Advanced Materials and Applications

- i. Nanoscience and Nanomaterials** - Quantum dots, Metal-oxide nanostructures, Functional nanomaterials
- ii. Energy Materials and Devices** - Green energy materials, Electro-chemical devices, Solar cells, LEDs
- iii. Advanced Materials** - Manganite materials, Multiferroic materials, Ferroelectric and piezoelectric ceramics, Composite materials

- iv. **Atomic and Molecular Physics** - Charge transfer dynamics and phase transitions, Molecular modeling and simulation, Laser assisted collisions, Opto-chemical and fluorescence sensors
- v. **MEMS and Smart Systems** - Piezoelectric ceramics for MEMS applications, Piezoelectric composites for sensors and actuators

2. Photonics, Plasma Physics and Quantum Computing

- i. **Photonics and Plasma Physics** - Laser plasma interaction, Photonic crystals and devices, Optical fiber sensor, Surface Plasmons, Terahertz radiation generation
- ii. **Quantum Optics and Quantum Computing** - Higher order non-classical states, Quantum communication, Quantum gates and circuits, Quantum cryptography

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

A. Ongoing Projects: Nil

B. Completed Projects:

- (a) From National Funding Agency: 05
- (b) From International Funding Agency: Nil
- (c) Total grants received: Rs. 103.29 Lac

Details of completed projects are given as below:

Sl. No.	Funding Agency	Duration	Project Title	PI	Grant (Rs in Lac)
1	DST	2011-15	Theoretical study of higher order non-classicality and its applications	Prof. A. Pathak	12.75
2	DST	2011-14	Investigations on multifunctional properties of alkaline earth and rare earth doped $BFe_{1-x}Ti_xO_3$ solid solutions	Dr. R. K. Dwivedi	51.31
3	DST	2010-14	Bistability due to intra-molecular and inter-molecular charge transfer in different	Dr. Papia Chowdhury	9.36

			environments		
4	DST	2010-14	Synthesis and study of structural, dielectric, magnetic and magneto-electric properties of multiferroic materials	Dr. Manoj Kumar	11.58
5	DRDO	2010-12	Investigation on multi functional properties in substituted multi ferroics	Dr. R. K. Dwivedi	16.13
6	DST	2006-09	Theoretical study of single photon sources for quantum computation	Prof. A. Pathak	2.16
Total					103.29

18. Inter-institutional collaborative projects and associated grants received

a) National collaboration

b) International collaboration

There are no funded inter-institutional collaborative projects at present. However, faculty members of the department are engaged in collaborative research work at individual level with researchers working in national and international universities and research labs without funding. These collaborations are as under:

(a) National Collaborations at individual level (without grants)

S. No.	JIIT Faculty	Collaborating Faculty	Research Area	Outcome (Res. Pub.)
1	Prof. D K Rai	Dr. S A Hashmi University of Delhi	Solid State Ionics	Journal: 04 Conf: 12
2	Prof. S C Katyal	Dr. Rajesh Kumar, Dr. Pankaj Sharma, JUIT, Wagnaghat	Compound Semiconductors	Journal: 16 Conf: 01
		Prof. Mahavir Singh, Prof. Nagesh Thakur, Prof. V S Rangram, HP University, Shimla	-do-	
3	Prof. Anirban Pathak	Dr. S Banerjee, IIT Jodhpur	Quantum Optics and Quantum Information	Journal: 07 Conf: 04
		Prof. P K Panigrahi, Prof. J Banerji, PRL, Ahmedabad	-do-	

		Prof. S Mandal Visva Bharati, Santiniketan	-do-	
		Dr. B Sen, Vidyasagar Teachers Training College, Midnapore	-do-	
		Dr. R Srikanth, Poorna Prajna Institute of Scientific Research, Bangalore	-do-	
		Dr. Anu Venugopalan GGSIU, Delhi	-do-	
4	Dr. R K Dwivedi	Dr. R P Tandon Delhi University	Multiferroic Materials	Journal: 28 Conf: 11 Ph.D.: 01
		Dr. H K Singh, NPL Delhi	-do-	
		Dr A K Jha, DTU, Delhi	-do-	
		Prof. R Ranjan, Prof. A M Umarji, IISc Bangalore	-do-	
		Dr. K Asokan, IUAC Delhi	-do-	
		Dr. O P Thakur SSPL, DRDO, Delhi	-do-	
		Dr. Avneesh Anshul AMPRI, CSIR Bhopal	-do-	
		Prof. Om Prakash, IIT BHU	-do-	
		Dr. S K Mishra, Moser Baer India Ltd, G Noida	-do-	
5	Dr. Papia Chowdhury	Prof. C B Narayan JNCASR, Bangalore	Spectroscopy	Journal: 10 Conf: 07
		Prof. S Chakravorty, IACS Kolkata	-do-	
		Dr. S K Goswami, Bruker India Scientific Ltd.	Fluorescent Materials	
6	Dr. Navendu Goswami	Prof. Vinay Gupta Delhi University	Nanomaterials	Journal: 03 Conf: 02
		Prof. P Sen , JNU Delhi	-do-	
7	Dr. Manoj Kumar	Dr. R K Kotnala, Dr. V N Singh, Dr. M Jewariya, Dr. V P S Awana NPL Delhi	Multiferroic Materials	Journal: 13 Conf: 05
		Dr. A K Pawar, DTU Delhi	-do-	
		Prof. K L Yadav IIT Roorkee	-do-	
		Dr. Naresh Kumar	-do-	

		MNIT, Allahabad		
		Prof. A K Shukla, IIT Delhi	Nanomaterials	
8	Dr. S K Awasthi	L. Shiveshwari K B Women's College, Vinoba Bhave University, Hazaribag	Photonics and Metamaterials	Journal: 08 Conf: 10
9	Dr. Geetika Srivastava	Prof. A M Umarji, IISc Bangalore	Ferroelectrics	Journal: 02
10	Dr. Vivek Sajal	Prof. V K Tripathi IIT Delhi	Plasma Physics	Journal: 05
		Dr. Anil Malik, MM Modi PG College, Modinagar	-do-	
		Dr K P Singh, Singh Simutech Pvt Ltd Bharatpur	-do-	
11	Dr. Ravindra Kumar	Dr. P. K. Kulriya IUAC, Delhi	Diluted Magnetic Semiconductors	Journal: 02
		Dr. Govind Gupta, NPL, Delhi	-do-	
12	Dr. Sandeep Chhoker	Prof. V D Vankar, IIT Delhi	-do-	Journal: 01
13	Dr. Bhubesh C Joshi	Dr. R J Choudhary, Dr. D M Phase, UGC-DAE, CSR, Indore	Thin Film Devices	-
14	Dr. Prashant K Chauhan	Prof. R P Sharma, IIT Delhi	Plasma Physics	Journal: 02
		Dr. G Purohit, DAV College Dehradun	-do-	

(b) International Collaborations

S. No.	JIIT Faculty	Collaborating Faculty	Research Area	Outcome (Res. Pub.)
1	Prof. D K Rai	Prof. C W Lan, NTU Taiwan	Non-Linear Crystal Growth and Solar Cells	Journal: 03
2	Prof. Anirban Pathak	Prof. F M Fernandez Universidad Nacional de La Plata, Argentina	Mathematical Physics	Journal: 09 Conf: 01
		Prof. A Miranowicz, Dr. M Paprzycka, Adam Mickiewicz Univ, Poland	Quantum Optics and Quantum Information	

		Prof. J Perina, Prof. J Perina Jr. Dr. J Krepelka, Prof. V Peřinová, Dr. A Lukš, Dr. M Hamar, Dr. V Michálek Palacky Univ, Czech Republic	-do-	
		Prof. F Nori, Prof. A Miranowicz, CEMS, RIKEN, Japan/ Univ. of Michigan, USA	-do	
		Prof. C H R Ooi, Univ. of Malaya, Malaysia	-do	
		Prof. M Garcia Universität Kassel, Germany	Quantum Optics	
		Dr. P Pintr, Institute of Plasma Physics, Czech Republic	Astrophysics	
		Prof. G W Dueck, University of New Brunswick, Canada	Reversible Computing	
3	Dr. Navendu Goswami	Prof. V Agarwal Av. Universidad Mexico	Nano-materials	Journal: 02
4	Dr. Prashant K Chauhan	Prof. Saleh T Mahmood, UAE Univ Al AIN-UAE	Plasma Physics	-

Details of publications are attached as **Annexure-I/PMSE**.

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.

S. No.	Granting Agency	Duration	Title	Grant (Rs in Lac)	PI/Co PI
1.	AICTE	2008-11	MODROB	7.0	Prof. K C Mathur/ Dr. R K Dwivedi

20. Research facility / centre with

- state recognition None
- national recognition None
- international recognition None

21. Special research laboratories sponsored by / created by industry or corporate bodies

None

22. Publications:

1	Total Publications : Peer reviewed	221
	International Journals	216
	National Journals	5
2	Monographs	Nil
3	Chapters in Books	03
4	Edited Books	01
5	Books with ISBN	02
6	Number listed in International Databases	244
7	Citation Index (Google)	
	Range	0 - 85
	Average	5.15
8	Citation Index (Scopus)	
	Range	0 - 47
	Average	4.10
9	SNIP	1.007
10	SJR	0.715
11	Impact Factor (Scopus)	
	Range	0 - 3.84
	Average	1.74
12	H-index (Scopus)	
	Average	71.725

Details of Publications and citations are attached as **Annexure-II/PMSE and Annexure-III/PMSE**

- 23. Details of patents and income generated** None
- 24. Areas of consultancy and income generated** None
- 25. Faculty selected nationally/ internationally to visit other laboratories /institutions/ industries in India and abroad**

The details of the visits are are outlined below:

Prof. D K Rai

- Department of Chemical Engineering, National Taiwan University for a year (2007-08).

Prof. A. Pathak

- RCPTM, Joint Laboratory of Optics, Palacky University, Olomouc, Czech Republic from 15/06/15 to 12/07/15 for research collaboration. Delivered an invited talk on " Nonclassicality: Some recent observations and open questions related to its quantitative measures, applicability and necessity" on 19/06/15.
- Faculty of Informatics, Masaryk University. Delivered an invited talk on "Controlled quantum communication and quantum e-commerce in noisy environment" on 23/06/2015.
- RCPTM, Joint Laboratory of Optics of Palacky University and Institute of Physics of Academy of Science of the Czech Republic, Palacky University, Czech Republic from 29/10/ 2013 to 7/11/2013 for collaborative work.
- Prof. Adam Miranowicz at Faculty of Physics, Adam Mickiewicz University, Poland from 7/11/2013 to 10/11/2013 for collaborative work.
- RCPTM, Joint Laboratory of Optics of Palacky University and Institute of Physics of Academy of Science of the Czech Republic, Palacky University, from 13/02/2012 to 14/02/2013.
- Prof. Adam Miranowicz at Faculty of Physics, Adam Mickiewicz University, Poland from 20/1/13 to 28/1/2013.
- Prof. Martin Garcia, Universität Kassel, Institut für Physik, Kassel, Germany from 29/1/2013 to 1/2/2013.
- Delivered a talk on “Secure quantum communication using arbitrary, orthogonal, multi-particle quantum states” on 23/01/2013 at Adam Mickiewicz University, Poland.
- Delivered a talk on “Some interesting aspects of multi-partite secure quantum communication” on 30/01/2013 at Universität Kassel, Institut für Physik, Germany.
- Delivered an invited talk on, “A Journey from QKD to Quantum Dialogue: What makes this protocols unconditionally secured”, Masaryk University, Czech Republic on 07/03/2012.
- Delivered a series of invited talks at MIMOS, Malaysia, as a member of Panel of Experts Forum on Quantum Information from 7/12/2009 to 11/12/2009.
- University of Calgary, Canada and various other places (2006-07).
- National University of Singapore from 11/07/2004 to 25/07/2004 and delivered a lecture on quantum cryptography.

- Delivered an invited talk on “A Quantum Magic Show”, Ramjas College, Delhi University on 04/02/2012.
- Delivered invited technical talks at S N Bose National Centre for Basics Sciences, Kolkata; Indian Association for the Cultivation of Sciences, Kolkata; IIT Chennai; Physical Research Laboratory, Ahmedabad; BARC, Mumbai; Dr. Pathak was also elected as TPSC speaker for 2006-07.

Dr. R. K. Dwivedi

- Delivered an invited talk on “Magnetic & Electrical behavior of the bulk and thin films of $\text{Nd}_{1-x}\text{Sr}_x\text{MnO}_3$ system” at Sharda University, Greater Noida on 21/05/2010.

Dr. Papia Chowdhury

- Joint Laboratory of Optics of Palacky University and Institute of Physics of Academy of Science of the Czech Republic, Palacky University, Czech Republic from 7/06/2012 to 22/07/2012 for collaborative work.
- Became a visiting scientist in Optics Laboratory, Academy of Sciences, Univerzity Palackého, Olomouc, Česká Republika from 09/06/2012 to 23/07/2012.
- Chemistry and Physics of Materials Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore from 18/06/2012 to 28/06/2013.

Dr. Navendu Goswami

- Electrical Engineering Department, Center of Research and Advanced Studies of I.P.N. (CINVESTAV), Mexico, during Feb-June 2006
- Delivered an invited talk on ‘Understanding the Fundamentals of Nanoscience: Synthesis and Characterization of Semiconductor Nanoparticles’ in Indian Institute of Science Education and Research (IISER) Kolkata, 19/03/2008).

26. Faculty serving in

a) National committees b) International committees c) Editorial Boards d) any other (please specify)

- | | |
|------------------------------|-----|
| a. National committees: | Nil |
| b. International Committees: | Nil |
| c. Editorial Boards | |

Prof. D. K. Rai

Guest editor of the special issue of Indian J. Pure and Applied Physics, Vol. 51 (5), May 2013, published by NISCAIR, CSIR, New Delhi

Dr. N. Goswami

Member of editorial board of (i) Journal of Lasers, Optics & Photonics (ii) International Scientific Research Forum (ISRF)

Dr. S. K. Awasthi

Member of editorial board of (i) International Journal of Scientific and Innovative Research and (ii) International journal of Advances in Engineering and Technology

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).

Department regularly organizes workshops, conferences, seminars, expert talks, etc., as part of faculty recharging strategy. Faculty members also participate in such programs outside, with the Institute support. The details of such programs are given below:

(a) Conference/Workshop/FDP organized by the Department

International: 02

National: 05

S. No.	Conference/workshop/FDP	Date
1	FDP on Recent Trends in Physics and Materials Science	21-26/07/2014
2	International Workshop on Optical Quantum Information	1 -2/09/2013
3	Two Days Workshop on Quantum Mechanics and its Applications	18-19/04/2013
4	Ninth National Conference on Solid State Ionics	15-17/12/2011
5	International Conference on Quantum Optics and Quantum Computing (ICQOQC-11)	24-26/03/2011
6	One Day Workshop on Advanced Materials and Nano Technology–2009 (AMNT-09)	21/11/2009
7	One Day Workshop on Fundamentals and Applications of Optics	20/09/2008

(b) Expert Talks organized by the Department

S. No.	Expert	Topic	Date
1	Dr. Ankur Goswami, University of Alberta, Canada	Microfluidics in Energy harvesting and Superhydrophobicity	06/09/2014
2	Dr Nirpendra Singh, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia	Topological phases of novel two-dimensional materials	05/08/2014
3	Prof. P N Ghosh, F.A.Sc.T. and former VC, Jadavpur University Kolkata	Bose Einstein Condensation and Laser Cooling: Basic Concept	01/04/ 2014
4	Prof. Binod Kumar, UDRI, Dayton, Ohio, USA	Special Need and Emerging Lithium-Air Technology	18 /11/ 2013
5	Dr. Vijay Raj Singh, Singapore-MIT Alliance for Research and Technology (SMART), Singapore	3D fluorescence Microscopy Systems Development for Tissue Imaging Applications.	30/10/2013
6	Prof. Subodh Kumar De, IACS, Kolkata	Self-Assembly: An Important Aspect of Nanomaterials	21/06/2013
7	Prof. D Kumar, IIT BHU	Laser Spectroscopic Studies on Rare earth doped Oxides Materials	06/06/2013
8	Prof. V Agarwal, Autonomous State Univ. of Morelos, Mexico	Porous Silicon Nanostructures and its Applications: From Light Emitting Devices to Sensors	28/07/2012
9	Dr. Himadri Chakraborty, Northwest Missouri State University, Missouri, USA	From the Brog to Humans: Collectivised, Coupled, and Lonely Electrons in Excited Nanostructures	03/07/2012
10	Prof. D K Agrawal, Pennsylvania State University, USA	Microwave Processing of Ceramics, Composites and Metals: An Overview	26/05/2012
11	Prof Arghya Taraphder, IIT Kharagpur & IIT Mandi	Transition Metal Dichalcogenides: A Novel Perspective	03/04/2012
12	Prof. R K Mandal, IIT BHU	Metallic Materials at Different Length Scales	02/04/2012
13	His Excellency (Prof.) Sead Avdic, Ambassador of Bosnia and Herzegovina	Innovation Model of Industrial Development	24/08/2011

14	Prof. Takeshi Yasui, Inst. of Tech. and Sci., Univ. of Tokushima, Japan	Terahertz Color Scanner for Moving Objects	10/05/2011
15	Prof. Tsutomu Araki, Osaka University, Japan	Observation of Human Skin Collagen Using a Second Harmonic Generation Microscope	10/05/2011
16	Prof G W Dueck, New Brunswick Univ, Canada	Visited department and delivered a talk	20-22/03/2011
17	Dr G D Varma, IIT Roorkee	Functional Nano Material	29/01/2011
18	Dr. Anupam Mazumdar, Lancaster Univ., UK & Niels Bohr Inst., Denmark	Big Bang Universe	12/01/2011

(c) Faculty Participation in conferences/ workshops/ seminars, etc., outside

Prof. D K Rai

International:

- Delivered a contributory talk on "Poly(vinyl)alcohol/1-butyl-3-methylimidazolium Hydrogen Sulfate Solid Polymer Electrolyte: Structural and Electrical studies" at 17th International Conference on Solid State Protonic Conductors, Seoul, South Korea, 14-19 Sept, 2014.
- Delivered an invited talk on "All solid state proton batteries", International Conference on Science and Engineering of Materials (ICSEM-2014), Sharda University, Greater Noida, 6-8 January, 2014.
- Participated and chaired a technical session in Fifth International Conference on Electroactive Polymers: Materials & Devices, BHU, Varanasi, 4-9 November, 2012.
- Delivered a contributory talk on "Studies on proton conducting gel polymer electrolyte based on PMMA/ PVdF-HFP blend" at 18th International Conference on Solid State Ionics, Warsaw, Poland, 3-8 July, 2011.
- Worked as resource person in Fourth International Conference on Electroactive Polymers: Materials and Devices, Surjakund, 21-26 November, 2010.
- Attended Conference on From Physical understanding to Novel Architecture of Fuel Cells, ICTP, Trieste, Italy, 21-25/05/2007.
- Attended Second International Conference on Electroactive Polymers:

Materials and Device, Goa, 19-24/02/2007.

National:

- Delivered invited talk on “Studies on Polymer Blend Based Proton Conducting Gel Electrolytes” and chaired a session in 10th National Conference on Solid State Ionics (NCSSI-10), IIT Kharagpur, 22-24/12/2013.
- Participated as Sectional Recorder of Materials Science Section in 99th Indian Science Congress, KIIT University, Bhubaneswar, 3-7/01/2012.
- Attended 98th Indian Science Congress, SRM University Chennai, as Recorder in the Materials Science Section, 3-7/01/2011.
- Attended 8th National Conference on solid state ionics, department of Physics, Dr. Hari Singh Gour University, Sagar, 7-9/12/2009.

Prof. A. Pathak

International:

- Delivered an invited talk at QUANTUM 2014: Advances in Foundations of Quantum Mechanics and Quantum Information with atoms and photons, INRIM, Turin, Italy, 25-31/05/014.
- Delivered two invited talks on “Secure quantum communication beyond QKD” at International Program of Quantum Information (IPQI-2014), Institute of Physics, Bhubaneswar, India, 17-28/02/2014.
- Delivered a talk on “Nonclassical properties of Fock state superpositions” in XVIII Czech-Polish-Slovak Optical Conference, Ostravice, Czech Republic, 4-7/09/2012.
- Became a visiting scientist at Joint Laboratory of Optics, Palacky University, Olomouc, Czech Republic, 15/02/2012- Till date.
- Delivered a contributory talk on, “How can we construct and classify efficient protocols of secure quantum communication?” Quantum 2012, INRIM, Turin, Italy, 21-25/05/2012.
- Delivered a contributory talk on, “The Secret of Quantum Secrecy”, ISCQI-2011, Institute of Physics, Bhubaneswar, 13-22/12/2011.
- Delivered a contributory talk on “Quantum communication: Symmetry, security and some tricks”, and chaired a session in the International School on Quantum and Nano Computing Systems and Applications, Dayalbagh Educational Institute, Agra, 1-4/12/2011.
- Delivered an invited talk at International Program on Quantum Information (IPQI-2010), IOP, Bhubaneswar, 4-30/01/2010.
- Delivered an Invited talk at Quantum 2010: Advances in Foundations of

Quantum Mechanics and Quantum Information with atoms and photons, INRIM, Turin, Italy, 24-29/05/2010.

National:

- Delivered 9 invited talks at Summer School on, “Physics of Rotation” organized by Ponna Prajna Institute of Scientific Research, Bangalore, 15-24/06/2009.
- Attended International conference CLBAS-2009, Visva-Bharati, Santiniketan, India, 14-17/02/009.
- Delivered invited talk on Quantum cryptography at Two-Days Workshop on “Quantum Mechanics: Theory and Application”, Deen Dayal Upadhyaya College, University of Delhi, 21-22/11/2008.
- Delivered 8 invited talks at summer school on, “Light: Classical and Quantum” organized by Ponna Prajna Institute of Scientific Research, Bangalore, during 1-15/06/2008.

Dr. R. K. Dwivedi

International:

- Delivered a contributory talk on, “Crystal Structure, microstructure and Piezoelectric properties of lead free BLNT-BCT ceramics”, South Korea, 23/03/2015.
- Delivered a contributory talk on, “Phase transition and multiferroic properties of Pr & Ti modified BiFeO₃”, WCSM, South Korea, 23/03/2015.
- Delivered a contributory talk on, “A view on multifunctional properties of modified BiFeO₃”, Sejong University, South Korea, 26/03/2015.
- Delivered a contributory talk on “Dielectric Properties of La modified ceramics for MEMS Applications” in International Conference on Smart Materials, Structures and Systems (ISSS-2012), IISc Bangalore, 4-7/01/2012.
- Attended International conference on Materials for Advanced Technologies (ICMAT-2009 and ICA-IUMRS-2009) by NUS Singapore and MRS Singapore, 28/06 – 03/07/2009.
- Presented paper in the International workshop on “Advance Materials and Technologies for nano and oxide electronics” (AMNTOE-2007) organized by IIT Delhi. 19-22/02/2007.
- Presented paper in the International conference on “Nano materials for electronics” organized by Centre for Materials for electronics Technology (C-MET) Pune, 27-29 /11/2006.

National:

- Delivered a Contributory talk in the National Seminar on Ferroelectrics and dielectrics, ITER, Bhubaneswar, 17-20/12/2012.
- Delivered invited talk on “Modified Barium Titanate Ceramics: Dielectric Behavior and Applications “ in the National Conference on Recent Trends in Materials Science (RTMS-2011) JUIT Waknaghat, 8-9/10/2011.
- Delivered an invited talk on “Effect of Film thickness and atmosphere on the magneto-electrical properties of LSMO-BTO composite film”, in the National Conference on Emerging Technologies: Nanotechnology and Cryogenics (ETNC-1), G. L. Bajaj Institute of Technology and Management, Greater Noida, 30-31/10/2009.
- Attended National workshop on “Smart materials for the design of intelligent systems” by IIT Kanpur, 23-24/03/2007.

Dr. Papia Chowdhury**International:**

- Delivered a talk Radiation effects on the stability of Benzimidazole, which directly affects the stability of Human DNA at First Asia-Pacific Symposium on Radiation Chemistry (APSRC), Shanghai, China, September 2006.

National:

- Presented paper on Excited State Intramolecular and Intermolecular Proton Transfer Spectroscopy in UV-VIS Region for Solution Phase in Different Environment. Trombay Symposium on Radiation and Photo Chemistry (TSRP2008), Pune University.7-10/01/2008.
- Delivered a talk on Dynamics of Excited State Intramolecular and Intermolecular Proton Transfer in Solution Phase in Different Environment in International Conference on Frontiers of Radiation and Photochemistry, Kottayam, 8-11/02/2007.
- Delivered a talk on Designing Safe Sweeteners: A Photochemical Study of Sweet Proteins/Molecules, Sudha Srivastava and Papia Chowdhury. International Conference on Frontiers of Radiation and Photochemistry, Kottayam, 8-11/02/ 2007.

Dr. Navendu Goswami**International:**

- Delivered a contributory talk on “Study of Copper Oxide Nanostructures Prepared by Exploding Wire Technique” in Symposium S in Materials Research Society (MRS) Spring Meeting-2013 in San Francisco, CA,

USA, 1-5/04/2013.

- Made a poster presentation on “Structural Evolution of Nickel Doped Zinc Oxide Nanostructures” in Symposium R in Materials Research Society (MRS) Spring Meeting-2013 in San Francisco, CA, USA, 1-5/04/2013.

National:

- Attended and presented paper “Realization of Nano-resistor using Single Electron Transistor” in MRSI Annual Conference, NPL New Delhi, 12-16/02/2007.

Dr. Manoj Kumar

International:

- Delivered two contributory talks in an International Conference on Materials for Advanced technologies (ICMAT-2011) at National University of Singapore, Singapore, 26/06-01/07/2011.

Dr. Amit Verma

International:

- Attended International symposium “Optics and Photonics 2008” organized by SPIE USA at San Diego, California, 14-18/08/2008.
- Attended Workshop on “Quantum Mechanics: Theory and Applications”, DDU College, University of Delhi, 21-22/11/2008.

National:

- Delivered a talk on “Recent Trends in Higher Order Nonclassical States” at International conference on Recent Trends in Interdisciplinary Sciences: Opportunities and Challenges RTISOC-2014, MMC, Modinagar, 28/02-01/03/ 2014.
- Made a poster presentation on “Agarwal Tara Nonclassicality in Intermediate States” at International conference on Recent Trends in Interdisciplinary Sciences: Opportunities and Challenges RTISOC-2014, MMC, Modinagar, 28/02-01/03/ 2014.
- Delivered a contributory talk in an international conference on Quantum Optics and Quantum Computing-11 at IIIT, Noida, India, 24-26/03/2011.
- Attended 14 days workshop on “Quantum Information Science”, Centre of ICTP, Institute of Mathematical Sciences (Unit of DAE), Taramani, Chennai, India, 21/11 – 04/12/2010.
- Attended and presented a research paper in National Laser Symposium (NLS-07) organized by Department of Atomic Energy and University of Baroda at Vadodhara, 17-20/12/2007

Dr. Vivek Sajal

National:

- Presented a paper on “Stimulated Raman Scattering of lower hybrid mode excited by two counter-propagating lasers in plasma” at International conference on Recent Trends in Interdisciplinary Sciences: Opportunities & Challenges “RTISOC-2014, MMC Modi Nagar, 28/02-01/03/2014.

Dr. Prashant Chauhan

National:

- Delivered a talk on “HiPER: making star on Earth” at International conference on Recent Trends in Interdisciplinary Sciences: Opportunities & Challenges “RTISOC-2014, MMC Modi Nagar, 28/02-01/03/2014.
- Presented a paper on “Harmonic Emission: A tool for pre-plasma scale length diagnostic in plasma” at International conference on Recent Trends in Interdisciplinary Sciences: Opportunities & Challenges “RTISOC-2014, MMC Modi Nagar, 28/02-01/03/2014.

Dr. Vikas Malik

National:

- Chaired a session on soft computing in IEEE 4th International Advance computing Conference, ITM University Gurgaon, 21-22/02/2014.

28. Student projects

- **percentage of students who have done in-house projects including inter-departmental projects: 100%**
- **percentage of students doing projects in collaboration with other universities / industry / institute: Nil**

29. Awards/ recognitions received at the national and international level by Faculty, Doctoral / post doctoral fellows/ Students

1. Awards/Recognition Received by Faculty

Prof. D K Rai

- Recorder, Materials Science Section of Indian Science Congress for the years 2010 and 2011

Prof. Anirban Pathak

- Visiting Scientist, RCPTM, Palacky Univeristy, Czech Republic (14.02.2012 to 13.02.2013)

- Member, National Academy of Science, Allahabad

Dr. Navendu Goswami

- Vice-Chancellor's Gold Medal for Topper in M. Sc. Physics exam (1999-2000) of Bundelkhand University, Jhansi, India.
- Chancellor's Silver Medal for Topper in all M. Sc. level exams (1999-2000) of Bundelkhand University, Jhansi, India.
- District Winner (Ghaziabad) of Broad-Outlook Learner-Teacher (BOLT) - 2008 award (By Air-India & Dainik Jagran).
- 3rd prize for poster presentation during Annual symposium (2004) held in School of Physical Sciences, Jawaharlal Nehru University, New Delhi.
- Awarded as BBC Genius –1998, a collegiate competition in Bipin Behari P.G. College, Jhansi.
- Received U.P. Government 'A' category Scholarship.

Dr. Geetika Srivastava

- Egide Fellowship to work as Visiting Research Scientist at ICMCB, Bordeaux, France from Sept 2007 to Jan 2008

Dr. Prashant Chauhan

- Awarded FCT Fellowship to work at Lisbon, Portugal, April 2011 to December 2011
- HiPER post doctorate fellowship for two years from April 2009 to March 2011, Lisbon, Portugal

Dr. Bhubesh Chander Joshi

- University Gold Medalist (M Sc, Kumaon University, Nainital), 2004

2. Awards/Recognition Received by Students

- Chitra Shukla - **JSPS Post-Doctoral Fellowship**, 2015.
- Ashish Tripathi (M. Tech.) - **Certificate of appreciation** for one of the best five posters in Multi-disciplinary National Conf. SCIENCE COLLOQUIUM: Emerging trends in basic and applied Sciences, DAV College Jalandhar, 6-8 March, 2014.
- Prateek Varshney (Ph.D. student) - **Best poster** award at International Conf. on Recent Trends in Interdisciplinary Science-Opportunities and Challenges, organized at Multanimall Modi College, Modi Nagar, 28 Feb-1 March, 2014.

- Kuldeep Mishra - **D S Kothari Fellowship** for Post-Doctoral Research, 2013.
- Prakash Chandra Sati (Ph. D student) - **INSPIRE Fellowship** by **Department of Science and Technology (DST)**, 2011.
- Anshuman Sahai (Ph. D student) - **INSPIRE Fellowship** by **Department of Science and Technology (DST)**, 2012.
- Anshuman Sahai (Ph. D student) - **Second Prize** for the **Best Poster** in National Conference on Recent Trends in Material Science (RTMS-2011), JUIT, Wagnaghat, October 8-10, 2011.
- Anshuman Sahai (Ph. D student) - **Best Oral Paper** talk presented in National Conference on Recent aspects of Research in Applied Sciences (RRAS-2011), Inderprastha Engineering College, Ghaziabad, February 12th, 2011.
- Anshuman Sahai (Ph. D student) - **Second Prize** for the **Best Poster** in International Conference on Quantum Effects in Solids of Today (ICONQUEST-2010), National Physical Laboratory (NPL), New Delhi, December 20-24, 2010.

30. Seminars/ Conferences/ Workshops organized and the source of funding (national/ International) with details of outstanding participants, if any.

S. No.	Details of Seminar Conference/workshop
1	Faculty Development program on Recent Trends in Physics and Materials Science, 21-26 July, 2014 Source of Funding: JIIT Outstanding Participants: Faculty of the Department
2	International Workshop on Optical Quantum Information (IWOQI), 1-2 Sept, 2013 Source of Funding: CSIR, DST, ISc Chennai, JIIT Outstanding Participants: Prof. J. Gruska , Masaryk University Brno, Czech Republic), Prof. Maria Chekhova , MPI Erlangen, Germany, Dr. Alessio Avella , INRIM Turin, Italy, Dr. Angela Perez , MPI Erlangen, Germany, Prof. S Ghosh , ISc Chennai, Dr. S. Banerjee , IIT Jodhpur, Prof. D. Goswami , IIT Kanpur, Dr. R Srikanth , PPISR Bangalore, Prof. R. Ghosh , JNU, New Delhi, Prof. K. Thyagarajan , IIT Delhi
3	Two Days Workshop on Quantum Mechanics and its Applications, 18-19 April, 2013 Source of Funding: CSIR, NASI, JIIT Outstanding Participants: Prof. V. P. Sharma (President NASI, Delhi

	chapter), Prof. Ajoy Ghatak, Prof. K. Thyagarajan (IIT Delhi), Dr. Anu Venugopalan (GGSIPU, Delhi).
4	<p>Ninth National Conf. on Solid State Ionics (NCSSI-9), 15-17 Dec, 2011</p> <p>Source of Funding: CSIR, DST, DRDO, IIIT</p> <p>Outstanding Participants: Prof. S. Chandra, BHU Varanasi), Prof. K. Hariharan, IIT Madras, Dr. M. Patri, NMRL Thane, Prof. S. K. De, IACS Kolkata, R. C. Agrawal, Pt. Ravi Shankar University, Raipur, Dr. Amita Chandra, Delhi University, Delhi, Dr. A. Kumar, Tezpur University, Tezpur, Dr. D. K. Kancha, The M. S University, Baroda, Dr. R K Singh, BHU Varanasi, Dr. Sujata Tarafdar, Jadavpur University Kolkata, Dr. G. Govindaraj, Pondicherry University, Puducherry, Dr. J. P. Tiwari, CECRI Karaikudi, Dr. Anshuman Dalvi, BITS, Pilani, Dr. C. S. Sunandana, University of Hyderabad, Hyderabad, Dr. Amreesh Chandra, IIT Kharagpur, Dr. S. S. Bhoga, RTM Nagpur University, Nagpur, Dr.S. A. Hashmi, Delhi University, Delhi, Dr. Ramaswamy Murugan, Pondicherry University Puducherry, Dr. S. Austin Suthanthiraraj, University of Madras Chennai, and Dr. Ashok Kumar, IGIB New Delhi.</p>
5	<p>International Conf. on Quantum Optics and Quantum Computing (ICQOQC-11), 24-26 March, 2011</p> <p>Source of Funding: National - BRNS, DST, CSIR, IIIT; International - Optical Society of America (Int. Chap), IdQuantique Switzerland</p> <p>Outstanding Participants: Prof. Barry Sanders, Institute for Quantum Information Science, Calgary, Canada, Prof. G. Dueck, University of New Brunswick Canada, Prof. M. R. Wahiddin, MIMOS Malaysia, Prof. Apostolos Vourdas, University of Bradford, Prof. P. N. Ghosh, Jadavpur University, Prof. Ajoy Ghatak, IIT Delhi), Prof. Anil Kumar, IISc, Bangalore.</p>
6	<p>One Day Workshop on Advanced Materials and Nano Technology–2009 (AMNT-09), 21 Nov, 2009</p> <p>Source of Funding: DRDO, IIIT</p> <p>Outstanding Participants: Dr. Harsh, DRDO, Prof. V. D. Vanker, IIT Delhi, Dr. D. K. Awasthi, IUAC New Delhi, Dr. Chandra Prakash, DRDO, Prof. N. Khare, IIT Delhi, Mr. G.R. Nyati, Moser Baer India Ltd.</p>
7	<p>One Day Workshop on Fundamentals and Applications of Optics, 20 Sept, 2008</p> <p>Source of Funding: National - NASI, IIIT; International - Optical Soc. of America (Delhi Chapter)</p> <p>Outstanding Participants: Prof. Ajoy Ghatak, IIT Delhi, Prof. Rupamanjari Ghosh, JNU and S N University Greater Noida, Prof. Anurag Sharma, IIT Delhi</p>

31. Code of ethics for research followed by the departments

Department follows the code of ethics defined by the Institute. The ethics lays strong emphasis that all research work/theses must be original and work by others is duly acknowledged. To enhance quality of research anti-plagiarism software is used. Research scholars and students before submitting their Ph.D. theses, dissertations, Project reports and research papers for award/publications check manuscripts for plagiarism.

32. Student profile programme-wise:

Name of the Program	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
M. Tech. (PMSE) MATSC					
2009-11	23	3	1	100	100
2010-12	13	2	1	100	100
2011-13	8	1	0	100	-
2012-14	7	1	3	100	100
Ph.D. Upto 2014	193	18	21		
		No. Awarded		4	5
		No. Continuing		11	13
		No. Discontinued		3	3

33. Diversity of students

Name of the Programme	% of students from the same university	% of students from other universities within the state	% of students from universities outside the state	% of students from other countries
M. Tech. (MSE)				
2009-11	NIL	75.00	25.00	NIL
2010-12	NIL	NIL	100.00	NIL
2011-13	NIL	100.00	NIL	NIL
2012-14	NIL	50.00	50.00	NIL
2013-15	NIL	60.00	40.00	NIL
2014-16	NIL	NIL	NIL	NIL
Ph.D.				
2011	37.5	12.5	50.00	NIL

2012	NIL	NIL	100	NIL
2013	NIL	100	NIL	NIL
2014	NIL	NIL	100	NIL

34. How many students have cleared Civil Services and Defence Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

Data not available

35. Student progression

Student progression	Percentage against enrolled
UG to PG	NA
PG to M.Phil.	NIL
PG to Ph.D.	58.6 %
Ph.D. to Post-Doctoral	55.6 %
Employed	
Campus selection	NIL
Other than campus recruitment	100%
Entrepreneurs	NIL

36. Diversity of staff

Percentage of faculty who are graduates (Ph.D.)	
of the same university	05
from other universities within the State	14
from universities from other States	76
from universities outside the country	05

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: NIL

38. Present details of departmental infrastructural facilities with regard to

a) Library Learning Resource Centre (LRC)

b) Internet facilities for staff and students

- All faculty members are provided with networked computer with internet connections in their offices. Each faculty has access to

WebKiosk (ERP), internal webmail services, LRC facilities and all other resources available on the Institute's network, in their offices.

- All PhD scholars have been provided seating space with internet connections.
 - All labs of the Department are networked from where internet and all resources on the Institute's network can be accessed by students, staff and faculty.
 - Entire campus is Wi-Fi enabled which is available to faculty, staff and students.
 - Class rooms, lecture theatres and labs are also well equipped with internet facilities for teaching and demonstration.
- c) **Total number of class room:** 49 Lecture Theatres/ Class Rooms and 42 Tutorial Rooms of the Institute are shared with other departments
- d) **Class rooms with ICT facility:** 40 Lecture Theatres/ Class Rooms.
- e) **Student's Laboratories**

Laboratory	Location	L A N	P C	Power backup	Capacity	Display Board	White Board
Sector-62							
Physics Lab-1	ABB-I	Y	Y	Y	30	Y	Y
Physics Lab-2	ABB-I	Y	Y	Y	30	Y	Y
Material Science & Engineering Lab	ABB-I	Y	Y	Y	20	Y	Y
Sector-128							
Physics Lab	Block A	N	N	Y	30	Y	Y

f) **Research Laboratories**

Laboratory	Location	L A N	P C	Power backup	Capacity	Display Board	White Board
Sector-62							
Materials Characterisation Lab	ABB-I	Y	Y	Y	-	Y	N

39. List of doctoral, post-doctoral students and Research Associates

a) **from the host institution/university**

S. No.	Name of the Student	Title of Thesis/ Dissertation/ Project	Names of supervisor(s)
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Ongoing			
1	Saurabh S Pundir	Ion Transport Studies of Some Ionic Liquid Based Solid Electrolysis	Prof. D K Rai
2	Sunil	Synthesis and characterization of multifunctional nanomaterials	Prof. S. C. Katyal Dr. Manoj Kumar
3	Anshuman Sahai	Synthesis and Characterization of Metal Oxide Nanostructures	Dr. N Goswami
4	Subhash	Preparation and characterization of ferroelectric bulk and thin film materials	R K Dwivedi
5	Vijayeta Pal	Synthesis and characterization of lead free piezoelectric ceramics	R K Dwivedi
6	Prateek Varshney	Parametric instabilities and electron acceleration in a plasma	Dr. Vivek Sajal Dr. Ravindra Kr.
Completed			
7	Prakash C Sati	Study of aliovalent ions substitution effect on BiFeO ₃ multiferroic ceramics	Dr. Manoj Kumar Dr. Vivek Sajal
8	Gunjan Srinet	Synthesis and Characterization of doped ZnO	Dr. Ravindra Kr.
9	Vikash Singh	Studies on Multifunctional Properties of Doped Multiferroics	Dr. R.K. Dwivedi Dr. Manoj Kumar
10	Amit Verma	Theoretical Study of Higher Order Nonclassicality in Intermediate States	Dr. Anirban Pathak

b) from other institutions/universities:

S. No.	Name of the Student	Title of Thesis/ Dissertation/ Project	Names of supervisor(s)
Ongoing			
1	Vineet Tiwari	Piezoelectric actuators and energy harvesters	Dr. Geetika Srivastava
2	Meenakshi Rana	To study optical and electrical properties of quantum dots	Dr. Papia Chowdhury
3	Kishore Thapliyal	A theoretical study of nonclassical effects in optical, atomic and optomechanical systems and their potential applications	Dr. Anirban Pathak
4	Shalu	Synthesis and optical properties of Oxide nano structures	Dr. Sandeep Chhoker
5	Deepti Maikhuri	Some Studies of Electronic and Optical Properties in Atomic Systems and Nanostructures	Dr. S P Purohit and Prof. K C Mathur

6	Seema Joshi	Synthesis and characterization of functional nanomaterials	Dr. Geetika Srivastava Dr. Manoj Kumar
7	Vanita Devi	Compound Semiconductors and Devices	Dr. B C Joshi
8	Komal Chawla	Material development for energy efficient devices	Dr. A P S Chauhan
9	Manisha Arora	Synthesis and Characterization of Multiferroic Nanomaterials	Dr. Manoj Kumar
10	Pradeep Jha	Synthesis and studies on multifunctional properties of substituted ferroic materials	Dr. R K Dwivedi
11	Maitreyi Upadhyay	Investigation of Electromagnetic wave Propagation in Photonic crystals	Dr S K Awasthi
12	Kanika Verma	Parametric instabilities in a magnetized plasma	Dr. Vivek Sajal
13	Deepika	Plasmonics: Interaction of Electromagnetic waves with surface Plasmons	Dr P K Chauhan Dr. Anshu D Varshney
14	Sarika Shukla	Theoretical studies on surface plasmon resonance based fiber optic sensors using different materials	Dr N K Sharma
15	Brahm Raj Singh	Design and Analysis of Nanophotonic Waveguides and Devices	Dr. Swati Rawal
Completed			
16	Mahima Rani	Studies on surface plasma resonance based fiber optic sensors	Dr N K Sharma
17	Anindita Banerjee	Synthesis, Optimization and Testing of Reversible and Quantum Circuits	Dr. Anirban Pathak
18	Chitra Shukla	To design new protocol, analyze and improve the security and efficiency of existing protocol of secure quantum communication	Prof. Anirban Pathak Dr. Amit Verma
19	Anchala	Some studies on collisions of electrons and photons with atoms and nano structures	Dr. S. P. Purohit Prof. K.C. Mathur
20	Kuldeep Mishra	Preparation, Characterization and Battery Applications of Proton Conducting Polymer Electrolytes	Prof. D. K. Rai
21	Pawan Kumar	Magnetism and magneto-transport in half and over doped manganites: Impact of substrate induced strain and polycrystalline disorder	Dr. R. K. Dwivedi Dr. H. K. Singh, NPL
22	Nidhi Singla	Exploring the proton transfer dynamics of some hydrogen bonded	Dr. P. Chowdhury

		heterocyclic molecules in different environments	
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40. Number of post graduate students getting financial assistance from the university.

M. Tech. = 01

Ph.D = 14

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.

No new program was introduced in the last four years

42. Does the department obtain feedback from

a. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?

Yes. The feedback is taken through regular faculty meetings. Feedback from faculty is obtained during departmental meetings. On the basis of feedback, appropriate measures are taken for further improvement in the course content, teaching, learning and evaluation.

b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?

Yes. The feedback from students is obtained through a formal procedure at the end of each semester in a customised form for theory and lab courses. The remarks are conveyed to the faculty for corrective steps.

c. alumni and employers on the programmes offered and how does the department utilize the feedback?

It is obtained at the Institute level

Online feedback collection mechanism has been introduced through IQAC from the academic session 2014-15.

43. List the distinguished alumni of the department (maximum 10)

Nil

44. Give details of student enrichment programmes (special lectures /

workshops / seminar) involving external experts.

Department regularly organizes conferences/ workshops/ seminars and expert talks. PG and Ph.D. students are encouraged to attend these academic activities. In addition to this, students are financially supported to participate in these activities outside. The details of enrichment programs organized at IIIT Noida are given at Item 27 above. The students' participation outside is given as **Annexure-IV/PMSE**.

45. List the teaching methods adopted by the faculty for different programmes.

- Regular Chalk/Marker and Board
- Use of audio visual aids
- Educational videos
- Peer-reviewed research paper based learning
- Lab based hands-on training
- Tutorials and Assignments
- Projects and Seminars

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

Following methods are used for ensuring that program objectives are constantly met and learning outcomes are monitored:

- (i) Through continuous teaching, learning and evaluation activities followed by the revision of the curriculum.
- (ii) Through the feedback of the experts and the students.
- (iii) Through the monitoring and advice of the
 - (a) Internal Quality Assurance Cell (IQAC)
 - (b) Academic Management Committee
 - (c) Academic Council

Student progress and learning outcomes are monitored through continuous evaluations, tutorials and laboratory exercises, and live projects/assignments. The Institute conducts three tests in all courses and review the performance of students in the faculty meeting at departmental level and in the meeting of result committee under the chairmanship of the Vice Chancellor. At the end of each semester, student feedback is taken; course wise performance of students is discussed, analyzed and recorded in terms of grades. Based on discussion, feedback of student and faculty, course contents are improved. Weak students are encouraged to interact with the faculty to identify their problems and means to solve them.

47. Highlight the participation of students and faculty in extension activities.

Department participates jointly at Institute level in the extension activities like blood donation camps, collection and distribution of various items like old clothes, toys, for distribution amongst needy people of the society.

48. Give details of “beyond syllabus scholarly activities” of the department.

1. Department organizes conferences/ workshops/seminars
2. Invites experts regularly for talks and interactions
3. Regular visits to the national and international academic institutions/ Industry

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.

No

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

Contributions of the Department in generating new knowledge is evidenced by publications as listed in the table below:

S. No.	Paper Type	Total
1	International Journals	216
2	National Journals	05
3	International Conferences	127
4	National Conferences	37
5	Book Publication	02
6	Chapter Publication	03
	Total	390

Some of the highlights of the current research work carried out in the Department are given below:

1. Experimentally, a novel method based on electro-explosion of wire technique was employed to successfully synthesize ZnS nanoparticles.

Water driven stabilization of ZnS nanoparticles was demonstrated and comprehended. It was established that depending on the type and concentration of dopant, synthesized Fe/Ni doped ZnO nanostructures exhibit different morphologies. Substrate and post deposition treatment dependent growth of ZnO labyrinth and ribbon shaped patterns on porous silicon substrates has been demonstrated. For trace level detection of NO₂ gas, Polyaniline (PAni) doped SnO₂ thin films were prepared by chemical route.

2. Using the quantum mechanical formulation and the effective mass approximation, investigations are made on the linear and nonlinear optical properties of GaAs, Si, and ZnO semiconductor quantum dot nanostructures. Studies on the linear absorption, third-order nonlinear absorption, the change in refractive index, the third-order nonlinear susceptibility, third harmonic generation, the two-photon absorption, and the two-photon photoelectric processes are made for the intersublevel (ISL) transitions in quantum dots embedded in amorphous matrices. These investigations on the ISL transitions in semiconductor quantum dots will be useful in the development of infrared devices.
3. Single electron transistor (SET) and SET based nano-resistor were realized by spice model.
4. First protocols of hierarchical quantum secret sharing, probabilistic hierarchical quantum information splitting, hierarchical dynamic quantum secret sharing, etc., have been proposed. Several efficient and secure schemes of quantum communication have been designed and analyzed. Existence of higher order and lower order nonclassical states have been reported in several atomic, molecular, optical and optomechanical systems including BEC and optical coupler.
5. Surface plasmon resonance (SPR) based fiber optic sensor with bi layers of ITO-Au has been theoretically studied. It has been proposed that sensitivity of SPR sensor increases with increase in both thickness of nanocomposites and volume fraction of nanoparticles.
6. The interaction of electron beams and other electromagnetic beams with this surface plasma wave has wide range of applications in explosives detection, narcotics, medical application, etc. For these applications electron beams of moderate energy are required. Our study shows that the gain and the trajectory of electron beam can be governed by applying the external magnetic field.
7. Research in nonlinear interactions of the high power laser beam (10^{18} - 10^{21} W/cm²) has direct application in the inertial confinement fusion (ICF) and particle acceleration. Our study shows that growth of

ripple of laser beam significantly affects the gain of the electron during laser plasma interaction.

8. Defect mediated room temperature ferromagnetism was established in doped ZnO systems. Signatures of room temperature ferroelectricity were observed first time in Ba doped ZnO samples.

9. Lead free BNT based piezoceramics have been prepared by (a) Semi-wet method. Morphotropic phase boundary has been investigated in BLNT-BCT $[(\text{Bi}_{0.96}\text{La}_{0.04})_{0.50}\text{Na}_{0.5}\text{TiO}_3\text{-Ba}_{0.90}\text{Ca}_{0.10}\text{TiO}_3]$ system. Dielectric and piezoelectric properties are found to be superior for compositions near the boundary among studied samples.

10. The recent technological developments in MEMS field have led to the replacement of piezoelectric ceramics by polymers for their light weight, flexibility and ease in fabrication. Poly (vinyl difluoride) (PVDF), has been widely explored among all other electroactive polymers for their better piezoelectric properties.

11. For applications in green energy devices, like fuel cells, supercapacitors, etc., protic ionic liquid based polymer electrolytes have been proposed. These electrolytes have been shown to have superior electrical and thermal properties suited for electrochemical applications.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

A. Strengths:

1. All faculty with doctoral/ post-doctoral experience from institutes of national and international repute
2. A blend of theoretical and experimental research expertise
3. Availability of good teaching and research facilities
4. National and international collaborations
5. Active engagement in front-line research areas

B. Weaknesses:

1. Enrolment of students in M. Tech.
2. Sponsored research projects with international agencies
3. Research facility with state/ national/ international recognition
4. Conversion of research output into patents

C. Opportunities

1. Strategic location of the Institute
2. Inter-departmental research
3. Sponsored projects
4. Sponsored inter institutional collaborations

D. Challenges

1. Enrolment in PG and Ph.D. programs
2. Research laboratories with state/ national/ international recognition
3. Industry collaborations and placement opportunity for PG students
4. Research funding

52. Future plans of the department.

1. Strengthen and start new PG programs
2. Enhance research facilities and research outcome
3. To join Govt. schemes like UGC-COSIST/SAP/DSA, DST-FIST etc.
4. To establish joint funded collaborations with international research organizations

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140	Pathak A., Chowdhury P.	Singla N., Tripathi A., Rana M., Kishore Goswami S., Pathak A., Chowdhury P., ""Turn on/off" proton transfer based fluorescent sensor for selective detection of environmentally hazardous metal ions (Zn ²⁺ , Pb ²⁺) in aqueous media" Journal of Luminescence, vol 165, 46, 2015.	1
141	Kumar R., Joshi B.C.	Devi V., Kumar M., Choudhary R.J., Phase D.M., Kumar R., Joshi B.C., "Band offset studies in pulse laser deposited Zn _{1-x} Cd _x O/ZnO hetero-junctions" Journal of Applied Physics, vol 117, 22, 225305, 2015.	1
142	Dwivedi R.K.	Jha P.K., Jha P.A., Singh V., Kumar P., Asokan K., Dwivedi R.K., "Diffuse phase ferroelectric vs. Polomska transition in (1-x)BiFeO ₃ -(x)BaZr _{0.025} Ti _{0.975} O ₃ (0.1 ≤ x	1

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143	Kumar M., Chhoker S.	Chandra Sati P., Kumar M., Chhoker S., "Low temperature ferromagnetic ordering and dielectric properties of Bi _{1-x} Dy _x FeO ₃ ceramics" Ceramics International, vol 41, 2, 3227, 2015.	1
144	Srivastava G.	Tiwari V., Srivastava G., "The effect of Li ₂ CO ₃ addition on the structural, dielectric and piezoelectric properties of PZT ceramics" Ceramics International, vol 41, 2, 2774, 2015	1
145	Dwivedi R.K.	Sharma S., Singh V., Kotnala R.K., Ranjan R., Dwivedi R.K., "Co-existence of tetragonal and monoclinic phases and multiferroic properties for x â%0.30 in the (1 - X)Pb(Zr _{0.52} Ti _{0.48})O ₃ -(x)BiFeO ₃ system", Journal of Alloys and Compounds, vol 614, 165, 2014.	1
146	Pathak A.	Thapliyal K., Pathak A., Sen B., Perina J., "Nonclassical properties of a contradirectional nonlinear optical coupler", Physics Letters, Section A: General, Atomic and Solid State Physics, vol 378, 46, 3431, 2014.	1
147	Purohit S.P., Mathur K.C.	Maikhuri D., Purohit S.P., Mathur K.C., "Intersublevel photoabsorption and photoelectric processes in ZnO quantum dot embedded in HfO ₂ and AlN matrices", IEEE Photonics Journal, vol6, 5, 6882847, 2014.	1
148	Chowdhury P.	Singla N., Chowdhury P., "Inclusion behaviour of Indole-7-Carboxaldehyde inside Î ² -cyclodextrin: A nano cage", Chemical Physics, vol 441, 93, 2014.	1
149	Kumar R., Sajal V.	Srinet G., Kumar R., Sajal V., "High T _c ferroelectricity in Ba-doped ZnO nanoparticles", Materials Letters, vol 126, 274, 2014.	1
150	Goswami N	Martinez L., Kumar Y., Mayorga D., Goswami N., Agarwal V., "Labyrinth patterns of zinc oxide on porous silicon substrate", Superlattices and Microstructures, vol 67, 72, 2014.	1
151	Dwivedi R.K.	Jha P.K., Jha P.A., Kumar P., Asokan K., Dwivedi R.K., "Defect induced weak ferroelectricity and magnetism in cubic off-	1

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152	Rai D.K.	Mishra K., Hashmi S.A., Rai D.K., "Protic ionic liquid-based gel polymer electrolyte: Structural and ion transport studies and its application in proton battery", Journal of Solid State Electrochemistry, vol 18, 8, 2255, 2014.	1
153	Kumar M.	Arora M., Chauhan S., Sati P.C., Kumar M., "Effect of non-magnetic ions substitution on structural, magnetic and optical properties of BiFeO ₃ nanoparticles", Journal of Superconductivity and Novel Magnetism, vol 27, 8, 1867, 2014.	1
154	Srivastava G.	Tiwari V., Srivastava G., "Effect of thermal processing conditions on the structure and dielectric properties of PVDF films", Journal of Polymer Research, vol 21, 11,8, 2014.	1
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156	Kumar M., Srivastava G.	Joshi S., Kumar M., Srivastava G., "Structural and dielectric properties of Ni-Co mixed ferrite nanoparticles", International Journal of Applied Engineering Research, vol 9, 6, 713, 2014.	1
157	Chauhan P.	Gauniyal R., Chauhan P., Rawat P., Purohit G., "Effect of self-focused rippled laser beam on the excitation of ion acoustic wave in relativistic ponderomotive regime", Laser and Particle Beams, vol 32, 4, 557, 2014.	1
158	Pathak A.	Hamar M., Michalek V., Pathak A., "Non-classical signature of parametric fluorescence and its application in metrology", Measurement Science Review, vol 14, 4, 227, 2014.	1
159	Sajal V.	Malik A.K., Singh K.P., Sajal V., "Highly focused and efficient terahertz radiation generation by photo-mixing of lasers in plasma in the presence of magnetic field", Physics of Plasmas, vol 21, 7, 73104, 2014.	1

160	Pathak A.	Pintr P., Perinova V., Luks A., Pathak A., "Relative stellar occurrence of exoplanets in habitable zones of the main sequence F, G, K stars", Planetary and Space Science, vol 99, 1, 6, 2014.	1
161	Rai D.K.	Mishra K., Hashmi S.A., Rai D.K., "Studies on a proton battery using gel polymer electrolyte", High Performance Polymers, vol 26, 6, 672, 2014.	1
162	Kumar M., Chhoker S., Katyal S.C.	Chauhan S., Kumar M., Chhoker S., Katyal S.C., Awana V.P.S., "Structural, vibrational, optical and magnetic properties of sol-gel derived Nd doped ZnO nanoparticles", Journal of Materials Science: Materials in Electronics, vol 24, 12, 5102, 2013.	1
163	Dwivedi R.K	Pal V., Dwivedi R.K., Thakur O.P., "Dielectric and ferroelectric properties of lead-free $[1-z\{(Bi_{1-x}La_x)_{0.5}(Na_{1-y}Li_y)_{0.5}TiO_3\}-zBaTiO_3]$ ceramic system", Advances in Materials Science and Engineering, 2013, 125634, 2013.	1
164	Kumar R., Sajal V.	Srinet G., Kumar R., Sajal V., "Effects of Mg doping on the structural and optical properties of ZnO nanoparticles", AIP Conference Proceedings, 1536, 247, 2013.	1
165	Pathak A.	Rahman Md.M., Banerjee A., Dueck G.W., Pathak A., "Two-qubit quantum gates to reduce the quantum cost of reversible circuit", Proceedings - 41st IEEE International Symposium on Multiple-Valued Logic, ISMVL 2011, 5954214, 86, 2011.	1
166	Anchala, Purohit S.P., Mathur K.C.	Anchala, Purohit S.P., Mathur K.C., "Photoabsorption in Si semiconductor quantum dot nanostructure", AIP Conference Proceedings, 1313, 230, 2010.	1
Total citations			907

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D. K. Rai, "Edited conference proceeding published as special issue of Indian journal of pure and applied physics".

Books with ISBN with details of publishers

1. Elements of Quantum Computation and Quantum Communication,

Anirban Pathak, CRC Press (Taylor and Francis), Boca Raton, USA, 2013, ISBN: 978-1-4665-1791-2.

2. A. Dixit, N. Singh, M. Dhoundiyal, **S. K. Awasthi**, "Leading Towards Placements", Winger Publications Hyderabad, Edition: First -2013 (ISBN 978-81-921580-4-4).

Book Chapters

1. Banerjee, A, **Pathak**, A, and G. W. Dueck, "Minimal Designs of Reversible Sequential Elements,. In Reversible Computation, Eds. S. Yamashita and S.-i. Minato, Lect. Notes in Computer Science, Springer International Publishing, **8507**, 137-148. (2014).
2. Banerjee A and, Pathak **A.**, "Probabilistic Model of Fault Detection in Quantum Circuits" Lect. Notes in Phys. **802** (2010) 297–304 (Chapter 15).
3. S.Chakravorti, **Papia Chowdhury** and T. Adhikary., "Characterization of two substituted benzimidazoles as potential excited state proton transfer system along with modulation of their photophysical properties in different media including nano-cavity and microheterogeneous systems at different pH" Photo Electrochemistry and Photobiology in the Environment, Energy and Fuel, Ed. S. Kaneco, Research Signpost, Trivandrum, India pp 141-176, (2007).

**PARTICIPATION OF STUDENTS IN CONFERENCES/
WORKSHOPS/ SCHOOLS OUTSIDE**

1. **Anshuman Sahai** presented paper “Pre-conference School on Neutrons as Probes of Condensed Matter” (NPCM-2014), BARC, Mumbai, 04-08 February, 2014.
2. **Chitra Shukla** presented paper “Quantum Physics and Logic” (QPL-2014), Kyoto University, Kyoto, Japan, 4-6 June 2014.
3. **Vijayeta Pal**, presented paper, “Crystal structure and FTIR vibrational spectroscopic studies in complex $(1-x) (\text{Bi}_{0.96}\text{La}_{0.04})_{0.5} (\text{Na}_{0.975}\text{Li}_{0.025})_{0.5} \text{TiO}_3\text{-}(x)\text{BaTiO}_3$ ceramics system” in the International Conference on Science & Engineering of Materials (ICSEM-2014), Sharda University on 6-8 January, 2014.
4. **Vanita Devi** presented paper “Structural and optical properties of Cd and Mg doped Zinc Oxide thin films deposited by pulse laser deposition”, International Conference on Recent Trends in Physics (ICRTP 2014), Devi Ahilya Vishwavidyalaya Indore, 22-23 February 2014.
5. **Prateek Varshney** presented paper “Generation of tunable THz radiation by beating of two laser pulses in rippled magnetized plasma” In the international conference recent trends in interdisciplinary Sciences: opportunities and challenges, MMC Modinagar on 28 Feb- 1 Mar, 2014.
6. **Deepika** presented paper “Stimulated compton scattering of surface plasma waves in over dense plasma” In the international conference recent trends in interdisciplinary Sciences: opportunities and challenges, MMC Modinagar on 28 Feb- 1 Mar, 2014
7. **Deepti Maikhuri** presented paper “Nonlinear Optical Properties of ZnO/Al₂O₃ Quantum Dots” In the International Conference on Optics and Optoelectronics (ICOL-2014), IRDE, Dehradun, 05-08 March 2014.
8. **Mahima Rani** presented paper “Simulation of Cobalt based fiber optic surface plasmon resonance sensor” In the International Conference on Optics and Optoelectronics (ICOL-2014), IRDE, Dehradun, 05-08 March 2014.
9. **Maitreyi Upadhyay** presented papers “Novel Application of 1D Superconductor Photonic Crystal in Optical Wavelength Division Demultiplexing”, “A Novel Tunable Reflector featuring

- Omnidirectional Frequency Range in One- Dimensional Tilted Ternary Plasma Photonic Crystal”, and “Filter performance of Singly-Negative Defect Photonic Crystals” In the International Conference on Optics and Optoelectronics (ICOL-2014), IRDE, Dehradun, 05-08 March 2014.
10. **Deepika** presented paper “External magnetic field effect on electron acceleration” In the International Conference on Optics and Optoelectronics (ICOL-2014), IRDE, Dehradun, 05-08 March 2014.
 11. **Komal Chawla** presented paper “Effect of Carbon Black on Poly(vinyl alcohol) Matrix” in the 1st International Conference on Innovative Advancements in Engineering & Technology (**IAET-2014**), at Jaipur National University, Jaipur, Rajasthan, 7-8 March, 2014.
 12. **Vijayeta Pal** presented paper “Structural and piezoelectric properties of Li modified BLNT Ceramics”, International Conference on Emerging Materials and Applications, (ICEMA-14) held at I.I.T. Roorkee, 05-06 April, 2014.
 13. **Maitreyi Upadhyay** presented paper “Novel Tunable Reflector Based on a New Concept: One-Dimensional Tilted Ternary Plasma Photonic Crystal” in International Conference on Advance Trends in Engineering & Technology, Arya College of Engg. & I.T., Jaipur, 18-19 April 2014.
 14. **Maitreyi Upadhyay** presented paper “One dimensional photonic crystal reflectors: An analytical approach” In the international conference on Advances in Mechanical, Material, Manufacturing, Automobile, Aeronautical Engineering and Applied Physics, JNU, Delhi, 07-08 June 2014
 15. **Seema Joshi** presented paper “Structural and dielectric properties of Ni-Co mixed ferrite nanoparticles” In the international conference on Advances in Mechanical, Material, Manufacturing, Automobile, Aeronautical Engineering and Applied Physics, JNU, Delhi, 07-08 June 2014
 16. **Chitra Shukla** presented paper “Orthogonal-state-based protocols of quantum key agreement” in International Conference “Quantum-14”, Advances in Foundations of Quantum Mechanics and Quantum Information with atoms and photons, INRIM, Turin, Italy, 26-30 June, 2014.
 17. **S. S. Pundir** presented paper “Structural and Ion Transport Studies of PVA-BMImHSO₄ Polymer Electrolyte Membranes” in 10th National Conference of Solid State Ionics held at IIT, Kharagpur, December 22-24, 2013.
 18. **Kanika Verma** presented a research paper entitled “Stimulated Raman Scattering of non resonant space charge mode in beat wave process” in

2nd PSSI-Plasma Scholars Colloquium and National workshop on Plasma Devices Technology in CEERI Pilani, July 22-24, 2013.

19. **Kanika Verma** presented a research paper entitled “Two plasmon decay of a non- resonant beating mode of counter propagating lasers in plasma” in “28th National Symposium on Plasma Science & Technology (PLASMA 2013) in KIIT Bhubaneswar, December 3-6 2013.
20. **Prateek Varshney** presented a research paper entitled “Study of Terahertz radiation generation by beating of two spatial triangular lasers in magnetized plasma” in 28th National Symposium on Plasma Science & Technology, “Plasma-2013” at KIIT University, Bhubanseshwar (Odisha) page no. 195, Dec 3-6, 2013.
21. **Prateek Varshney** presented a research paper entitled “Excitation of THz radiation generation by beating of extra-ordinary lasers in a magnetized plasma”, “2nd PSSI-Plasma Scholars Colloquium” in CSIR-CEERI, Pilani, page no. 49, July 22-24, 2013.
22. **Deepika** presented a research paper entitled “Electron Acceleration by Surface Plasma Wave in the Presence of External Magnetic Field” in Scholars colloquim (PSSI) and national workshop on plasma devices technology at CSIR-Central Electronics Engineering and Research Institute (CEERI), Pilani on 22-24 July 2013.
23. **Deepika** presented a research paper entitled “Comparative Study of Dispersion Relation of Surface Plasma Waves in the Presence of External Magnetic Field Applied in Different Directions” in National symposium on plasma science and technology at KIIT University Bhubaneswar, 3-6 December, 2013
24. **Sunil Chauhan** presented a research paper entitled “Size Dependent Structural, Vibrational and Magnetic Properties of BiFeO₃ and Core-shell Structured BiFeO₃@SiO₂ Nanoparticles” in 58th DAE Solid State Physics Symposium, Thapar University Patiala, pp-98, December 17-21, 2013.
25. **Prakash Chandra Sati** presented paper entitled “Structural, magnetic and dielectric properties of Dy doped BiFeO₃ multiferroic ceramics” in National Conference on Advances in Physics (NCAP-2012), IIT Roorkee, Feb. 25-26 2012.
26. **Vijayeta Pal** presented paper entitled “Dielectric and Ferroelectric Properties of Lead Free (Bi_{1-x}Rx)_{0.5}Na_{0.5}TiO₃ Ceramic” 17th National Seminar on Ferroelectrics and Dielectrics (NSFD XVII -2012), Siksha ‘O’ Anusandhanh, Orrisa, 17-19 December 2012.
27. **Vijayeta Pal** presented paper entitled “Structural, Dielectric and Ferroelectric Behavior of Lead free BRNT Ceramics”, National Seminar

on Futuristic Material for Device Applications”, Sharda University (Greater Noida), 27 July 2012.

28. **Prateek Varshney** presented a research paper entitled “Stimulated Raman Scattering of an Extraordinary Laser Beam in a Magnetized Plasma”, “1st PSSI-Plasma Scholars Colloquium” in IPR Gandhinagar, page no. 55, July 3-4, 2012.
29. **S.S. Pundir** presented paper “Studies on PEO-BMIMHSO₄ Polymer Electrolyte System” in 57th DAE Solid State Physics Symposium (DAE-SSPS 2012) held at IIT Bombay, Powai, Mumbai during 03–07 December, 2012.
30. **Anshuman Sahai** presented a research paper entitled, “Growth and Study of Ni doped ZnO Nanostructures”, in National Conference on Recent Trends in Material Science (RTMS-2011) held at Department of Physics, Jaypee University of Information Technology, Waknaghat, Solan-173234 (H.P.) from October 8th -10th 2011.
31. **Anshuman Sahai** presented a research paper entitled, “X-ray diffraction and UV-Visible Spectroscopy of Ni doped ZnO nanoparticles”, in National Conference on Recent aspects of Research in Applied Sciences (RRAS-2-11) held at Indraprastha Engineering College, Ghaziabad (U.P.) on February 12th, 2011.
32. **Chitra Shukla** attended “Ninth National conference on solid state ionics (NCSSI-9)”, IIIT, Noida, 15-17 December, 2011.
33. **Sunil Chauhan** presented a research paper entitled “Multiferroic properties of sol-gel derived Ba doped BiFeO₃ nanoparticles” in National Conference and Workshop on Recent Advances in Modern Communication Systems and Nanotechnology (NCMCN – 2011), University of Rajasthan, Jaipur, 06-08 Jan. 2011.
34. **Prateek Varshney** presented a research paper entitled “Structural and Optical Characterization of Co doped ZnO” in National Conference “AFTMS 2011”, Mahatma Jyotiba Phule Rohilkhand university, Bareilly, March 2011.
35. **Gunjan Srinet** presented paper entitled “Synthesis and characterization of Mn doped ZnO” in National Conference on Recent aspects of research in applied science, Inderprastha Engineering College, Ghaziabad, Feb-12 2011.
36. **Vineet Tiwari** attended Ninth National Conference on Solid State Ionics (NCSSI-9), Jaypee Institute of Information Technology, Sector-62, Noida(U.P), India., December 15-17, 2011.
37. **Pardeep K. Jha** presented paper entitled “Electrical characterization of Nano Bismuth Ferrite”, 2nd National Conference on Advanced

Materials and Radiation Physics (AMRP-2011), SLIET, Sangrur, p-21, Nov. 04-05, 2011.

38. **Vijayeta Pal** presented paper entitled “Effect of La doping on the dielectric behavior of $(\text{Bi}_{1-\text{X}}\text{R}_\text{X})_{0.5}\text{Na}_{0.5}\text{TiO}_3$ ceramic”, National Seminar on Advanced Material and Devices, G.V.M. Girls College, Sonapat (Haryana) 3-4 July 2011.
39. **Saurabh S. Pundir** presented paper “Ion-polymer interaction and ion conduction studies on PEO/BMIm-HSO₄ solid polymer electrolyte” in National Conference on Recent Trends in Materials Science (RTMS-2011), Jaypee University of Information Technology, Wagnaghat (H.P.), India, October 8-10, 2011.
40. **Saurabh S. Pundir** presented paper “Electrochemical cell performance of a PEO based electrolyte system plasticized by tween” in 9th National conference on “Solid State Ionics” (NCSSI-9), Jaypee Institute of Information Technology, Noida (U.P.), India, December 15-17, 2011.
41. **Prateek Varshney** attended Ninth National Conference on Solid State Ionics (NCSSI-9), Jaypee Institute of Information Technology, Sector-62, Noida (U.P), India., December 15-17, 2011.
42. **Mahima** attended “Ninth National conference on solid state ionics (NCSSI-9)”, JIIT, Noida, 15-17 December, 2011.
43. **Kuldeep Mishra** presented paper entitled “Studies on a blended polymer based proton conducting gel polymer electrolyte system for proton battery application” in 9th national conference on “Solid State Ionics” (NCSSI-9), Jaypee Institute of Information Technology, Noida (U.P.), India, December 15-17, 2011.
44. **Kuldeep Mishra** presented paper entitled “Electrochemical cell performance of a PEO based electrolyte system plasticized by tween” in 9th national conference on “Solid State Ionics” (NCSSI-9), Jaypee Institute of Information Technology, Noida (U.P.), India, December 15-17, 2011.
45. **Kuldeep Mishra** presented paper entitled “Studies on nano-composite polymer blend gel electrolyte and its application in proton battery” in National Conference on Recent Trends in Materials Science (RTMS-2011), Jaypee University of Information Technology, Wagnaghat (H.P.), India, October 8-10, 2011.
46. **Nidhi Singla** presented a paper entitled “Phases of Nano-Sized Pyrrole-2-Caboxaldehyde in different environments: An Experimental and Theoretical Study” National workshop on Nanotechnology for Defense Applications composite in defense applications, New Delhi, November 16-17, 2011.

47. **Anshuman Sahai** presented a research paper entitled, “Synthesis and characterization of Zinc Oxide nanoparticles”, in National Conference on Recent Advances in Material Science & Engineering: A Multidisciplinary Approach [RAMSE 2010] held at Jaypee University of Engineering and Technology, Guna, M.P. during October 23- 24, 2010.
48. **Kuldeep Mishra** presented paper entitled “Structural and ion transport studies on plasticized Polyethylene oxide (PEO)-Ammonium hexafluorophosphate (NH₄PF₆) polymer electrolyte system” in National Conference on “Recent Advances in Materials Science & Engineering : A Multidisciplinary Approach [RAMSE 2010]” Jaypee University of Engg & Technology (JUET), Guna (M.P.) India, October 23-24, 2010.
49. **Gunjan Srinet** presented paper entitled “Structural characterization of Zn_{1-x}Mn_xO diluted magnetic semiconductor” in National conference RAMSE 2010, JUIT Guna, October 23-24 2010.
50. **Subhash Sharma** presented paper entitled “Effect of oblique angle deposition on optical properties of optical thin films TiO₂” in Recent Advances in Materials Science & Engineering: A Multidisciplinary Approach [RAMSE 2010], Jaypee University of Engg. & Technology, Guna, October 23-24 2010.
51. **Vijayeta Pal** presented paper entitled “Ferroelectric Behavior in (Bi_{1-x}Lax) 0.50Na0.50TiO₃ Ceramics” 16th National Conference of Dielectrics and Ferroelectrics (NSFD-XVI-2010), GGU Bilashpur (C. G.), 02-04 December 2010.
52. **Vijayeta Pal** presented paper entitled “Effect of Chemical Precursors on Structure and Dielectric Properties of Lead free Piezoelectric Ceramic” National conference “RAMSE” 2010, JUIT Guna (M.P.), 23-24 October 2010.
53. **Kuldeep Mishra** presented paper entitled “Structural and ion transport studies of PEO + NH₄PF₆ polymer electrolyte system” in 8th national conference on “Solid State Ionics: Materials for Novel devices” Dr. Hari Singh Gaur University (Central University) Sagar (M.P.), India, December 7-9, 2009.
54. **Saurabh S. Pundir** attended the 8th national conference on “Solid State Ionics: Materials for Novel devices” at Dr. Hari Singh Gaur University (Central University) Sagar (M.P.), India, December 7-9, 2009.
55. **Vanita Devi** presented paper “Effect of Linear Grading on Internal Quantum efficiency in InGaN/GaN light-emitting diode”, NCPMS 2014, GJU Hisar, 20-21 March, 2014.
56. **Prateek Varshney** attended SERB School on “High Power Laser Plasma Interaction”, IIT Delhi, 5-23 May, 2014.

57. **Kanika and Deepika** attended SERB School on “High Power Laser Plasma Interaction”, IIT Delhi, 5-23 May, 2014.
58. **Vijayeta Pal** attended workshop on “Nano Probe Techniques” IIT, Delhi, 14 July 2014.
59. **Anshuman Sahai** attended the workshop on Atomistix Toolkit and Virtual Nanolab (QuantumWise Inc.) at University Science Instrumentation Centre, Jawaharlal Nehru University (JNU), New Delhi-110067 (India) on January 15th 2013.
60. **Chitra Shukla** attended Two days workshop on “Quantum Mechanics and its Applications”, IIIT Noida, 18-19 April, 2013.
61. **Vineet Tiwari** attended two days workshop on Quantum Mechanics and its Applications, Jaypee Institute of Information Technology, Sector-62, Noida(U.P), April 18-19, 2013.
62. **Deepti Maikhuri** attended a workshop on “Quantum Mechanics and its Applications”, IIIT, Noida, (18-19 April 2013).
63. **Pardeep K. Jha** presented beam time request proposal on experiment entitled “Effect of swift heavy ion on microstructure dielectric, ferroelectric and electronic properties of Sm doped bismuth ferrite.” in 55th ACCELERATOR USER WORKSHOP, IUAC, Delhi, December 17-18, 2013.
64. **Seema Joshi** attended Workshop on “Quantum mechanics and its application” at Department of Physics and Materials Science and Engineering, IIIT Noida, April 18-19, 2013.
65. **Subhash Sharma** attended NRC-M Summer Workshop on Principles and Techniques of X-Ray Diffraction, Indian Institute of Science Bangalore, June 10 – 21 2013
66. **Vijayeta Pal** attended “NRC-M Summer Workshop on Principle and Techniques of X-ray Diffraction” held at the Department of Materials Engineering, Indian Institute Science (IISc), Bangalore, on 10-21 June, 2013.
67. **Prateek Varshney** attended Two days workshop on “Quantum Mechanics and its Applications”, IIIT Noida, 18-19 April, 2013.
68. **Mahima** attended Two days workshop on “Quantum Mechanics and its Applications”, IIIT Noida, 18-19 April, 2013.
69. **Sunil Chauhan** attended ACNM School and NEEM-2013 workshop on “Advanced Characterization Methods for Nanophase Materials (ACNM) and Nanoscale Excitations in Emergent Materials (NEEM-2013)” Institute of Plasma Research (IPR), Gandhinagar Gujarat, during 22-26 November 2013.

70. **Deepika** attended Quantum Mechanics and its applications, Jaypee Institute of Information Technology, Noida, April 13-14 (2013).
71. **Maitreyi Upadhyay** attended DST- SERB School on Tokamaks and Magnetized Plasma Fusion, Institute of Plasma Research, Gandhinagar, 25 Feb to 15 March (2013).
72. **Maitreyi Upadhyay** attended Quantum Mechanics and its applications, Jaypee Institute of Information Technology, Noida, April 13-14 (2013).
73. **Anshuman Sahai** attended the workshop on School of Thin Films at Inter-University Accelerator Centre (IUAC), New Delhi-110067 (India) from December 11-13, 2012.
74. **Anshuman Sahai** attended the workshop on How to write for and Get Published in Scientific Journals and Publish Manuscript held at Jawaharlal Nehru University, New Delhi-110067 (India) on August 27, 2012.
75. **Subhash Sharma** attended IUAC School of thin films, Inter-University Accelerator Centre, New Delhi, December 11-13 2012.
76. **Gunjan Srinet** attended IUAC School of thin films, Inter-University Accelerator Centre, New Delhi, December 11-13, 2012.
77. **Sunil Chauhan** attended INUP Familiarization Workshop on “Nanofabrication Technologies” in Center for Nanoscience and Engineering, Indian Institute of Science (IISc), Bangalore, during 29 - 31 October 2012.
78. **Sunil Chauhan** attended Hands on training program “18th INUP Hands-on Training on Biosensors” in Center for Nanoscience and Engineering, Indian Institute of Science (IISc), Bangalore, during 26th-5th December 2012.
79. **Sunil Chauhan** attended Workshop on “Electron and Ion Beam Lithography” in Center for Nanoscience and Engineering, Indian Institute of Science (IISc), Bangalore, during 3-4 December 2012.
80. **Sunil Chauhan** attended School on “School on Thin Films” in Inter-University Accelerator Center (IUAC), New Delhi, during, 10-12, December 2012.
81. **Kuldeep Mishra** attended workshop on “Physical Techniques for the Investigation of Fast Ion Conducting Materials” at Department of Physics, M.S. University of Baroda, Vadodara, India, March 22-24, 2011.
82. **Prateek Varshney** attend workshop of “Fundamentals of Quantum Mechanics and Applications” Department of Physics IIT, Delhi, 6 -7 March, 2010
Vijayeta Pal attend workshop of “Fundamentals of

Quantum Mechanics and Applications” Department of Physics IIT, Delhi, 6 -7 March, 2010.

83. **S. S. Pundir** attended three days Workshop on “Physical Techniques for the Investigation of Fast Ion Conducting Materials” at Department of Physics, M.S. University of Baroda, Vadodara, India, 2010.
84. **Subhash Sharma** attended workshop of “Advanced Materials and Nano materials” IIIT, Noida, November-21 2009.
85. **Vijayeta Pal** attended workshop of “Advance Materials and Nanotechnology” Department of Physics IIIT, Noida, 21th November, 2009.
86. **Gunjan Srinet** attended workshop of “Advanced Materials and Nano materials” Department Physics and Materials Science, IIIT Noida, 21 November-2009.
87. **Prateek Varshney** attended workshop of “Advance Materials and Nanotechnology” Department of Physics IIIT, Noida, 21th November, 2009.
88. **Vijayeta Pal** attended workshop of “Fundamentals and Application of Optics” at the Department of Physics IIIT, Noida, 20th September, 2008.