

Track ID: MPUNGN11402

Volume-10

# EVALUATIVE REPORT

DEPARTMENT OF PHYSICS

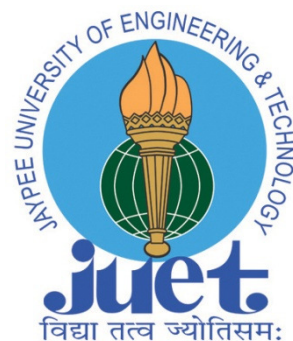
*for*

## ASSESSMENT AND ACCREDITATION

*Submitted to*

NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

BANGALORE



JAYPEE UNIVERSITY OF ENGINEERING AND TECHNOLOGY  
GUNA

November 26, 2015

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## EVALUATIVE REPORT OF THE DEPARTMENT

1. **Name of the Department** : Physics (PHY)

2. **Year of Establishment** : 2003

3. **Is the Department part of a School/Faculty of the University?**

Jaypee University of Engineering & Technology, Guna is a unitary university. It has departments that include Department Physics.

4. **Names of Programmes offered**

- Undergraduate Program: B. Sc. (Hons), Physics, Chemistry, Mathematics.
- Post Graduate Program: M. Sc. (Physics)
- Integrated M. Tech. (Solid State Technology)
- Ph. D. Program (Physics)

5. **Interdisciplinary programmes and departments involved**

Courses offered by the department involve active participation from other departments like Mathematics, Chemistry, Computer Science & Engineering, Mechanical Engineering and Electronics & Communication Engineering.

6. **Courses in collaboration with other universities, industries, foreign institutions etc.**

Currently the department is not having any collaboration with other universities, industries. But we hope to extend our collaboration in near future.

7. **Details of programmes discontinued, if any, with reasons**

The B.Sc. (Hons.) program was dropped from session 2015-16 due to continuously decreasing demand.

8. **Examination System: Semester and Choice Based Credit System**

Semester, along with choice based credit system. Following are the details for evaluation of all type of courses.

### **Examinations**

The University follows continuous evaluation system to inculcate sustained and disciplined work culture in the entire period of study. The examination pattern being implemented by the University is briefly described below:

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## **I. Theory Courses:**

The university follows the semester systems and accordingly three examinations held in each semester for theory courses. These examinations have a total weightage of 75%; the balance 25% are allocated to Assignments, Quizzes, Tutorial, and Regularity in Attendance etc. by the Course Coordinator/Teacher. Details of examinations and their weightage are as follows.

### **a) Theory Tests/Examinations**

Three tests/examinations held in each semester as specified in previous section. Tests/examinations are as under:-

- (i) Test-1 or T-1
- (ii) Test-2 or T-2
- (iii) Test-3 or T-3

### **b) Weightage of marks, duration & Syllabus for theory test/examination Allotment of weightage of marks i.e.75% of total & Syllabus, duration, marks for each Tests/Examination will be as under:-**

Allotment of marks:

Tests/Exams	T-1	T-2	T-3
Percentage of marks	15	25	35
Duration in Hours	1	1 ½	2

### **Syllabi Coverage:**

The syllabus for each test is course contents covered up to the last day of teaching before the examination.

### **c) Allotment of remaining weightage of marks i.e. 25% of total.**

Remaining weightage of marks i.e. 25% including 5% of attendance awarded by respective course coordinator in each theory course through the individual events i.e. Assignments, Tutorials, Quizzes, Regularity & Punctuality in class attendance on the basis of entire semester performance of the individual student.

## **II. Practical Courses**

The evaluation of Practical / Laboratory / Sessional / Workshop work are based on the following:-

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a) Day to day work	70%
(i) Attendance and discipline in laboratory	(15%)
(ii) Quantity & Quality of Experiments Performed, Learning laboratory skills and handling laboratory equipment, Instruments, gadgets, components, materials and software etc.	(40%)
(iii) Laboratory record	(15%)
b) Mid-Semester lab-viva voce / test (P-1)	15%
c) End Semester lab - viva voce / test (P-2)	15%

### III. Evaluation of Project Courses:

Same as M.Tech from other Departments. Currently Not Applicable.

### 9. Participation of the department in the courses offered by other departments

The Department of Physics is offering following courses in the B. Tech./M. Tech. programs of other departments.

Beneficiary Department	Course Name
All branches of B. Tech. Program	Physics-I
All branches of B. Tech. Program	Physics Laboratory I
B. Tech. Computer Science & Engineering and Electronics & Communication Engineering	Physics-II
B. Tech. Computer Science & Engineering and . Electronics & Communication Engineering	Electronic Devices & Circuit Laboratory
B. Tech. Chemical Engineering	Physics for Chemical Engineers
B. Tech. Chemical Engineering	Physics Laboratory II
B. Tech. Computer Science & Engineering, and Electronics & Communication Engineering	Material Science
M. Tech. Computer Science & Engineering and Electronics & Communication Engineering	Quantum Computation & Quantum Cryptography
B.Tech (All Branches)	Nanoscience & Nanotechnology
B. Tech. Electronics & Communication Engineering	Nonlinear Optics & Optical Communication
B. Tech. Computer Science & Engineering	Quantum Computing
B. Tech. Electronics & Communication Engineering	Nonlinear Dynamics Applications
B. Tech. Chemical Engineering	Characterization Techniques
B. Tech. Electronics & Communication Engineering	Simulation of Semiconductor Devices
M. Tech. Electronics & Communication Engineering	Simulation of Semiconductor Devices & Processes

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

Positions		Sanctioned	Filled	Actual (including CAS & MPS)
Professor		0		
Associate Professors		0	1	
Asst. Professors	G-I	6	-	
	G-II		3	
	SG		2	
Teaching Assistants*			2*	

\*Full time Ph.D. Scholars

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

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D./M. Phil Students Guided for the last 4 Years
Dr. Anuj Kumar	Ph.D.	Associate Professor & HOD	Computational spectroscopy, Nanomaterials	15	Ph.D. : One Guiding, One awarded.
Dr. Arnab Kumar Ray	Ph.D.	Assistant Professor (Sr. Grade)	Astrophysics, Nonlinear Dynamics	11	Not Yet Guiding
Dr. Santosh Kumar Tripathi	Ph.D.	Assistant Professor (Sr. Grade)	Energy storage/ conversion devices	9	Ph.D.: One Guiding, Two awarded.
Dr. Rajneesh Atre	Ph.D.	Assistant Professor (Grade -II)	Quantum Optics	8	Not Yet Guiding
Dr. Santosh M. Bobade	Ph.D.	Assistant Professor (Grade -II)	Material Science & Electronic devices	8	Ph.D. : One Guiding,
Dr. Salil M. Modak	Ph.D.	Assistant Professor (Grade -II)	Magnetic Materials	10	Not Yet Guiding

**12. List of senior Visiting Fellows, adjunct faculty, emeritus professors**

At present no Visiting Fellows, Adjunct Faculty or Emeritus Professors are visiting the department.

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

Nil

**14. Programme-wise Student Teacher Ratio**

Faculty members are mainly involved in teaching B.Tech./M.Tech. students of engineering departments. Student Teacher Ratio is calculated by these departments.

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

	Sanctioned	Filled	Actual
Technical	2	2	2
Administrative	Centrally managed at University level		

**16. Research thrust areas as recognized by major funding agencies**

- Nano Science & Technology.
- Materials for Energy Storage Devices.

**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.**

Name of Investigator	Year	Name of Project	Name of Funding Agency	Total grant received(in lakh)
Dr. Santosh Kumar Tripathi	2008-2012 Completed	Fabrication and characterization of solid state supercapacitors using polymeric gel electrolytes	Department of Science and Technology (DST), Govt. of India under the scheme of SERC Fast Track Proposals for Young Scientist, vide D.O. Nos. SR/FTP/PS-02/2007; Dated: 30.07.2008	₹6,30,000

Dr. Anuj Kumar	2012-2014 Completed	Synthesis of nano-materials using chemical approaches and their possible application in water purification	Madhya Pradesh Council of Science and Technology (MPCST), Govt. of Madhya Pradesh, India, vide order no. 1044/CST/R&D/2012 dated 30.06.2012.	₹3,10,000
Dr. Santosh Kumar Tripathi	2012-Ongoing	Synthesis and characterization of nano-gel polymer electrolyte for its application in energy storing supercapacitor devices	Madhya Pradesh Council of Science and Technology (MPCST), Govt. of Madhya Pradesh, India, vide Letter Nos. 3683/CST/R&D/Phy & Engg Sc/2012, Bhopal; Dated: 12.11.2012.	₹4,93,000

**18. Inter-institutional collaborative projects and associated grants received**  
**a) National collaboration                      b) International collaboration**

The department has so far not received any grant formally for collaborative research. However, a good number of faculty members of other institutes as well as few industry professionals have worked/working with many faculty members of department for pursuing/supervising doctoral research. This collaboration has resulted in some Ph.D. theses at JUET and other universities as well as several publications.

**I. National collaboration (without grants/funds)**

Currently Physics Department is not receiving any grants from Inter-institutional collaborative projects, but efforts are constantly being made to get the same in near future. However, Physics department is actively involved in collaborative work and it has resulted in fruitful publications. Details of such publications are given in Annexure PHY01.

**Summary of collaboration- Department of Physics**

No. of collaborating institutions/ organizations	: 16
No. of JUET faculty involved in the collaborations	: 5
No of researchers involved in the collaborations from outside	: 17
Output of collaborations (Publications)	: 19
Ph.D. theses (completed/ ongoing)	: NIL

<b>S. No</b>	<b>Faculty name</b>	<b>Department</b>	<b>Research Collaborator affiliation</b>	<b>Research Area</b>
1.	Anuj Kumar	Physics	Prof. Poonam Tandon, Department of Physics, University of Lucknow, Lucknow, India	Computational Solid State Physics.
2.	Anuj Kumar	Physics	Prof. Yusuf Yagci, Istanbul Technical University, Department of Chemistry, Maslak, Istanbul 34469, Turkey	Polymer synthesis and characterization.
3.	Anuj Kumar	Physics	Prof. Navin Chandra, Former Director, AMPRI, Bhopal	Nanoparticle synthesis and characterization.
4.	Anuj Kumar	Physics	Prof. ,A. Jayaram, Department of Physics, Sahyadri College of Engineering & Management, Mangalore, India.	Nonlinear Crystals Synthesis and characterization.
5.	Arnab Kumar Ray	Physics	Prof. Jayanta Kumar Bhattacharjee, Harish–Chandra Research Institute, Allahabad, India (An Aided Institute of the Department of Atomic Energy, Government of India)	Astrophysical Accretion, Nuclear Physics, Fluid Mechanics
6.	Arnab Kumar Ray	Physics	Dr. Tapas Kumar Das, Harish–Chandra Research Institute, Allahabad, India (An Aided Institute of the Department of Atomic Energy, Government of India)	Astrophysical Accretion
7.	Arnab Kumar Ray	Physics	Dr. G. Nagarjuna, Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research, Mumbai, India (National Centre of the Government of India for Nuclear Science and Mathematics)	Complex Systems
8.	Arnab Kumar Ray	Physics	Prof. Abhik Basu, Condensed Matter Physics Division, Saha Institute of Nuclear Physics, Kolkata, India (under the Department of Atomic Energy, Government of India)	Nuclear Physics, Fluid Mechanics
9.	Salil Modak	Physics	Shashank N. Kane, School of Physics, Devi Ahilya Vishwavidyalaya, Indore, India	Soft magnetic materials, High Bs Alloys, Bulk metallic glasses, ion irradiation effects on bulk magnetic properties of Fe and Fe-Co based nano-crystalline alloys



10.	Salil Modak	Physics	F. Mazaleyrat, SATIE, ENS de Cachan, Cachan, France	Soft magnetic materials
11.	Salil Modak	Physics	Marco Coisson, INRIM, Torino Italy	Thin Film Magnetism, Magneto transport properties of soft magnetic alloys
12.	Salil Modak	Physics	L. K. Varga, RISSOPO, Hungarian Academy of Sciences, Budapest, Hungary	Hysteresis and magnetic anisotropy measurements on High Bs alloys and bulk metallic glasses
13.	Salil Modak	Physics	N. Ghodke, UGC-DAE CSR, DAVV Campus, Indore, India	Development of Constant current supply and relevant hardware for quasi-static hysteresis loop tracer
14.	S.M. Bobade	Physics	Duck Kyun Choi, Division of Materials Science, Hanyang University Seoul	Thin films, transparent electronics, TFT
15.	S.M. Bobade	Physics	Prof. Ajit. Kulkarni, Met. Eng. And Materials Sciences, Indian Institute of Technology Powai, Mumbai.	Polymer electrolyte, Ferroelectric thin films, relaxor materials
16.	S.M. Bobade	Physics	Prof. Prakash Gopalan, Met. Eng. And Materials Sciences, Indian Institute of Technology Powai, Mumbai.	Ferroelectric materials , thin film by PLD, solid electrolyte
17.	Rajneesh Atre	Physics	Prof. P K Panigrahi, IISER, Kolkata	Fiber optics & Mathematical Physics

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

Department of Physics has got the project from DST (Details are indicated in reply of point no 17).

**20. Research facility / centre with**

- State recognition : Not yet
- National recognition : Not yet
- International recognition : Not yet

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

Not yet

**22. Publications**

**I. Summary Report**

Category	Year						Total publications
	2010	2011	2012	2013	2014	2015	
International Journals	6	2	5	10	5	4	32
National Journals	2	0	1	0	2	0	5
International Conferences	2	4	5	3	2	2	18
National Conferences	5	8	2	0	0	0	15

**II. Other Publications**

Year	2015	2014	2013	2012	2011	2010	Total
<b>Books</b>	0	0	2	0	1	0	3
<b>Books Edited</b>	0	0	0	0	0	0	0
<b>Books Chapter</b>	0	0	0	0	1	0	1

**III. Journals Indexed in SCOPUS/SCI/Others**

Category	SCOPUS	SCI	Others	Total
International	27	26	5	32
National	0	0	5	5

**IV. Citation Index**

Indexing Parameter	Details
Google Citations	Total Citations: 61.144 Range: 0 to 4.864, Average: $61.144/26=2.35$
SNIP	Range: Average: $14.624/26=0.562$
SJR	Range: Average: $17.541/26=0.675$
Impact Factor	Range: Average: $17.541/26=0.675$
H-index	Range: 0 to 234 Average: $1374/26=50.889$

A comprehensive list of publications is attached as Annexure II/PHY.

**23. Details of patents and income generated**

Nil

**24. Areas of consultancy and income generated**

Nil

**25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad**

Faculty members of Department of Physics are regularly visiting Institutes/Laboratories in India. Details of these visits are given in Annexure-III/Physics.

**26. Faculty serving in a) National committees b) International committees c) Editorial Boards d) any other (please specify)**

a) Nil

b) Nil

c) Editorial Boards:

(i) Dr. Anuj Kumar is Editorial board member of “International Journal of Materials and Chemistry”.

(ii) Dr. Anuj Kumar is Editor of “JUET Research Journal of Science & Technology”.

d) Research Committee Societies

S. No	Name of Faculty member	Name of committees/societies	Role
1.	Dr. Anuj Kumar	Indian Science Congress Association, Kolkata	Life Member
2.	Dr. Anuj Kumar	Material Research Society, India	Life Member
3.	Dr. S.K. Tripathi	Indian Society for Solid State Ionics	Life Member
4.	Dr. Rajneesh Atre	Indian Society for Atomic and Molecular Physics	Life Member

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

A workshop entitled 'Ancillary Tools for Research' was organized by the Department in collaboration with Department of Mathematics during 16-18 June 2015. It covered the basic tools like Origin, MatLab and LaTeX which are very useful for processing the data and drafting the manuscript for publishing a research articles.

### **Workshops attended by Faculty in last five years:**

- S.K. Tripathi attended five days International Conference on “IUCEE Workshop on Renewable Energy”, held at Jaypee University of Engineering and Technology, Guna organized by Mechanical Engineering Department from 04-08 June, 2012.
- S.K. Tripathi attended five days National Workshop on “Materials Science for Energy Storage held at Anna University”, Chennai from 18-22 January, 2010.
- Anuj Kumar attended International Workshop/Conference on “Computational Condensed Matter Physics and Materials Science”, IITM Gwalior from October 18-22, 2015.

### **28. Student projects**

- **Percentage of students who have done in-house projects including inter-departmental projects**  
Presently Not Applicable
- **Percentage of students doing projects in collaboration with other universities, industry / institute**  
Presently Not Applicable

### **29. Awards / recognitions received at the national and international level by**

#### **a) Faculty**

##### **Invited Talks**

- [1] “Structural and spectroscopic studies on some nonlinear crystals”, Anuj Kumar, invited talk delivered at 98th Indian science congress(International congress) , January 3-7, 2011, at SRM University Chennai.
- [2] “Density Functional Theory: An established tool for theoretical investigations of material properties,” Anuj Kumar, invited talk delivered at National conference on Recent Trends in Materials Science and Nano Structure(RTMSNS 12) January 3-4, 2012 at Govt. P.G.College Rudrapur (U.S.Nagar) Uttarakhand.
- [3] “A Unified Analytical Treatment to Cigar Shaped BECs & Dispersion Managed Optical Solitons”, Dr. Rajneeh Atre delivered an Invited talk on at 3rd International Conference on Current Developments in Atomic Molecular & Optical Physics 2011, December 14-16, 2011.

**b) Doctoral / post doctoral fellows**

Mrs. Amrita Jain, Doctoral Fellow, received, “Young Scientist Award” from MPCST, Bhopal, August 2011.

**c) Students**

Nil

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

S. No	Title	Duration (with date)	Sponsoring body/agency (if any)	No. of participants	Keynote speakers (with detail)
1	National Conference on Recent Advances in Materials Science & Engineering: A Multidisciplinary Approach [RAMSE-2010]  (Convener: Dr. Anuj Kumar)	02 Days 23-24, October, 2010	DST, ISRO	70	1. Prof. K L Chopra, Former Director, IIT, Kharagpur. 2. Dr. Anil K Gupta Director, (AMPRI), Bhopal 3. Prof. B R Mehta IIT Delhi 4. Dr. M Nasim DMSRDE, Kanpur etc.
2	National Workshop on Energy Storage/Conversion Devices using Ion Conducting Polymer Electrolytes [NWESD-2012]  (Convener: Dr. S.K. Tripathi)	03 Days 10-12, December 2012	DRDO and MPCOST	33	(a) Dr. S. A. Hashmi, Department of Physics and Astrophysics, University of Delhi, India (b) Dr. A.K. Thakur, Department of Physics, Indian Institute of Technology, Patna, India (c) Mr. Amit Raje Managing Director Aartech Solonics, Bhopal, M.P., India

**31. Code of ethics for research followed by the departments**

The Department follows the University code of research ethics. In addition the faculty members and research scholars are advised to follow APS (American Physical Society) Guidelines for Professional Conduct.

HyperLink: [http://www.aps.org/policy/statements/02\\_2.cfm](http://www.aps.org/policy/statements/02_2.cfm)

**32. Student profile programme-wise**

Not Applicable

**33. Diversity of students**

Not Applicable

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

Information is not available.

**35. Student progression**

Currently not applicable

**36. Diversity of staff**

Department of Physics is currently having six faculty member, all of them hold a doctorate preceded by masters degree in physics. Academic background of the department is quite diverse.

<b>Percentage of faculty who are graduates</b>	<b>Ph.D.</b>	<b>P.G.</b>
of the same universities	0	0
from other universities within the state	0 %	33 %
from universities within other states	84 %	67 %
from universities outside the country	16%	0

**37. Number of faculty who were awarded M. Phil., Ph.D., D.Sc. and D.Lit. during the assessment period**

One faculty member, Dr. Yogendra Kumar Gautam was awarded Ph.D. from Roorkee University; he has already resigned in February 2015.

**38. Present details of departmental infrastructural facilities with regard to**

**a) Library**

A departmental library has been established by the University to cater specific needs of faculty members, research scholars and students. Faculty members, research scholars and students can borrow books for a limited period of time from the departmental library. A faculty member is assigned for smooth functioning of the departmental library.

**Books:** Departmental Library currently has 100 titles specifically on various field o of physics.

**Journals:** For the Research Journals, department uses facilities provided by Learning Resource Center of the University.

**b) Internet facilities for staff and students**

JUET campus is fully connected through LAN/ Wi-Fi arrangement consisting of around 3500 node. Internet facility is available 24 X 7 on all these nodes through 1Gbps leased line. On this network 855 Desktop Systems are made available to faculty members and staff members. Other nodes are available for connections of personal computing devices by faculty members/staff/students.

**c) Total number of class rooms**

13 Lecture Theatres and 30 Class Rooms/Tutorial rooms of the University are shared with other departments.

**d) Class rooms with ICT facility**

13 Lecture Theatres and 6 Class Rooms with ICT facility are with other departments. The detail information is mentioned in Section 4.3.7.

\*Details mentioned at point b),c) &d) is available centrally at University level which is being shared by other departments also.

**e) Students. Laboratories**

Department has two fully equipped labs catering the need of undergraduate students specially B. Tech. The experiments available in the laboratories not only enrich the understanding of the theory courses in physics, it also provide an opportunity to develop independent thinking and methodical approach towards the practical problems. The experiments available in the department broadly covers, Physical Optics (e.g., Newton's Ring, Plane Transmission Grating) , Modern Physics (Photoelectric Effect, Franck-Hertz Experiments), Solid State Physics (e.g., Energy Band Gap determination, Hall Effect, Curie Temperature in Ferroelectric substances), Electromagnetism (e.g., Helmholtz Galvanometer, e/m Determination) and Semiconductor based electronic devices (e.g., Study of Transistors, Rectifiers, FET Characteristics etc).

## Research Laboratories

Research laboratories for synthesis of nanomaterials and energy devices fabrication and testing are there in the department. All the laboratories are well equipped with relevant and advanced experimental facilities along with necessary software. Some equipments and software are listed below:

S. No.	Name of the Equipment/Software	Quantity
1.	Electrochemical Analyzer	01
2.	Digital pH Meter	01
3.	Vacuum Oven	01
4.	LCR HI Tester (Hioki, Japan)	01
5.	Analytical Balance	01
6.	Gaussian 09, Multiprocessor Version	01
7.	Gauss View 5	01

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

- from the host institution/university : NIL
- from other institutions/universities :

Name of student	Supervisor	Thesis Topic	Registration Year
Mahendra Singh Yadav	Dr. S K Tripathi	Materials for energy storage / conversion devices	2015, Ongoing
Dharmendra Jain	Dr. S K Tripathi	Ion conducting materials for energy storage devices	2015, Ongoing
Mukta Tripathi	Dr. S K Tripathi	Ion conducting polymer electrolyte for electrochemical devices	2014, Ongoing
Mahesh Pal Singh Yadav	Dr. Anuj Kumar	Spectroscopic studies and molecular modeling on finite molecules.	2011, Ongoing
Amrita Jain	Dr. S K Tripathi	Studies on biomass based activated charcoal for electrochemical double layer capacitors.	Awarded
Ashish Gupta	Dr. S K Tripathi	Experimental studies on ion conducting polymer electrolytes.	Awarded
Sapna Pathak	Dr. Anuj Kumar	Spectroscopic and structural studies of substituted polyacetylenes and non linear optical material.	Awarded



- 40. Number of post graduate students getting financial assistance from the University.**

Currently Not Applicable.

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

Yes, based on interaction with prominent academicians the proposal of new course is brought before BOS. After a detailed analysis and deliberations BOS recommends the course to academic council for its approval.

- 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?**

**(b) Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?**

**(c) Alumni and employers on the programmes offered and how does the department utilize the feedback?**

Yes. There is a provision of taking feedback from faculty as well as students. This feedback is analyzed in departmental meetings and the outcome is proposed to BOS for final recommendation for any corrective measure to be taken on curriculum and teaching learning evaluation.

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

Currently not applicable.

- 44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.**

Currently not applicable

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

Other than white boards, Visualizer and Power point slides are also used for effective delivery of lectures. Problem sets are distributed and discussion is done with active participation of students. Small tests comprising questions on concepts and numerical ability are also conducted during tutorials to ensure involvement and to judge the learning pace of individual students.

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

The detailed plan on lectures/lab courses for every course is prepared in the beginning keeping in mind the objectives of the program. A review on proper implementation of the plan is done on regular intervals. Course coordinator/HOD ensures that objectives are met and learning outcome is achieved.

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

Currently not applicable.

**48. Give details of beyond syllabus scholarly activities of the department.**

Faculty members of the Department of Physics have extensive academic interaction with the students besides routine classroom teaching. It was found very fruitful for them in many ways e.g., going for summer internship to a Research Institute which primarily focuses on basic sciences. Many students even chose to venture into pure research oriented higher studies in India as well as abroad.

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

Currently not applicable.

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

The faculty of the department is actively involved in generating and dissemination of knowledge. The completed funded research projects in the area of nanotechnology and energy storage devices specifically super capacitors have produced significant contribution. Other than the contribution in generating knowledge through research, department has also contributed to creation of study materials and lab manuals.

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

**Strengths**

- Highly qualified and experienced Faculty members.
- State of the art infra structure.
- Fully equipped functional laboratories. Flexibility for addition of new experiments.
- Opportunity to update course structure and content.
- Good Research outcome in terms of publications, funded projects and Ph.D. awarded.
- National and international collaborations.

**Weaknesses:**

- Location is measure disadvantage. This reduces the possibility of sharing resources with others for improvement in research and teaching learning output.
- Non-availability of students in under graduate and Post graduate courses severely hampering the growth of academics of the department. Similarly, for Ph.D. scholars the demand ratio is very poor. This is resulted in low utilization of faculty's capabilities in producing research output.

- Sponsored research projects with international agencies
- Research facility with state/ national/ international recognition
- Conversion of research output into patents

**Opportunities:**

- Inter-departmental research
- Sponsored projects
- Inter institutional collaborations

**Challenges**

- Enrolment in UG, PG and Ph.D. programs.
- Research laboratories with state/ national/ international recognition.
- Industry collaborations and consultancy.
- Research funding and sponsored projects.

**52. Future plans of the department.**

Plan of action of the department for the next five years:

- To look for establishment of Industrial Collaborations through inter-disciplinary research and development.
- Setting up of research groups in: Computational and experimental material science, Nanoscience and Nanotechnology, Theoretical Physics.
- Setting up of specialized laboratories for fabrication and characterization of nanomaterials
- Efforts will be made to successfully run existing Integrated M Tech Program and to develop new programs.

### List of Publication (Collaboration with Other Academicians)

1. Sapna Pathak, Anuj Kumar and Poonam Tandon, "Molecular structure and vibrational spectroscopic investigation of 4-chloro-4'-dimethylamino-benzylidene aniline using density functional theory", *J. Mol. Structure*, Volume 981, p.p. 1-9, 2010.[Citation Index: 10, SNIP: 0.849, SJR: 0.476, Impact Factor: 1.599, H-Index: NA]
2. Sapna Pathak, Anuj Kumar, P.Tandon, Baris Kiskan, Banu Koz and Yusuf Yagci, "Synthesis, characterization and theoretical interpretation of vibrational spectra of Poly(2-methylbut-2-enyl thiophene-3-carboxylate)", *European Polymer Journal*, volume 46, p.p. 1525-153, 2010.[Citation Index: 2, SNIP: 1.66, SJR: 1.135, Impact Factor: 3.242, H- Index: NA]
3. Mahesh Pal Singh Yadav and Anuj Kumar, A. Jayarama, "Vibrational spectra analysis, NBO, HOMO–LUMO, and nonlinear optical behavior studies on 3-(3,4-dimethoxyphenyl)-1-(pyridin-2-yl)prop-2-en-1-one", *Monatshefte für Chemie - Chemical Monthly*, DOI 10.1007/s00706-015-1567-8.[Citation Index: 0, SNIP: NA, SJR: 0.33, Impact Factor: 1.222, H-Index: 46]
4. Anuj Kumar, Ravi Kant Upadhyay, and Navin Chandra "Synthesis & Characterization of ZnS Nanoparticles by Capped Precipitation", Winter Workshop 2012, An international conference held at IIT, Indore, pp. 113-114, December 10 – 12, 2012.
5. Anuj Kumar, Mahesh Pal Singh Yadav & Poonam tandon, "Density functional theory application on molecular structure and vibrational spectra studies on 2-amino-5-(m-nitrophenyl)-1,3,4-thiadiazole ", In Proceedings of Fourth international conference on perspectives in vibrational spectroscopy (ICOPVS-2013), Bishop Moore College, Mavelikara, Kerala, August 6-9, 2013.
6. Sapna Pathak, Anuj Kumar and Poonam Tandon, "Density functional theory study of structure and vibrational spectra of 4-chloro-4'-dimethylamino-benzylidene aniline", International Conference & Humboldt Kolleg 'Frontiers of Environmental & Health Sciences Useful to Mankind: A Multidisciplinary Approach' Organised by University of Lucknow & Humboldt Academy Lucknow, February 25- 27, 2010

7. Sapna Pathak, Anuj Kumar and Poonam Tandon , “Theoretical studies of the molecular structure and vibrational spectra of l-lysine monohydrochloride dihydrate using density functional theory”, International Conference on Perspectives in Vibrational Spectroscopy (ICOPVS-2010) organised by Department of Physics, Banaras Hindu University, February 21-24, 2010.
8. Niladri Sarkar, Abhik Basu, Jayanta K. Bhattacharjee and Arnab K. Ray, “Acoustic horizons in steady spherically symmetric nuclear fluid flows”, Physical Review C, Volume 88, Issue 5, pp 055205, November, 2013.[Citation Index: 2.96, SNIP: NA, SJR: 1.6, Impact Factor: 3.881, H-Index: 139]
9. Jayanta K. Bhattacharjee and Arnab. K. Ray, “Scale-dependent turbulence as a limiter of a gravity-driven flow”, JUET Research Journal of Science and Technology, Volume 1, Number 1, pp 85, January, 2014.[Citation Index: NA, SNIP: NA, SJR: NA, Impact Factor: NA, H-Index: NA]
10. J. K. Bhattacharjee and Arnab K. Ray, “Hydraulic Jump”, 12<sup>th</sup>. Continuum Models and Discrete Systems Symposium (CMDS12), Saha Institute of Nuclear Physics, Kolkata, India, Journal of Physics: Conference Series, Volume: 319, pp. 012003, ISSN: 1742-6588, September, 2011.
11. Rajiv Nair, G. Nagarjuna and Arnab K. Ray, “Finite-size effects in the dependency networks of free and open-source software”, Complex Systems, Volume 23, Number 1, pp 71, March, 2014.[Citation Index: 0.71, SNIP: NA, SJR: 0.27, Impact Factor: NA, H-Index: 2]

### Other Publications

1. Rajiv Nair, G. Nagarjuna and Arnab K. Ray, “Features of complex networks in a free-software operating system”, In Proceedings of International Conference on Recent Trends in Physics (ICRTP12), Department of Physics, Devi Ahilya University, Indore, India, Journal of Physics: Conference Series, Volume: 365, pp. 012058, ISSN: 1742-6588, May, 2012
2. Niladri Sarkar, Abhik Basu, Jayanta K. Bhattacharjee and Arnab K. Ray, “Acoustic horizons in steady spherically symmetric nuclear fluid flows”, Physical Review C, Volume 88, Issue 5, pp 055205, November, 2013.[Citation Index: 2.96, SNIP: NA, SJR: 1.6, Impact Factor: 3.881, H-Index: 139]
3. Sankhasubhra Nag, Swagata Acharya, Arnab K. Ray and Tapas K. Das, “The role of flow geometry in influencing the stability criteria for low angular momentum axisymmetric black hole accretion”, New Astronomy (Elsevier), Volume 17, Issue 3, pp 285, April 2012.[Citation Index: 1.18, SNIP: 0.726, SJR: 1.074, Impact Factor: 1.244, H-Index: 55]

4. S. S. Khinchi, S.S. Modak, L. Kraus, P. Svec, F. Mazaleyrat, S. N. Kane, “Influence of Co content and thermal annealing on structural, magnetic and magneto elastic properties of nanocrystalline Fe-Co-Nb-B alloys”, *Physica B: Condensed Matter* Vol. 405, pp-2806, (2010).[Citation Index: 04, SNIP: NA, SJR: 0.625, Impact Factor: 1.276 H-Index: 69]
5. S. S. Modak, S. N. Kane, A Gupta, F. Mazaleyrat, M. LoBue, M. Coission, F. Celegato, P. Tiberto F. Vinai, “Magnetic and structural properties of ion beam sputtered Fe-Zr-Nb-B-Cu thin films”, *Thin Solid Films* 520, pp-3499 (2012).[Citation Index: 02, SNIP: NA, SJR: 0.929, Impact Factor: 2.038 H-Index: 130]
6. Vipul Jain, Santosh Bobade, Devidas Gulwade, Devidas, Prakash Gopalan, “Role of the salt phase in GDC and alumina-based composites”, *Ionics*, 16-6, 487-496 (2010). [Citation Index: NA, SNIP: NA, SJR: NA, Impact Factor: 1.84, H-Index NA]
7. U. Roy, R. Atre, C. Sudheesh, C. N. Kumar and P.K. Panigrahi,, “Complex solitons in Bose–Einstein condensates with two- and three-body interactions”, *J. Phys. B: At. Mol. Opt. Phys.* Volume 43, Issue 2, pp 025003, January 2010.[Citation Index:1.26, SNIP NA, SJR: 0.68, Impact Factor: 1.916, H-Index: 84]
8. A. Sen, N. Gurappa, R. Atre and P.K. Panigrahi, “Who is Afraid of Special Functions and Orthogonal Polynomials in Quantum Mechanics”, *Physics Education* Volume 28, Issue 4, pp Oct-Dec 2012.[Citation Index: NA, SNIP: NA, SJR: NA, Impact Factor: NA, H-Index: NA]

**List of Publications (last five years)**

**SCI/ Scopus Indexed Journals**

**International Journals**

**2015**

1. Anuj Kumar and Ravi Kant Upadhyay, “Optical, structural and morphological studies of ZnS nanoparticles synthesized using inorganic capping agent”, *J Mater Sci: Mater Electron* (Springer), volume 26, pp. 2430–2435, 2015.[Citation Index: 0, SNIP: 1.216, SJR: 0.7, Impact Factor: 1.966, H- Index: 48]
2. Mahesh Pal Singh Yadav and Anuj Kumar, A. Jayarama, “Vibrational spectra analysis, NBO, HOMO–LUMO, and nonlinear optical behavior studies on 3-(3,4-dimethoxyphenyl)-1-(pyridin-2-yl)prop-2-en-1-one”, *Monatshefte für Chemie - Chemical Monthly*, DOI 10.1007/s00706-015-1567-8.[Citation Index: 0, SNIP: NA, SJR: 0.33, Impact Factor: 1.222, H-Index: 46]
3. Amrita Jain and S.K.Tripathi, “Almond Shell Based Activated Nano-Porous Carbon Electrode for EDLCs”, *Ionics* (Springer), Volume 21, Issue 5, pp. 1391-1398, May, 2015.[Citation Index: 0, SNIP: 0.91, SJR: 0.497, Impact Factor: 1.836, H-Index: 27]
4. Raj Kamala, Piyush Chandravanshia, Duck-Kyun Choib, Santosh M. Bobade, “The effect of annealing in forming gas on the a-IGZO thin film transistor performance and valence band cut-off of IGZO on SiNx”, *Current Applied Physics*, 15-5, 648 (2015).[Citation Index: 1.99, SNIP: 1.33, SJR: 0.85, Impact Factor: 2.02, H-Index: NA]

**2014**

5. Amrita Jain and S.K. Tripathi, “Fabrication and Characterization of Energy Storing Supercapacitor Devices using Coconut Shell based Activated Charcoal Electrode”, *Materials Science and Engineering B* (Elsevier), Volume 183, Issue, pp. 54-60, April, 2014.[Citation Index: 1, SNIP: 1.243, SJR: 0.805, Impact Factor: 2.122, H-Index: 74]

**2013**

6. Amrita Jain and S.K. Tripathi, “Converting Eucalyptus Leaves into Mesoporous Carbon for its Application in Quasi Solid-State Supercapacitors” *Journal of Solid State Electrochemistry* (Springer), Volume 17, Issue 9, pp. 2545-2550, June, 2013.[Citation Index: 2, SNIP: 0.91, SJR: 0.777, Impact Factor: 2.236, H-Index: 48]

7. Amrita Jain, S.K. Tripathi, Ashish Gupta and Manju Kumari “Fabrication and characterization of electrochemical double layer capacitors using ionic liquid based gel polymer electrolyte with chemically treated activated charcoal electrodes”, *Journal of Solid State Electrochemistry* (Springer), Volume 17, Issue 3, pp. 713-726, October, 2013.[Citation Index: 4, SNIP: 0.91, SJR: 0.777, Impact Factor: 2.236, H-Index: 48]
8. Amrita Jain and S.K.Tripathi, “Experimental studies on high performance supercapacitor based on nano gel polymer electrolyte with treated activated charcoal”, *Ionics* (Springer), Volume 19, Issue 3, pp. 549-557, July, 2013.[Citation Index: 2, SNIP: 0.934, SJR: 0.497, Impact Factor: 1.836, H-Index: 27]
9. S.K.Tripathi, Ashish Gupta, Amrita Jain and Manju Kumari “Electrochemical studies on nano composite polymer electrolytes”, *Indian Journal of Pure and Applied Physics*, Volume 51, pp. 351-358, May, 2013.[Citation Index: 1, SNIP: 1.042, SJR: 0.382, Impact Factor: 0.711, H-Index: 21]
10. S.K.Tripathi, Amrita Jain, Ashish Gupta and Manju Kumari, “Studies on Redox Supercapacitor using electrochemically synthesized polypyrrole as electrode material using blend polymer gel electrolyte”, *Indian Journal of Pure and Applied Physics*, Volume 51, pp. 315-319, May, 2013.[Citation Index: 0, SNIP: 0.941, SJR: 0.382, Impact Factor: 0.711, H-Index: 21]
11. Soumyajit Bose, Anindya Sengupta and Arnab K. Ray, “Nonlinear variations in axisymmetric accretion”, *Physical Review D*, Volume 89, Issue 10, pp 103011, May, 2014.[Citation Index: 4.06, SNIP: NA, SJR: 1.9, Impact Factor: 4.864, H-Index: 234]
12. Sourav Sen and Arnab K. Ray, “Implications of nonlinearity for spherically symmetric accretion”, *Physical Review D*, Volume 89, Issue 6, pp 063004, March, 2014.[Citation Index: 4.06, SNIP: NA, SJR: 1.9, Impact Factor: 4.864, H-Index: 234]
13. Niladri Sarkar, Abhik Basu, Jayanta K. Bhattacharjee and Arnab K. Ray, “Acoustic horizons in steady spherically symmetric nuclear fluid flows”, *Physical Review C*, Volume 88, Issue 5, pp 055205, November, 2013.[Citation Index: 2.96, SNIP: NA, SJR: 1.6, Impact Factor: 3.881, H-Index: 139]

## 2012

14. S.K. Tripathi, Ashish Gupta and Manju Kumari “Studies on electrical conductivity and dielectric behaviour of PVdF-HFP-PMMA-NaI polymer blend electrolyte”, *Bulletin of Materials Science* (Springer), Volume 35, Issue 6, pp. 969-975, November, 2012.[Citation Index: 11, SNIP: 0.941, SJR: 0.322, Impact Factor: 0.870, H-Index: 21]



15. S.K. Tripathi, Amrita Jain, Ashish Gupta and Manju Mishra “Electrical and Electrochemical studies on magnesium ion based polymer gel electrolytes”, *Journal of Solid State Electrochemistry* (Springer), Volume 16, Issue 5, pp. 1799-1806, January, 2012.[Citation Index: 5, SNIP: 1.043, SJR: 0.903, Impact Factor: 2.234, H-Index: 48]
16. S. S. Modak, S. N. Kane, A Gupta, F. Mazaleyrat, M. LoBue, M. Coission, F. Celegato, P. Tiberto F. Vinai, “Magnetic and structural properties of ion beam sputtered Fe-Zr-Nb-B-Cu thin films”, *Thin Solid Films* 520, pp-3499 (2012).[Citation Index: 02, SNIP: NA, SJR: 0.929, Impact Factor: 2.038 H-Index: 130]
17. Bobade, Santosh M “A reconstruction of cubic rs-ZnO on MgO (200) substrate through (100) plane of w-ZnO: rs-ZnO for transparent electronic application”, *Applied Physics Letters*, 100-7, 072102 (2012).[Citation Index: 1.35, SNIP: NA, SJR: NA, Impact Factor: 3.7, H-Index: NA]
18. Sankhasubhra Nag, Swagata Acharya, Arnab K. Ray and Tapas K. Das, “The role of flow geometry in influencing the stability criteria for low angular momentum axisymmetric black hole accretion”, *New Astronomy* (Elsevier), Volume 17, Issue 3, pp 285, April 2012.[Citation Index: 1.18, SNIP: 0.726, SJR: 1.074, Impact Factor: 1.244, H-Index: 55]

## 2011

19. Sapna Pathak, Anuj Kumar, “Quantitative interpretation of IR spectra and heat capacity calculations for environment friendly polymer”, *Journal of Polymer Environment*, volume 19, p.p 230-238, 2011.[Citation Index: 0, SNIP: NA, SJR: NA, Impact Factor: 1.628, H- Index: NA]
20. Cho, Young-Je; Kim, HyunHo; Park, Kyoung-Yun; Lee, Jaegab, Santosh M. Bobade; Wu, Fu-Chung; Choi, Duck-Kyun , “Fabrication of an a-IGZO Thin Film Transistor Using Selective Deposition of Cobalt by the Self-Assembly Monolayer (SAM) Process”, “ *Journal of nanoscience and nanotechnology*”,11-1,787-790(2011).[Citation Index: NA, SNIP: NA, SJR: NA, Impact Factor: 1.33, H-Index: NA]

## 2010

21. Sapna Pathak, Anuj Kumar, Poonam Tandon, “Molecular structure and vibrational spectroscopic investigation of 4-chloro-4’ dimethylamino-benzylidene aniline using density functional theory”, *J. Mol. Structure*, Volume 981, p.p. 1-9, 2010.[Citation Index: 10, SNIP: 0.849, SJR: 0.476, Impact Factor: 1.599, H-Index: NA]

22. Sapna Pathak, Anuj Kumar, P.Tandon, Baris Kiskan, Banu Koz and Yusuf Yagci, "Synthesis, characterization and theoretical interpretation of vibrational spectra of Poly(2-methylbut-2-enyl thiophene-3-carboxylate)", *European Polymer Journal*, volume 46, p.p. 1525-153, 2010.[Citation Index: 2, SNIP: 1.66, SJR: 1.135, Impact Factor: 3.242, H- Index: NA]
23. U. Roy, R. Atre, C. Sudheesh, C. N. Kumar and P.K. Panigrahi,, "Complex solitons in Bose–Einstein condensates with two- and three-body interactions", *J. Phys. B: At. Mol. Opt. Phys.* Volume 43, Issue 2, pp 025003, January 2010.[Citation Index:1.26, SNIP NA, SJR: 0.68, Impact Factor: 1.916, H-Index: 84]
24. Seo, Hyungtak; Cho, Young-Je; Kim, Jinwoo; M. Bobade, Santosh; Park, Kyoung-Youn; Lee, Jaegab; Choi, Duck-Kyun, "Permanent optical doping of amorphous metal oxide semiconductors by deep ultraviolet irradiation at room temperature", *Applied Physics Letters*, 96-22, 222101 (2010).[Citation Index: 1.35, SNIP: NA, SJR: NA, Impact Factor: 3.7, H-Index: NA]
25. Vipul Jain, Santosh Bobade, Devidas Gulwade, Devidas, Prakash Gopalan, "Role of the salt phase in GDC and alumina-based composites", *Ionics*, 16-6, 487-496 ( 2010). [Citation Index: NA, SNIP: NA, SJR: NA, Impact Factor: 1.84, H-Index NA]
26. S. S. Khinchi, S.S. Modak, L. Kraus, P. Svec, F. Mazaleyrat, S. N. Kane, "Influence of Co content and thermal annealing on structural, magnetic and magneto elastic properties of nanocrystalline Fe-Co-Nb-B alloys", *Physica B: Condensed Matter* Vol. 405, pp-2806, (2010).[Citation Index: 04, SNIP: NA, SJR: 0.625, Impact Factor: 1.276 H-Index: 69]

## **Other Journals**

### **International Journals**

#### **2014**

1. Mahesh Pal singh Yadav and Anuj Kumar, "Molecular Structure and Vibrational Analysis of 2-Amino- 5-(m-Nitrophenyl)-1,3,4-Thiadiazole by DFT Calculations", *International Journal of Materials and Chemistry*, Volume 4, Issue 3, pp 51-64, 2014.[Citation Index: 0, SNIP: NA, SJR: NA, Impact Factor: NA, H-Index: NA]

2. Amrita Jain and S.K. Tripathi, “Effect of nano-filler on the performance of MWCNTs based EDLCs”, Journal of Renewable and Sustainable Energy (American Institute of Physics), Volume 6, Issue 1, pp. 0131081-01310811, January, 2014.[Citation Index: 0, SNIP: 0.879, SJR: 0.472, Impact Factor: 1.176, H-Index: 10] **SCI**
3. Rajiv Nair, G. Nagarjuna and Arnab K. Ray, “Finite-size effects in the dependency networks of free and open-source software”, Complex Systems, Volume 23, Number 1, pp 71, March, 2014.[Citation Index: 0.71, SNIP: NA, SJR: 0.27, Impact Factor: NA, H-Index: 2]
4. Arjun Mullick and Arnab K. Ray, Dynamics of bimodality in vehicular traffic flows, Journal of Applied Nonlinear Dynamics, Volume 3, Issue 1, pp 17, March, 2014.[Citation Index: NA, SNIP: NA, SJR: NA, Impact Factor: NA, H-Index: NA]

## **2013**

5. Ashish Gupta and S.K. Tripathi, “Studies on polymer blend electrolytes for redox capacitors”, International Journal of Engineering Research and Development (Open Access Journal), Volume 6, Issue 2, pp 63-66, Month, 2013.[Citation Index: 0, SNIP NA, SJR: NA, Impact Factor: NA, H-Index: NA]
6. Ashish Gupta and S.K. Tripathi “Effect of anionic size of PMMA based polymer gel electrolytes for redox capacitor”, International Journal of Engineering Research and Applications (Open Access Journal), Volume 3, Issue, pp. 1908-1911, 2013.[Citation Index: 1, SNIP Not Available, SJR: NA, Impact Factor: 1.69 H-Index: NA]

## **National Journals**

### **2014**

1. Jayanta K. Bhattacharjee and Arnab. K. Ray, “Scale-dependent turbulence as a limiter of a gravity-driven flow”, JUET Research Journal of Science and Technology, Volume 1, Number 1, pp 85, January, 2014.[Citation Index: NA, SNIP: NA, SJR: NA, Impact Factor: NA, H-Index: NA]
2. Arnab K. Ray and Jayanta K. Bhattacharjee, “A dynamical systems approach to a thin accretion disc and its time-dependent behaviour on large length scales”, JUET Research Journal of Science and Technology, Volume 1, Number 2, pp 119, July, 2014.[Citation Index: NA, SNIP: NA, SJR: NA, Impact Factor: NA, H-Index: NA]

## 2012

1. A. Sen, N. Gurappa, R. Atre and P.K. Panigrahi, "Who is Afraid of Special Functions and Orthogonal Polynomials in Quantum Mechanics", *Physics Education* Volume 28, Issue 4, pp Oct-Dec 2012.[Citation Index: NA, SNIP: NA, SJR: NA, Impact Factor: NA, H-Index: NA]

## 2010

1. S.K. Tripathi, Ashish Gupta, L.N.Gupta and Manju Kumari, "Preliminary studies on hybrid supercapacitors using Impedance Spectroscopy", *Jnanabha*, Volume 40, pp. 13-20, 2010.[Citation Index: 0, SNIP: NA, SJR: NA, Impact Factor: NA, H-Index: NA]
2. S.K.Tripathi, Ashish Gupta, L.N.Gupta and Manju Kumari, "Optimization of polymer gel electrolytes for its application in energy storage devices", *Jnanabha*, Volume 40, pp. 21-28, 2010.[Citation Index: 0, SNIP: NA, SJR: NA, Impact Factor: NA, H-Index: NA]

## International Conferences

### 2015

1. Mahesh Pal Singh Yadav and Anuj kumar, "Computational studies of third-order nonlinear optical properties of Pyridine derivative 2-Aminopyridinium p-Toluenesulfonate crystal", In *Proceedings of International E-Workshop/Conference on Computational Condensed Matter Physics and Materials Science" IWCCMP-2015* organised by ABV-IIITM, Gwalior , October 18-22, 2015.
2. Mahesh Pal Singh Yadav and Anuj kumar, "Ab-initio investigations on NLO crystal 1-[4-(methylsulfanyl) phenyl]-3-(4-nitrophenyl) prop-2-en-1-one", In *Proceedings of International E-Workshop/Conference on Computational Condensed Matter Physics and Materials Science" IWCCMP-2015* organised by ABV-IIITM, Gwalior , pp, October 18-22, 2015.

### 2014

3. Mahesh Pal Singh Yadav and Anuj kumar, "Quantum Chemical Computation By DFT Application Of NLO Molecule 2-Aminopyridinium p-Toluenesulfonate", In *Proceedings of International E-Workshop/Conference on Computational Condensed Matter Physics and Materials Science" IWCCMP-2014* organised by ABV-IIITM, Gwalior , pp, November 25-30, 2014.

4. Anuj Kumar and Mahesh Pal Singh Yadav , “Quantum Chemical Studies for Pharmacologically Significant Thiadiazole Derivative., In Proceedings of International Symposium on Advances in Biological & Material Sciences, Lucknow University, July 15, 2014.

## 2013

5. Anuj Kumar, Mahesh Pal Singh Yadav & Poonam tandon, “Density functional theory application on molecular structure and vibrational spectra studies on 2-amino-5-(m-nitrophenyl)-1,3,4-thiadiazole ”, In Proceedings of Fourth international conference on perspectives in vibrational spectroscopy (ICOPVS-2013), Bishop Moore College, Mavelikara, Kerala, August 6-9, 2013.
6. S.K.Tripathi and Ashish Gupta, “Experimental studies on ionic liquid based magnesium ion conducting polymer gel electrolytes”, In Proceedings of 19<sup>th</sup> International Conference on Solid State Ionics [ICSSI-19], held at Kyoto, Japan, June 02-07, 2013.
7. Amrita Jain and S.K.Tripathi, “Studies on EDLCs using coconut shell based activated charcoal with polymer blend electrolytes”, In Proceedings of 19<sup>th</sup> International Conference on Solid State Ionics [ICSSI-19], held at Kyoto, Japan, June 02-07, 2013.

## 2012

8. Anuj Kumar, Ravi Kant Upadhyay, and Navin Chandra “Synthesis & Characterization of ZnS Nanoparticles by Capped Precipitation”, Winter Workshop 2012, An international conference held at IIT, Indore, pp. 113-114, December 10 – 12, 2012.
9. Rajiv Nair, G. Nagarjuna and Arnab K. Ray, “Features of complex networks in a free-software operating system”, In Proceedings of International Conference on Recent Trends in Physics (ICRTP12), Department of Physics, Devi Ahilya University, Indore, India, Journal of Physics: Conference Series, Volume: 365, pp. 012058, ISSN: 1742-6588, May, 2012
10. S.K.Tripathi, Amrita Jain, Ashish Gupta and Manju Kumari,” Effect of monovalent anion on capacitive behaviour of polypyrrole based redox supercapacitor” In Proceedings of International Conference on Recent Trend in Physics ‘ICRTP 2012’, held at Devi Ahilya Vishwavidyalaya, Indore, India, February 04-05, 2012.

11. S.K.Tripathi, Amrita Jain, Ashish Gupta and Manju Kumari, “Studies on Coconut Shell Electrode for its application in electrical double layer capacitor using poly methyl methacrylate based gel electrolytes” In Proceedings of 6th Asian Conference on Electrochemical Power Sources, held at Hotel Green Park, Chennai, India, January 05-08, 2012.
12. S.K.Tripathi, Amrita Jain, Ashish Gupta and Manju Kumari, “Experimental Studies on Electrical Double Layer Supercapacitors using chemically treated activated charcoal powder with blend polymer gel electrolytes” In Proceedings of 6<sup>th</sup> Asian Conference on Electrochemical Power Sources, held at Hotel Green Park, Chennai, India, January 05-08, 2012.

## 2011

13. Anuj Kumar, invited talk “Structural and spectroscopic studies on some nonlinear crystals”, 98<sup>th</sup> Indian science congress (International congress) organized by SRM University Chennai, January 3-7, 2011.
14. J. K. Bhattacharjee and Arnab K. Ray, “Hydraulic Jump”, 12<sup>th</sup>. Continuum Models and Discrete Systems Symposium (CMDS12), Saha Institute of Nuclear Physics, Kolkata, India, Journal of Physics: Conference Series, Volume: 319, pp. 012003, ISSN: 1742-6588, September, 2011.
15. S.K.Tripathi, Amrita Jain, Ashish Gupta and Manju Kumari, “Electrical and Electrochemical studies on magnesium ion based polymer gel electrolytes” Presented in International Conference on Materials for Advanced Technologies [ICMAT-2011] held at Suntec, Singapore from 26 June 2011 to 01 July 2011.
16. S.K.Tripathi, Amrita Jain, Ashish Gupta and Manju Kumari, “Comparative Studies on Redox Supercapacitors using polypyrrole electrodes and PMMA based gel electrolytes with different anionic size” Presented in International Conference on Materials for Advanced Technologies [ICMAT-2011] held at Suntec, Singapore from 26 June 2011 to 01 July 2011.

## 2010

17. Sapna Pathak, Anuj Kumar and Poonam Tandon, “Density functional theory study of structure and vibrational spectra of 4-chloro-4’dimethylamino-benzylidene aniline”, International Conference & Humboldt Kolleg ‘Frontiers of Environmental & Health Sciences Useful to Mankind: A Multidisciplinary Approach’ Organised by University of Lucknow & Humboldt Academy Lucknow, February 25- 27, 2010

18. Sapna Pathak, Anuj Kumar and Poonam Tandon , “Theoretical studies of the molecular structure and vibrational spectra of l-lysine monohydrochloride dihydrate using density functional theory”, International Conference on Perspectives in Vibrational Spectroscopy (ICOPVS-2010) organised by Department of Physics, Banaras Hindu University, February 21-24, 2010.

## **National Conferences**

### **2012**

1. Anuj Kumar invited talk, “Density Functional Theory: An established tool for theoretical investigations of material properties”, National conference on Recent Trends in Materials Science and Nanostructures”, organized by Government P G College Rudrapur, pp 28, Jan 3-4, 2012.
2. S.K.Tripathi, “Superionic solid and its possible application in energy storage devices: An overview” Learning Manual “NWESD-2012” of National Workshop on Energy Storage/Conversion Devices using Ion Conducting Polymer Electrolyte [NWESD-2012] held at Jaypee University of Engineering and Technology, Guna, Madhya Pradesh from December 10-12, 2012; pp 110-128(2012)

### **2011**

3. Anuj Kumar, Sapna Pathak, “Density Functional Theory: A Tool for Spectroscopic Studies of Useful Materials”, National Conference on Recent Trends in Materials Science (RTMS-2011) Organized by Jaypee University of Information Technology, Waknaghat, Himachal Pradesh, October 08-10, 2011.
4. Mahesh Pal Singh Yadav, Anuj Kumar and R.K. Dwivedi, “Synthesis and Studies on Dielectric Behavior of  $Sr_{1-x}Bi_xTiO_3$  System”, National Conference on Recent Trends in Materials Science (RTMS-2011) organized by Jaypee University of Information Technology, Waknaghat, Himachal Pradesh, October 08-10, 2011.
5. Sapna Pathak, Anuj Kumar & Poonam Tandon, “Molecular Structure, NBO analysis and Nonlinear Optical Properties study of Semi-organic nonlinear optical material”, National Conference on Recent Advances in Materials Science & Engineering: A Multidisciplinary Approach” held at Jaypee University of Engineering and Technology, Guna, 23-24 October, 2010.
6. S.K.Tripathi, Amrita Jain, Ashish Gupta and Manju Kumari, “Studies on redox supercapacitor using electrochemically synthesized polypyrrole as electrode material using blend polymer gel electrolyte” Presented in Ninth National Conference on Solid State Ionics (NCSSI-09) held at Jaypee Institute of Information Technology, Noida from 15-17 December 2011.

7. S.K.Tripathi, Ashish Gupta, Amrita Jain and Manju Kumari, "Electrochemical studies on nanocomposite polymer electrolytes" Presented in Ninth National Conference on Solid State Ionics (NCSSI-09) held at Jaypee Institute of Information Technology, Noida from 15-17 Dec 2011.
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