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THAPAR INSTITUTE
OF ENGINEERING & TECHNOLOGY
(Deemed to be University)

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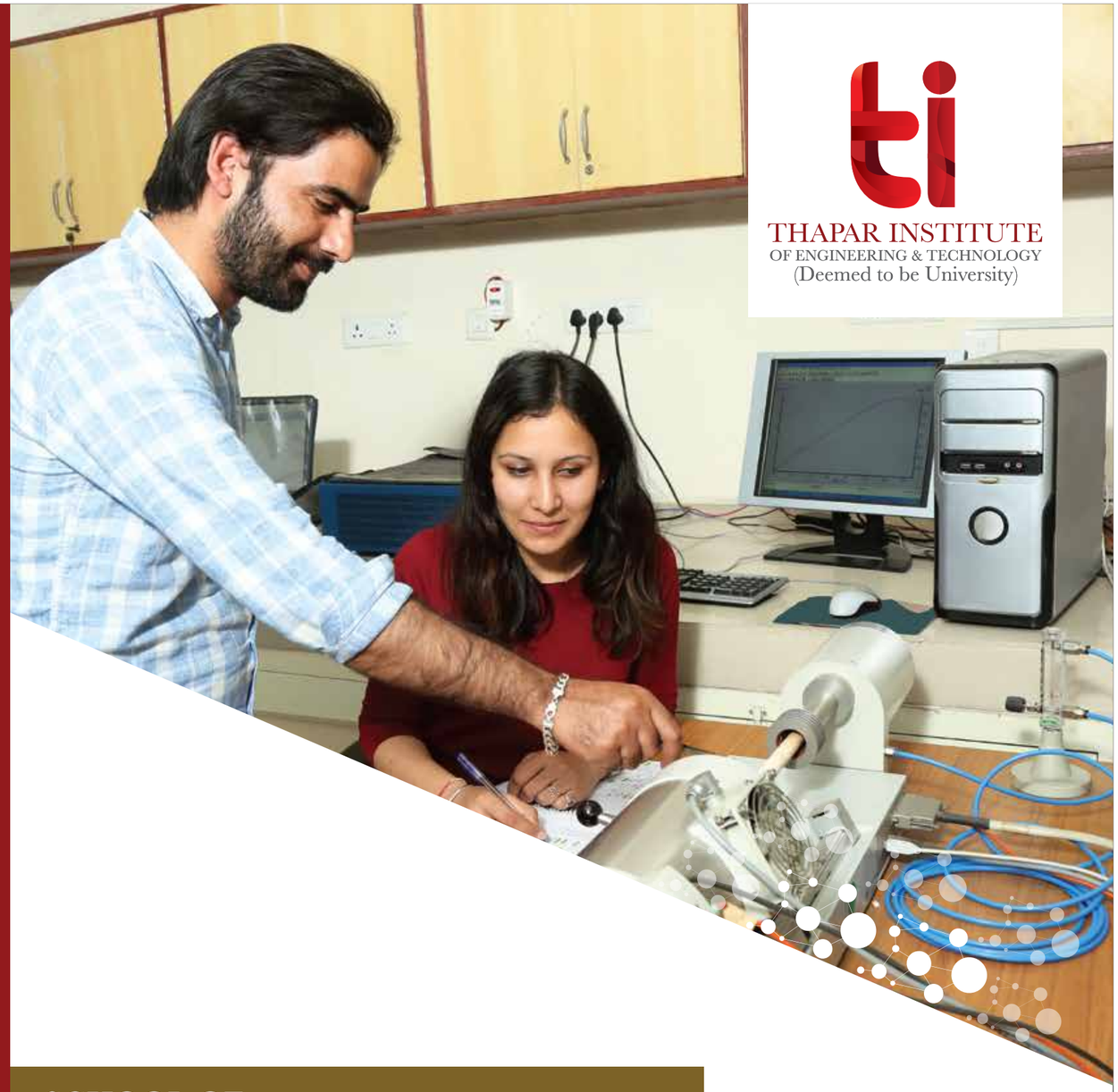

THAPAR INSTITUTE
OF ENGINEERING & TECHNOLOGY
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SCHOOL OF
PHYSICS & MATERIALS SCIENCE

From its modest inception to an incredible journey (that is still going on), the School of Physics & Materials Science (SPMS) has emerged as one of the most vibrant and dynamic academic units of TIET. Today, it stands as one of the leading schools in the country, notably because of the dedicated staff, cutting-edge research, unique programs and a supportive learning environment.

The moderate size of the School of Physics & Materials Science allows the faculty to guide students one-on-one. Also, the faculty is expert in a wide range of topics having excellent academic and research portfolios, thus projecting the School as of a true interdisciplinary character.

Scope

Graduates of Physics & Materials Science can find numerous opportunities in governmental organisations like DRDO, VSSC, ISRO, SSPL etc. They also have a very good chance of getting recruited in space research centres and research laboratories.

The field of IT, too, presents favourable job opportunities for graduates of Physics & Materials Science. Many companies such as Infosys, WIPRO, CTS and others are recruiting such graduates for software jobs. What's more, they can also get jobs in aviation industry, construction firms and power generating companies.

List of Academic Programs

- **Master of Science (M.Sc. Physics)**
  - Specialization: (i) Nuclear Science and Technology (ii) Electronics (iii) Materials Technology
- **Ph.D.**

  Experimental and theoretical Physics (Glass and Ceramics, Magnetism, Nanotechnology, Photovoltaics, Thin Film, Solid Oxide Fuel Cells, Nuclear Physics, Particle Physics, Photonics, Nonlinear dynamics, Computational Physics, Statistical Physics etc)

Outcome based Research Activities with International tie-ups

- University of Oslo, Norway
- Delaware State University, USA
- Yonsei University, Seoul, South Korea
- Tel Aviv University, Israel
- NIMS, Japan
- Tianjin University, China
- University of Padova, Italy
- Institute of Physical Chemistry PAS, Warsaw, Poland
- Universidade Estadual de Maringá, Av. Colombo, 5790, Maringá, Brazil

Ongoing Sponsored Projects

1. Transition metals doped Strontium Zirconate and Strontium manganite perovskite for solid oxide fuel cell applications (52 lakh), DST-HFC.
2. Bioactive properties of glass/ glass ceramics synthesized from agricultural and food waste (24.35 lakh), DST-WOS.
3. Magnetic core supported heterogeneous catalysts for the glycerol carbon synthesis (19.6 lakh), CSIR.
4. Development of non-lead based magneto-electric nanocomposite films with high magneto-electric coupling (35.30 lakh), DRDO.
5. Utilization of sea beach minerals for development of high performance aluminum matrix composites (16.97 lakh), CSIR.
6. Development of magnetic therapeutic agents for thermo-chemotherapy of cancer (48.78 lakh), DST.
7. Synthesis and characterization of molybdenum carbide nanoparticles for electrochemical applications (17.7 lakh), UGC, DAE, CRS.

8. Synthesis and characterization of novel 2D metal carbides (MXenes) for energy conversion and storage applications (40.66 lakh), DST.
9. Development of exchange coupled hard/soft ferrite nanocomposites for tunable microwave application (21.56 lakh), CSIR.
10. Lead free relaxor ferroelectric ceramics for Electrocaloric applications (39.40 lakh), CSIR.
11. Development of PVDF-(Ba, Sr) TiO3 nanocomposites based capacitor grade film for high energy density applications (25.21 lakh), TBRL, DRDO.
12. Study of alkali metal oxide containing calcium silicate glasses as substrate for solar cell application (23.70 lakh), DST-WOS.
13. Substrate mediated phase transition in two-dimensional liquid crystal systems (26.45 lakh), SERB-DST
14. Decay analysis of light particle induced reactions and related structural effects (17.80 lakh), DST.
15. Development of Transition Metal Oxides decorated Graphene-Polypyrole nanocomposites as RADAR Absorbing Materials (09.91 lakh), DRDO.
16. Photovoltaic and Grain Boundary Characteristics of Single Target Sputtered Cu2ZnSn(SSe)4 Thin Film Solar Cell (55.26 lakh), SERB-DST.
17. Low energy properties of baryon Jp=1/2+ octets and Jp=3/2+ Decuplets using phenomenological model, (17.39 lakh), DST.

Major Research Areas

Experimental:

- Solar Cells, Fuel Cell & Batteries
- Thin Film
- Drug Delivery
- Magnetism
- Liquid Crystals
- Polymers
- Metallurgy & Tribology

Theoretical Physics:

- Nuclear Physics
- Particle Physics
- Non-linear Dynamics
- Condensed Matter Physics
- Non-equilibrium Statistical Physics
- Computational Physics

List of Major Equipments

- Vibrating Sample Magnetometer (DST - FIST and TIET sponsored)
- Inductively coupled Plasma Atomic Emission Spectrophotometer (DST - FIST sponsored)
- Scanning Probe Microscope
- Simultaneous Thermal Analyzer
- UV-VIS Spectrophotometer
- Sputter System, Evaporator, Spin Coater
- Cryo Centrifuge
- Solar simulator
- Differential Scanning Calorimeter
- Time Resolve Photoluminescence Measurement Setup
- Particle Size and Zeta Potential Analyzer
- Evaporator & Magnetron Sputtering System
- Electro-optic & Thermo-optic Measurement Setup
- Inverted Metallurgical Microscope with Image Analyzer
- Micro Hardness and Rockwell Hardness Tester
- Universal Testing Machine

Major Milestones (last five years)

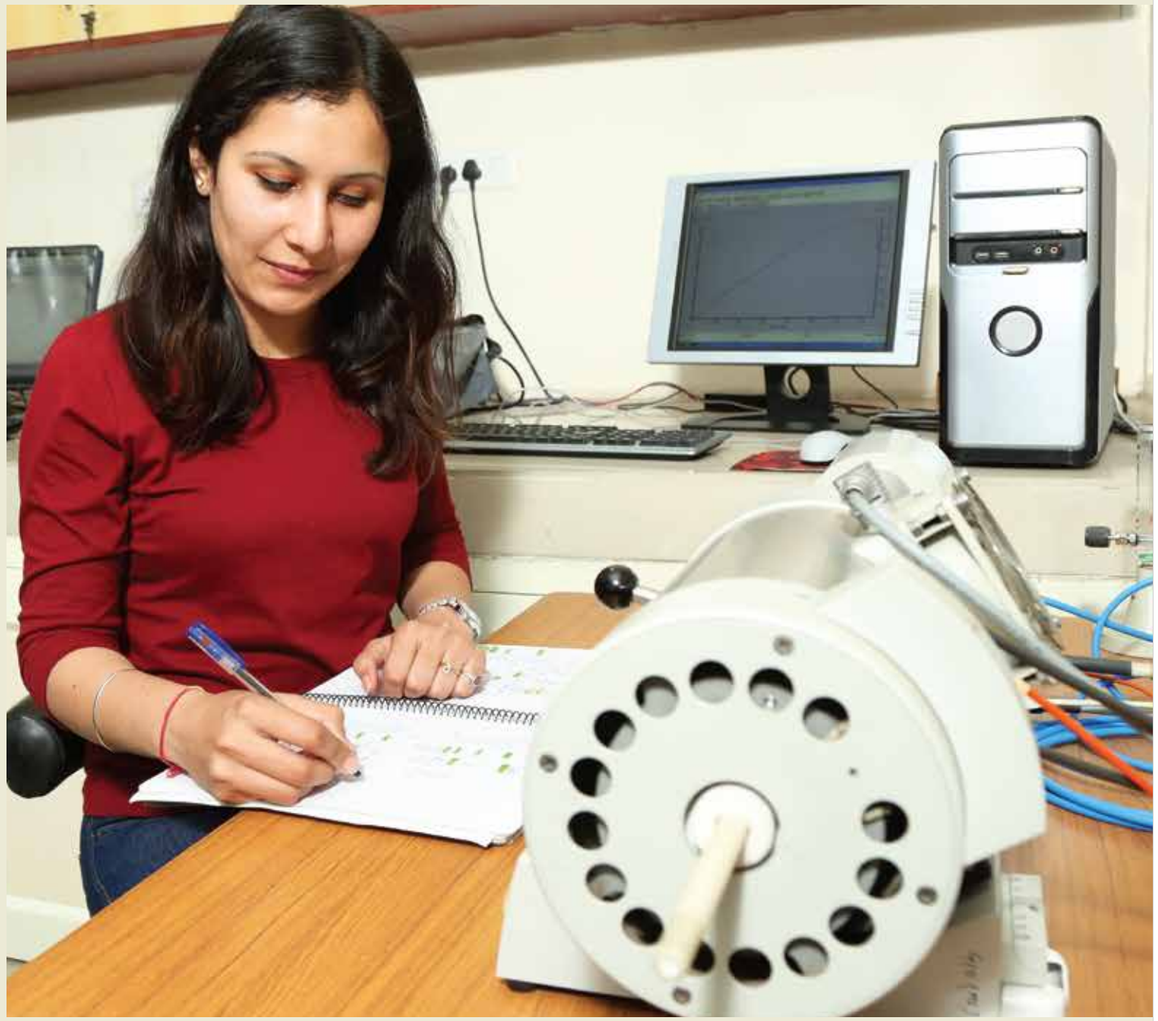
- Accorded FIST-II status in 2018 (Funds: ~Rs. 3.81 crores)
- Accorded FIST-I status in 2013
- Research papers published in peer-reviewed SCI journals: 587
- Secured research funds of approx. Rs. 8.82 crore

Latest Outreach Programs

- SCI FEST, 21st February, 2019
- Workshop on Career Awareness For Science Graduates (WCASG) 7th March, 2018
- 62nd DAE - BRNS Symposium on Nuclear Physics, 20th - 24th December, 2017
- Workshop on Career Awareness for Science Graduates, 30th March, 2017
- PhysMat Inquisitive, 18th November, 2016
- Summer School on Magnetism, 11th -15th July, 2016
- 2nd Conference on Microscopy in Materials Science, 25th - 27th February, 2016

Success Stories of Students (latest)

Award	Name	Name of the Awarding Agency	Year of Award	Student Category
Women Scientist Project	Shivani Punj	DST	2019	PhD
Senior Research Fellowship	Savidh Khan	CSIR	2019	PhD
Women Scientist Project	Neetu Bansal	DST	2017	PhD
Best Poster	Gurjit Kaur	SERB and BRNS, DST, UGC, Panjab University	2017	PhD
Best Poster	Suresh Kumar	MMSBT, DMSRDE-DRDO Kanpur	2015	PhD



Award	Name	Name of the Awarding Agency	Year of Award	Student Category
Best poster	Aayush Sharma	National Seminar on Advances of Functional Materials, Trivandrum	2017	PhD
Best poster	Gaurav Sharma	AMST-2016, Patiala	2016	PhD
Best Poster	Gaurav Sharma	European Ceramic Society, France	2016	PhD
Best Poster	Savidh Khan	AMST-2016, Patiala	2016	PhD
Best Poster	Santhosh Kumar M	National Symposium on material for advanced technology(MAT-2017) DIT-Dehradun	2017	PhD
Best Poster	Santhosh Kumar M	Young Materials Researchers' Meet 2017 (YMRM-2017) (BARC,Mumbai-2017)	2017	PhD

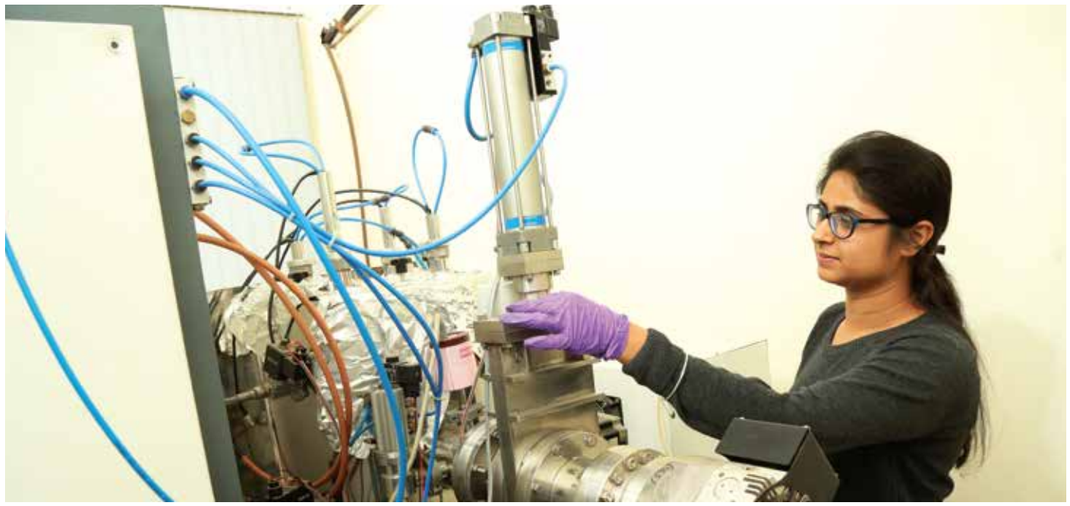
Award	Name	Name of the Awarding Agency	Year of Award	Student Category
Best Poster	Gurkirpal Parmar	3rd National conference on Photonics and Materials Science	2015	PhD
Best Poster	Deepshikha	AMDFA-2018, Chandigarh University	2018	PhD

Success Stories of Alumni

- Dr. Baldeep Kaur, Associate Consultant Engineer at University of Greenwith
- Neeti Pathak at Ludwig-Maximilllians Universität München, Germany
- Deepa Rajwar at Nanyang Technology University, Singapore
- Vaishali Singhi (Dhawan), employed at TCS, Noida in 2013
- Parveen Malik, Faculty Member, NIT-Jalandhar
- Sachin Tyagi, Scientist at CSIO, Chandigarh
- Manish Kumar, Scientist at ISRO, Bangalore
- Dr. Shefali Kanwar, Faculty Member, Amity University, Noida
- Dr. Supreet, Faculty Member, Amity University, Gurgaon
- Dr. Gudveen Sawhney, Faculty Member, SPMS, TIET, Patiala
- Dr. Chandni, Faculty Member, SPMS, TIET, Patiala

Success Stories of Faculty

Year	Name of full time teachers	Name of the award, fellowship, received from Government or recognised bodies
2019	Dr. Poonam Uniyal	Reviewer of Materials Letters, Elsevier, Amsterdam, The Netherlands
2019	Dr. Poonam Uniyal	Reviewer of Journal of Alloys & Compounds, Elsevier, Amsterdam, The Netherlands
2019	Dr. Poonam Uniyal	Reviewer of Journal of Materials Science: Materials in Electronics, Springer US
2018	Dr. Poonam Uniyal	Invited Speaker in National Conference on Advanced Materials and Nanotechnology at JIIT, Noida
2018	OP Pandey	Session Chair and Invited Speaker at 121st ISERD International Conference, Canada



2018	Soumendu Jana	Young Faculty Research Fellowship, Visvesvaraya PhD Programme of MeitY, Govt. of India
2018	Debabrata Deb	INSA Bilateral Exchange Program Fellowship – 2018
2018	Bhaskar C Mohanty	Invited Speaker and Session Chair on “Semiconductor Thin Films” at 8th APMAS 2018, Turkey
2018	Soumendu Jana	Invited Talk in SREC, Coimbatore
2018	Soumendu Jana	Invited Talk series in Pondicherry University.
2018	Soumendu Jana	Reviewer of Optical Society of America Journals
2018	OP Pandey	Reviewer of INORGANIC CHEMISTRY, American Chemical Society, USA
2018	OP Pandey	Reviewer of ACS Omega, American Chemical Society, USA
2018	OP Pandey	Reviewer of MATERIALS TODAY COMMUNICATIONS, Elsevier, Amsterdam, The Netherlands
2018	OP Pandey	Reviewer of JOURNAL OF ALLOYS AND COMPOUNDS, Elsevier, Amsterdam, The Netherlands

2018	OP Pandey	Reviewer of Zeitschrift für Naturforschung, Dieterich'sche Verlagsbuchhandlung (Germany)
2018	OP Pandey	Reviewer of JOURNAL OF MOLECULAR STRUCTURE, Elsevier, Amsterdam, The Netherlands
2018	OP Pandey	Reviewer of ACS APPLIED ENERGY MATERIALS, American Chemical Society, USA
2018	OP Pandey	Reviewer of CATALYSIS LETTERS, Springer US
2018	OP Pandey	Outstanding Reviewer of INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, Elsevier, Amsterdam, The Netherlands
2018	OP Pandey	Reviewer of MICROPOROUS AND MESOPOROUS MATERIALS, Elsevier, Amsterdam, The Netherlands
2018	OP Pandey	Session Chair 5th International Conference of FFHMT, Canada 2018
2018	Soumendu Jana	Plenary Talk at Advances in Materials Science and Engineering for Societal Applications (NMSE 2018), India
2018	Soumendu Jana	Invited Speaker at 9th International Conference on Optics, Photonics and Lasers 2018, Germany
2018	Kulvir Singh	Reviewer of VACUUM, Elsevier, Amsterdam, The Netherlands
2018	Kulvir Singh	Reviewer of SOLID STATE IONICS, Elsevier, Amsterdam, The Netherlands
2018	Bhaskar C Mohanty	Reviewer of MATERIALS TODAY COMMUNICATIONS, Elsevier, Amsterdam, The Netherlands
2018	Bhaskar C Mohanty	Reviewer of APPLIED SURFACE SCIENCE, Elsevier, Amsterdam, The Netherlands
2018	Jayant Kolte	Expert Lecture in workshop at Punjab Engineering College (PEC)
2018	Mukhesh Kumar	Reviewer of Thin Solid Films, Elsevier
2018	Mukhesh Kumar	Editor-in-Chief of "International Journal of Theoretical and Applied Sciences" (IJTAS)
2018	Manoj K Sharma	External member of Board Studies at BCET-Gurdaspur, Punjab
2018	Manoj K Sharma	External member of Board Studies at Kurukshetra University, Hariyana
2018	Manoj K Sharma	Chaired Session at 6th International Conference on Advances in Engineering and Technology 2018, BGIET Sangrur, Punjab
2018	Manoj K Sharma	External member of Board Studies at Himachal Pradesh University, Himachal
2017	Puneet Sharma	Reviewer of JOURNAL OF ALLOYS AND COMPOUNDS, Elsevier, Amsterdam, The Netherlands
2017	OP Pandey	Reviewer of JOURNAL OF APPLIED RESEARCH AND TECHNOLOGY, Elsevier, Amsterdam, The Netherlands

2017	Manoj K Sharma	Executive member of Punjab Academy of Sciences, India
2017	Kulvir Singh	Reviewer of JOURNAL OF LUMINESCENCE, Elsevier, Amsterdam, The Netherlands
2017	Kulvir Singh	Reviewer of WASTE MANAGEMENT, Elsevier, Amsterdam, The Netherlands
2017	Kulvir Singh	Reviewer of JOURNAL OF THE EUROPEAN CERAMIC SOCIETY, Elsevier, Amsterdam, The Netherlands
2017	Bhaskar C Mohanty	Reviewer of SOLAR ENERGY, Elsevier, Amsterdam, The Netherlands
2017	Bhaskar C Mohanty	Reviewer of MATERIALS RESEARCH EXPRESS, IoP
2017	Bhaskar C Mohanty	Reviewer of JOURNAL OF THE AMERICAN CERAMIC SOCIETY, WILEY
2017	Soumendu Jana	Reviewer of Advances in Optical Technologies, Hindawi
2017	Mukhesh Kumar	Reviewer of Materials Science in Semiconductor Processing, Elsevier
2017	Mukhesh Kumar	Reviewer of Wear, Elsevier
2017	Mukhesh Kumar	Reviewer of Applied Surface Science, Elsevier
2016	Raj Kumar	Young Scientist Award by DST, Govt. of India
2016	OP Pandey	Reviewer of POWDER TECHNOLOGY, Elsevier, Amsterdam, The Netherlands
2016	Bhaskar C Mohanty	Reviewer of APPLIED SURFACE SCIENCE, Elsevier, Amsterdam, The Netherlands