

Annual Report 2015-16

The Society for Promotion of Science and Technology in India came in to existence on Oct. 14, 2009. Since then, it has continued to grow and expand its activities in Chandigarh and Haryana. During the Year 2015-16, we tried to consolidate the existing activities and expand them depending upon the financial support we could mobilize. We had also worked on giving final shape to the Mobile Science Laboratory and operated it on a pilot basis before launching on April 6, 2016.

Important highlights of the year 2015-16 are as under: -

1. **Meetings of the General Body and Governing Council:** Fifth Annual General Body Meeting took place on September 26, 2016 at Chandigarh. The General Body approved the Annual Accounts for the Year 2015-16 along with the Auditor's Report. Two meetings of the Governing Council took place on September 11, 2016 and November 27, 2016.
2. **Income and Expenditure:** The Society's accounts are being maintained cash basis. Accordingly, Balance Sheet and Income and Expenditure Statements are prepared. The total income of the Society during the year was Rs. 7,08,500. This includes the grants of Rs. 62,500 received from the Chandigarh Administration for Quizzes and other activities. The total expenditure was Rs. 9,69,914. The excess of expenditure over the income was met out of the savings made during the previous years.
3. **Membership:** One Life Member, two Ordinary Members and two Associate Members were added during the year 2015-16. A sum of Rs. 4,500/- was received as Membership fee.
4. **Circus of Science (Vigyan ka Jantar-Mantar), Mobile Science Laboratory:** During the 2015-16, the Mobile Science Laboratory was set up and the Society started trial run in Karnal district and Village Dadawas, Pataudi, Gurgaon. A Coordinator was appointed. A bus chassis was arranged by Shri D. S. Bedi, Life Member of the SPSTI and Chairman Shivalik Public Schools Society. The School Society also got the body fabricated, including interiors and exterior. A generating set was also arranged. The Intel Corporation, through its subsidiary, had donated a sum of Rs. 5 lacs for science equipment etc. The SPSTI had purchased ten laptops and scientific equipment during previous years and added some of them amounting to Rs. 1,09,849/- during the year 2015-16. A list of experiments was prepared. For operating the Lab, a Coordinator, driver and lab attendant cum cleaner were appointed. A few students of local colleges, Panjab University and IISER Mohali, were engaged on part-time basis to work as demonstrators under the guidance of Prof. Keya Dharamvir, General Secretary and a few local teachers. The Mobile Lab eventually became the most significant outreach project of the SPSTI. The Mobile Lab was launched by Hon'ble Chief Minister on April 6, 2016 from Karnal.
5. **Trial Run of Circus of Science, Mobile Science Laboratory:** As stated above, the Society carried out trial run of Mobile Lab in Karnal district and Gurgaon district during the months of February and March as per the following details:
 - a. 08.02.2016: BMB School, Village Dadawas, Pataudi, Gurgaon
 - b. 09.02.2016: Govt. Middle school, Kailash
 - c. 29.02.2016: Govt. Sr. Sec. School, Prem Nagar, Karnal
 - d. 01.03.2016: Govt. High School (Boys), Prem Nagar, Karnal

- e. 02.03.2016: Govt. Middle School, Village Dholgarh, Karnal
- f. 03.03.2016: Govt. Middle School, Village Danyalpur, Karnal
- g. 08.03.2016: Govt. Middle School, Village Ganjo Garhi, Karnal
- h. 10.03.2016: Govt. Middle School, Village Taprana, Karnal
- i. 11.03.2016: Govt. Middle School, Banso Gate, Karnal



Experts: Prof. Keya Dharamvir and Dr. Ajay K. Garg

Coordinator: Dev Musafir

Support: B.Sc./M.Sc. students of Panjab University, IISER Mohali and local colleges. Several experiments were demonstrated, and the students were encouraged to perform them. In Karnal, the Mobile Lab interacted with more than 675 students and science Teachers during prelaunch period.

6. **Awareness Programme on Emerging Areas of Science & Technology and Careers Options** - Most of the students of Class XI and XII, even UG and PG, are not aware of the emerging / exciting opportunities in science and technology. To expose them to such opportunities, the Society had been organizing lectures cum interactive sessions from time to time. During the year 2015-16, the following awareness sessions were held: -
 - a. September 15, 2015: MCM DAV College for Women, Sector-36, Chandigarh: Excitement and Options in Higher Education and Careers in Mathematics: Speaker was Dr. Amit Kulshrestha, IISER Mohali.
 - b. October 14, 2015: Lecture on the Nobel Prize in Physics 2015: Dr. Ram Lal Awasthi, a young research scientist working at the India Institute of Science Education and Research, Mohali delivered a lecture on the Nobel Prize in Physics, 2015. Highlighting the importance of neutrinos, he said that they play a very vital role in understanding of universe and dark matter.
7. **Monthly Lecture Series:** This is a standing activity of the Society, which was launched on April 7, 2012. The Society tries to hold a lecture on one of the Saturdays of every month on a topic of importance and public concern involving science and technology. The following lectures were organized during the year 2015-16: -
 - a. Title: Conservation of Energy-What we need to know?
Speaker: Shri Pradeep Dhingra
Date & Time: September 9, 2015
Venue: Seminar Room, Department of Physics, Panjab University, Chandigarh

Shri Pradeep Dhingra is an accredited energy auditor and has successfully done energy audit of several buildings. He is a graduate engineer from the Nagpur University and MBA from the UBS, Panjab University. His CV is attached. Shri Dhingra would focus on the conservation of energy in buildings and the steps that one can take to save energy in the most economical manner.

- b. Title: Doctor-Patient Perceptions: Facts and Fiction
Speaker: Professor S. K. Jindal, Retired from PGIMER, Chandigarh
Date: January 9, 2016
Venue: Seminar Room, Department of Physics, Panjab University, Chandigarh
Background: Prof. Jindal has authored a book, the title of which is "Medical Encounters – True stories of patients". Based on his memoirs, the book is meant for general reading. It chronicles stories of some of the patients seen by him. Combined with vignettes from history, classical civilization, epics and mythology, it provides glimpses of the trials and tribulations faced by patients in their struggles against disease and death.
 - c. Title: Investigation of Nano-materials by means of X-ray diffraction
Speaker: Dr. Oleg Prymak, Department of X-Ray Diffraction, Institute of Inorganic Chemistry and Center for Nano-integration and Facility for X-ray Diffraction at the University of Duisburg-Essen, Germany.
Date: Feb 27, 2016
Venue: Seminar Hall, Dept. of Physics, PU, Chandigarh
Abstract: Among the common techniques used for the investigation of nanostructured materials, X-ray powder diffraction (PXRD) with different geometrical setups is a complementary non-destructive technique for the determination of crystallographic and size-related properties. Some examples of PXRD measurements in different applications with the use of Rietveld analysis, including size-specific data obtained from colloid-chemical analysis, transmission and scanning electron microscopy were presented.
 - d. Title: Gravitational Waves, a New Way of Seeing the Cosmos
Speaker: Professor M. P. Khanna, Department of Physics, Panjab University, Chandigarh
Date: March 19, 2016
Venue: Seminar Room, Department of Physics, Panjab University, Chandigarh
Abstract: The first direct observation of gravitational waves on September 14, 2015 but announced on February 11, 2016 by the LIGO and Virgo collaborations confirmed the predictions of Einstein's general relativity made about a hundred years ago. The observation was heralded as confirming the last remaining unproved prediction of general relativity and validating space time distortion in the context of large scale cosmic events as well as inaugurating a new era of gravitational wave astronomy allowing probing of violent astrophysical events and understanding of universe.
8. At the request of the Society, the Department of Science and Technology, Chandigarh Administration, sanctioned a sum of Rs. for holding Quizzes in Biosciences, Mathematics and Physics and released a sum of Rs. to the Society. Accordingly, the following two Quizzes were organized: -
- a. **Third Ramanujan Mathematics Quiz:** The Quiz was held on September 3, 2015 at the Shivalik Public School, Sector-41, Chandigarh. One hundred and twenty-two students of thirty-five schools participated. Anirudh Mehra and Maanik Arora of Shishu Niketan Public School, Sector-43A, Chandigarh won the first prize. Virok Sharma and Navneet Sharma of Mount Carmel School Sector-47 and Paranjay Bagga and Anish Sapra of the Bhavan Vidyalaya, Sector-27 got second and third prizes respectively. Dr. Amit Kulshrestha of the Indian Institute Science Education and Research Mohali was the Guest of Honour. He cited a few examples how mathematics is being used in crime detection, economics and forecasting. All these applications

provide very good avenues for employment to mathematics students. Dr. Neela Pawar of the MCM DAV College for Girls was the Chief Guest and gave away the prizes. Mrs. Gurkiran Jeet, Principal of the Shivalik Public School laid emphasis on the learning of mathematics and asked the students to pay special attention to the subject.



- b. **Second C. V. Raman Physics Quiz:** The Second C. V. Raman Physics Quiz was held on October 14, 2015 at the Bhavan Vidyalaya, Madhya Marg, Sector 27B, Chandigarh. Eighty-six students of twenty-three schools of Chandigarh participated in the Quiz competition. Navneet Sharma and Virok Sharma of the Mount Carmel School of Chandigarh won the Quiz competition. The second and third prizes went to Ishita and Sanjit of Shishu Niketan Model Senior Secondary School and Aryan Jajma and Jaskaran Singh of Chandigarh Baptist Senior Secondary School respectively. Biswajit Panda and Kanha Ram, students of the Indian Institute of Science Education and Research, Mohali conducted the quiz under the supervision of Prof. Keya Dharamvir, General Secretary, SPSTI.



9. **Lecture on Astrophotography and Glorious Night Skies of the Himalayas, August 21, 2015, Auditorium, Museum and Art Gallery, Sector-10, Chandigarh:** The speaker was Shri Ajay Talwar, a well know astrophotographer and specializes in the [photography](#) for capturing images of [objects](#) in the night sky. Astrophotography is a sub-discipline in [amateur astronomy](#) where it is usually used to record aesthetically pleasing images with a whole range of equipment and techniques dedicated to the activity. Ajay Talwar spoke on how to take pictures of astronomical objects through a comprehensive presentation on Night Skies of the Himalayas. In this lecture, Ajay explained how to take photos of astronomical objects by citing his experience and that of others with high quality beautiful images of night-landscapes and breath-taking videos.
10. **Summer Schools in Science and Mathematics:** This is another standing activity of the Society. The first Summer School in Science and Mathematics for students of classes XII was organized in the year at 2011. Since then, it has become an important activity of the Society and depending on the resources, Summer Schools are organized in Haryana. During the year 2015-16, four Summer Schools were organized. The locations were Panchkula, Kurukshetra, Gurgaon (experiments based at Vidya School) and Village Dadawas (Tehsil Pataudi, Gurgaon District). Nineteen students of IITs, Indian Institute of Science Education and Research Mohali and Panjab University were appointed as Mentors to teach the students of Classes XI and XII. The School at Kurukshetra was residential. All the Summer Schools were free for the students. The Summer Schools at Kurukshetra and

Panchkula were open to the students of all governments schools of the districts concerned. The Society raised funds for these two summer schools. The Summer Schools at Gurgaon and Dadawas were funded by the managements of the schools where they were held and for meant their students.



11. **Lectures on Nobel Prizes 2015:** The Society also organizes awareness lectures every on the Nobel Prizes, which are usually supported by the Department of Science and Technology, Chandigarh Administration. During the year 2015, the following lectures were organized: -

Physics, 2015

Dr. Ram Lal Awasthi, a young research scientist working at the India Institute of Science Education and Research, Mohali delivered a lecture on the Nobel Prize in Physics, 2015. Highlighting the importance of neutrinos, he said that they play a very vital role in the understanding of universe and dark matter.

Medicine or Physiology, 2015: Prof. I. S. Dua, formerly Kalinga Prize Awardee and Emeritus Professor, Panjab University, Chandigarh

- a. November 3, 2015: Guru Gobind Singh College for Women, Sec 26, Chandigarh,
- b. December 31, 2015: Academic Staff College, Panjab University, Chandigarh
- c. February 3, 2016: Govt. Girls College, Sector-11, Chandigarh

12. **Extension Lectures:** The following lectures were organized: -

- a. September 3, 2015

Title: Growing Applications of Mathematics

Speaker: Dr. Amit Kulshrestha, IISER Mohali

Venue: Shivalik Public School, Sector-41, Chandigarh

With an elaborate presentation, Dr. Kulshrestha cited several areas, including music and analysis of court cases, other than science and engineering where mathematics is being used extensively and encouraged students to learn mathematics.

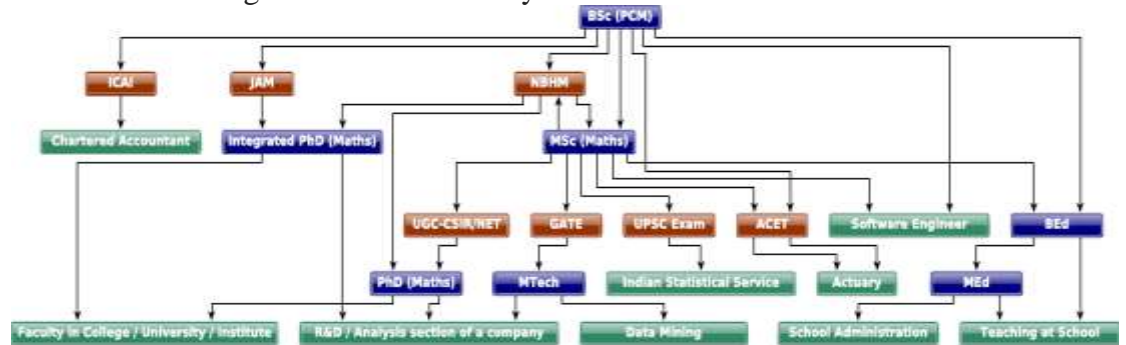
- b. September 15, 2015

Title: Option in Higher Education and Careers in Mathematics

Speaker: Dr. Amit Kulshrestha, IISER Mohali

Venue: MCM DAV PG College for Women

Dr. Kulshrestha made a detailed presentation on the options in higher education in mathematics and emerging areas where mathematics is being used extensively. He also referred to Big Data and Data Analytics



- c. February 6, 2016
 Seminar: Recent Advances in Sciences
 Venue: Arya P G College, Panipat
 Lecture 1:
 Title: Expanding Universe and Higgs Particle
 Speaker: Prof. Suman Beri, Department of Physics, Panjab University, Chandigarh
 Lecture 2:
 Title: The Life and Mathematics of Srinivasa Ramanujan
 Speaker: Dr. Varadharaj Ravi Srinivasan, Department of Mathematics, IISER Mohali

13. Karnal Office: It was decided to establish an office of the Society at Karnal for Mobile Lab. Possibility of launching other activities of the Society in Karnal district would also be explored.