

# Conference Report

## Report of Celebration of National Science Day with the theme, “National Science Day – New Frontiers in Science & Technology” held on 28<sup>th</sup> February 2022

To celebrate the National Science Day on 28th February, 2022, Institute of Science, Education and Culture (ISEC) Kolkata organized a National Webinar on that day through Google Meet platform. The programme was financially supported by the Higher Education Department, Govt. of West Bengal. Prof. Santanu Das, the Secretary of ISEC wished all. Prof. Das recalled that the discovery of Raman Effect by the great scientist Dr. C.V. Raman in 1928 in the British dominated India showed an important effect on Nobel Committee so that Dr. Raman was awarded by Nobel Prize in Physics on 28/02/1930. In India, 28<sup>th</sup> February is celebrated as National Science Day every year. Then, he invited the president of ISEC Kolkata, Prof. Anil Kumar Ghosh, to inaugurate the National Webinar. After addressing the Secretary, the Vice President, the Chairman of Seminar Committee and Convener of that day's webinar and also the audience, Prof. Ghosh started his inaugural speech. He made everyone aware of the significance of celebrating National Science Day and its importance in science education in the society. He informed that ISEC is a nonprofit, private and professional organization. The residence of Dr. Murali Mohan Biswas, founder of ISEC, Kolkata was donated to the Institute. This is now known as ISEC House. Prof. Ghosh welcomed the scientists, researchers, and all members of the ISEC Family. He inaugurated the auspicious webinar by welcoming all the speakers, the organizing committee members and also the audience. Then Dr. Kaushik Bharati, the Convener and Chairman of ISEC Seminar Committee welcomed all. He explained the thoughts of C.V. Raman which directed him to discover the Raman Effect. Dr. Bharati also mentioned Raman's connections with Kolkata. He spoke briefly about the eminent speakers and wished the webinar every success.

The first speaker was Dr. Amitava Pramanik, Head of the Department of Science & Engineering

for Enterprise Development (SEED), Society for Innovation & Development, Indian Institute of Science (IISc), Bangalore. He did his PhD and post-doctoral research from the Indian Association for the Cultivation of Science (IACS). The topic of his lecture was “Sustainable Materials – A Personal Take”. Dr. Pramanik informed the audience how C.V. Raman was engaged with IISc, Bangalore. He gave the concept on sustainability. This is very lucrative topic to do research in this period. Then he mentioned that profitable work will help to solve the unemployment crisis. He showed the worldwide scenario of population growth. Then he spoke that the navigation through sea route can reveal the actual shape of the Earth. The development in physical science can take the major role in the industrial revolution such as in renewable energy (i.e., hydroelectricity, solar power, wind energy etc.). Krishna Raja Sagara hydroelectricity and Bhadla Solar Park in Rajasthan are good examples of renewable energy. Wastage control is needed to get more energy. Revolutionary forces are the basic advancements in science and technology and it comes about twice a century and leads to massive wealth creation. The speaker, then explained the sustainability with examples that western country are developing electric vehicles, generating fossil fuels, battery resource (can be obtained from plastics). The key point of his lecture was to solve the problem rather than stay with the problem for a long time.

The second speaker was Prof. Pratiti Ghosh. She is the Head of the Department of Physiology, West Bengal State University, Kolkata. She did her graduation, post-graduation, and PhD from the University of Calcutta. She did her post-doctoral fellowship from the Uniformed Services University of Health Sciences (USUSH) and served as a Visiting Fellow at the National Institutes of Health, Bethesda, Maryland, USA. Her topic

was “Drug Resistance and its Consequences”. She defined drug resistance as the reduction in effectiveness of a drug in treating a disease, as a result of which the patient doesn’t respond to the dose which was previously effective. Two types of drug resistances are there: Primary resistance and Acquired resistance. Primary resistance is the condition when the patients never received treatment and acquired resistance when patients received treatment previously but not responding after that. She also told that seven types of antibiotics are grouped into five generation according to their actions. She mentioned that improper dose of medicine can give bad impact on diseased body so that it will be drug resistant of that particular disease. This was also warned by Sir Alexander Fleming in 1945 for penicillin by saying that if people take improper dose of penicillin, then it will become drug resistant. Prof. Ghosh warned that antibiotics can destroy innocent pathogens. She also gave the idea on evolution and setting for promoting drug resistance. She also spoke that drug resistance may be overcome by taking robust action plan to curtail unnecessary over usage, proper inhibitors to impede the efflux and use of nanopharmaceuticals for drug delivery.

The third speaker was Prof. Santana Das, Professor and Head, Department of Mechanical Engineering, Kalyani Government Engineering College, Kalyani and the Secretary, ISEC, Kolkata. Prof. Das did his B.E. and M.E. from Jadavpur University and PhD from IIT Kharagpur. He is holding important positions in several professional bodies. His lecture topic was “Some Innovative Areas of Welding Technology”. The basic concept of welding is to join two materials but huge innovative research is going on in the area of welding. He gave the idea of cladding in which one material (i.e., insulating/protective) covers another material under a high pressure and temperature. Cladding is very thin in the range of millimeters and it enhances the hardness. Cladding is used in various industries such as chemical, naval, mining, agriculture etc. Cladding is done by using welding. Its applications are in several fields such as thermal spraying, laser based, metal forming and many more. Prof. Das showed some experimental setup for welding and results of variation of penetration with heat input. He also explained the recent research work on additive manufacturing process using welding to obtain higher productivity.

The fourth speaker was Dr. Biswajit Maiti. He is an Associate Professor in the Department of Physics, Maulana Azad College, Kolkata. He did his graduation, post-graduation and PhD from Jadavpur University. He did post-doctoral research at IACS, Jadavpur. Dr. Maiti delivered the lecture on the topic: “Adaptive Optics used in Modern Astronomical Telescope”. He gave the concepts on optical window for ground based observation to watch stars through telescope. To watch stars, a large number of radio telescopes are required. The parallel waveforms are distorted due to the variations in refractive index. So, adaptive optics is needed. The adaptive optics increases the peak of intensity of a point source. There are so many methods to measure turbulent distortions, including Shack-Hartmann wave front sensor. He informed that liquid crystal devices and micro electro- mechanical system (MEMS) have been developed to observe tiny deformable mirrors. He showed pictures taken in 1994 and 1999 respectively at the Palomar Observatory in California, USA. The image captured using adaptive optics in 1999 found faint companions around bright stars. He also showed an image of Neptune in infra-red light with Keck adaptive optics (in June 27, 1999). He showed images of Uranus taken by Hubble space telescope (HST) and Keck AO. From these two images it was seen that Keck AO image was of better quality. Dr. Maiti ended his excellent lecture by saying that Adaptive Optics is quite good to take fine images by rectifying different deformations.

At the end of all lectures there were great interactions between the speakers and the audience. Then on behalf of ISEC, Kolkata, vote of thanks was delivered by Dr. Sanchita Bhowmick, Treasurer and Executive Council Member, ISEC. She showed her great gratitude and thanks to the President, the Secretary, the Vice-President, and the Chairman and Convener of ISEC Seminar Committee. She showed whole-hearted gratitude to the delegates and sincere thanks to the eminent speakers. She specially thanked to Mr. Rajat Pratihari. She told that knowledge brings fortune and happiness. Finally, Prof. Santanu Das, ended the webinar by thanking all participants, ISEC members and the speakers.

**Bandana Barman**

Assistant Secretary, ISEC Kolkata