

Guest Editor Message



Sir Jagadish Chandra Bose is a physicist, biologist, biophysicist, botanist and archaeologist. He pioneered plant science, and laid the foundations of experimental science in the Indian subcontinent. He proved by experimentation that both animals and plants share much in common. He demonstrated that plants are also sensitive to heat, cold, light, noise and various other external stimuli. It is widely considered that J.C. Bose was at least 60 years ahead of his time.

In 1895, Sir Jagadish Chandra Bose first demonstrated in Presidency College, Calcutta, India, transmission and reception of electromagnetic waves at 60 GHz, over 23 meters distance, through two intervening walls by remotely ringing a bell and detonating gunpowder. For his communication system, Bose pioneered in development of entire millimeter-wave components like a spark-gap transmitter, coherer, dielectric lens, polarizer, horn antenna, and cylindrical diffraction grating. This is the first millimeter-wave communication system in the world, developed about 125 years ago. This is the oldest Milestone achievement from the Asian continent. Bose's experimental work on millimeter-band microwave radio was commemorated as an IEEE Milestone on 14th September 2012 and a plaque in this regard may be viewed in the main corridor of the Acharya Jagadish Chandra Bose Auditorium in the Main Building of Presidency College, Kolkata, India.

IEEE celebrated the 160th anniversary of Sir Jagadish Chandra Bose by reflecting on his life and works through eminent speakers compassionately projecting his work to 150 plus IEEE members and engineers on Sunday, 17th February 2019 at the landmark World Trade Center Auditorium in Bengaluru, India. This workshop showcased the innovations of Sir J C Bose and its relevance and contribution to the modern technology.

While Dr. B.S. Sonde (ASM Technologies), Dr. D.P. Sengupta (NIAS) and Dr. Surendra Pal (DRDO) reflected on the life of Sir Jagadish Chandra Bose, Mr. C.S. Rao (Quadgen Wireless Solutions) and Dr. Yashwant Gupta (NCRA) presented the applications of Sir J C Bose's work in unlicensed 5G band for communication networks and Radio Astronomy. The highlight of the workshop was the demonstration of the working replica model of JC Bose's millimetre wave experiment by Dr. Shaik Kareem Ahmmad and Dr. Syed Ilyas Mohiuddin (MJCET) and demonstration of microwave apparatus by Mr. Sudhir Phakatkar (NCRA).

IEEE Foundation as part of the "Furthering Indian Perception of IEEE" project sponsored the J.C. Bose workshop organized by IEEE Bombay Section, IEEE India Council and IEEE Bangalore Section, and supported by IEEE SPS Bombay Chapter and IEEE APS-MTTS Bangalore Joint Chapter. A detailed report on this event was published in the Jan-Mar 2019 issue of the IEEE ICNL. Please refer <http://ieeecs-madras.managedbiz.com/icnl/19q1/p20-p21.pdf>.

Inspired by the quality of talks by the eminent speakers and unanimous demand by the participants, it was decided that we bring out manuscripts of these talks delivered as a Special Section in the IEEE India Council Newsletter. This Section includes the following articles:

1. Sir Jagadish Chandra Bose: Scientist Par Excellence: A Tribute by Dr. B.S. Sonde
2. Jagadish Chandra Bose: The Physicist who was forgotten by Dr. D.P. Sen Gupta
3. Sir Jagdish Chandra Bose, James Clerk Maxwell and there on..... by Dr. S. Pal
4. mmWave Applications in NextGen Wireless Broadband Evolution in 5G Era: Impact of Sir JC Bose invention by Mr. C.S. Rao, Ms. Arpita Hura and Ms. Mouna Jain
5. Radio Astronomy: How J.C. Bose's invention opened a new window to the Universe by Dr. Yashwant Gupta
6. Design and Construction of Working Replica of Sir J.C Bose 60 GHz Experiment by Dr. Shaik Kareem Ahmmad, Dr. Syed Ilyas Mohiuddin and Dr. Mohammed Arifuddin Soheli
7. Sir Jagadish Chandra Bose: Biologist, Biophysicist, Botanist, Physicist, Archaeologist and Polymath by Mr. Sudhir Phakatkar

We are highly grateful to all the speakers for providing us with their articles in spite of their very busy schedules. I can't thank enough Shri HR Mohan, Editor, IEEE India Council Newsletter for his patience and persuasion as well as his painstaking efforts in producing this Section so beautifully. We sincerely hope that the readers will find this compilation very informative and its contents, highly inspiring.

Dr. B. Satyanarayana (Secretary, IEEE Bombay Section)
Guest Editor, Special Section on J. C. Bose
Department of High Energy Physics
Tata Institute of Fundamental Research, Mumbai
bsn@tifr.res.in