

**Popular Lecture by Professor Samir K Brahmachari, Director General, Council of Scientific and Industrial Research (CSIR) and Secretary, Department of Scientific and Industrial Research (DSIR), Government of India.**

The Chamber organised a Popular Lecture on 'Frugal Innovation and Beyond : New CSIR for New India' addressed by Professor Samir K Brahmachari, Director General, Council of Scientific and Industrial Research (CSIR) and Secretary, Department of Scientific and Industrial Research (DSIR), Government of India on 7<sup>th</sup> September, 2012 at 4:00 p.m. at The Park Hotel, Kolkata.

In the course of his Welcome Address, Shri Ashok Aikat, President observed that Kolkata has been the crucible for research in physical sciences. The city has witnessed the discoveries made by great scientists such as Sir J C Bose and Sir C V Raman. In the present time, the discovery of Higgs Boson, which has made a huge uproar in the world of science, was first discovered by Professor Satyen Bose and so also trails its way back to Kolkata.

Shri Aikat emphasised that Professor Brahmachari has been a pioneer in engineering application of his research work into far-reaching conclusions in respect of human biology. He made fundamental discoveries in demonstrating the structural flexibility of DNA much before the discovery of repeats association with genetic basis of several neurological disorders. He was also the first to establish a close clinical network to address genetics of complex disorders in the human body and associated two genes to Schizophrenia and Bipolar Disorder, Shri Aikat observed. His finding that human RNA can target critical genes in HIV has received international acclamation. For all his achievements, Professor Brahmachari has received the honour to be a member of the Council of Human Genetic Organisation – HUGO.

Professor Brahmachari's work on genetic variations across Indian populations in collaboration with the Indian Statistical Institute, Kolkata has projected on how genes influence diseases, susceptibility to infections and response to medicines, Shri Aikat stated. In this regard, Shri Aikat requested Professor Brahmachari to explain in a popular language how his findings are going to predict spread of diseases based on their genetic profiles.

The CSIR Team India Consortium with Global Partnership for affordable health care, according to Shri Aikat, has created Open Source Drug Discovery Project. Drug discovery has always been an expensive research proposition. A lot of time, efforts and funds are expended through synthesis and a series of clinical trials before a new drug is marketed. Thus the discovery made by Professor Brahmachari would help in evolving an international protocol for Open Source Drug Discovery, Shri Aikat felt.

Foreseeing the shortfall of trained scientific manpower, Professor Brahmachari has initiated the creation of the Academy of Scientific and Innovative Research, which will award degrees in emerging and inter-disciplinary areas, Shri Aikat observed. Thus, this Academy is expected to add significantly to the trained manpower pool of the nation and the world. Shri Aikat felt, Professor Brahmachari's efforts will go a long way to effect translation of technologies developed in the national laboratories to the industrial arena. Such an Academy will lay strong foundations for the Indian industries and will help in meeting the global challenges, Shri Aikat, said.

Shri Aikat also stated, that CSIR has decided to set-up the country's first CSIR Innovation Complex by 2014 in Kolkata. This Complex, will be a tremendous boost to commercialisation of innovations and will be of great help for the scientific workers in the eastern parts of our country.

Professor Samir K Brahmachari, Director General, Council of Scientific and Industrial Research (CSIR) and Secretary, Department of Scientific and Industrial Research (DSIR), Government of India observed that CSIR is a very complex organisation which aims at the all round development of technology in a manner that it would supplement all sectors of the Indian economy. According to him, CSIR has started the realisation of such a vision by partnering innovation complexes with industrial undertakings. Professor Brahmachari's experience as a Guest-in-Chief in the 16<sup>th</sup> National Science Exhibition organised in Kolkata gave him the idea of the magnitude of blooming talents among the youth of India. The growing number of innovative minds thus, made Professor Brahmachari to feel the ardent need for the growth in centres of excellence which would promote industrial innovations and research competitiveness.

Emphasising on the fact that Professor Satyen Bose begun his scientific experimentation at the age of ten years, Professor Brahmachari stated that the inclination for science among children should be encouraged and nurtured. It is with the growth in the number of scientists in India that the country could attain excellence in the field of technology. The talents among children residing in the rural areas till date remain unexploited. Thus, the innovative capacity of the country can be enhanced only with the inclusion of rural India with its all round excellence.

Professor Brahmachari explained that India has borne an innovative temperament since ancient times. The architectural excellence of Taj Mahal and the rust free iron Ashok Stambh are the proofs to the gradual developments in technology since a very long time. The globally recognised rural market at Sriniketan in Shantiniketan is a living example of transforming education into applicability. He emphasised that Indian Industrialists, like Tata has proved that India can manufacture cheapest car, Reliance Industry built the cheapest communication system, Bharati Airtel produced a successful new business model for telecommunication. Since knowledge, no-where in the world is free unless backed by law, India should stress on innovation and not trade, Professor Brahmachari felt.

Highlighting the growth of science and technology in China, Professor Brahmachari stated that China invests 5 times more money in innovations and still gets only 2-3 per cent better results than India. This shows that India is growing at a rate faster than that of China, in terms of innovation. However, UK has shown a remarkable rise in its innovative strength in terms of science and technology. With fraction of its investment in research and development, UK has achieved high levels of innovation in terms of science and technology. Such a growth in R & D in UK has come about primarily because of a constant re-modification of historic universities and research institutions there. Thus, India should follow the path of growth traversed by England in terms of innovations in technology.

For the flourishing of innovation in technology, it is essential on the part of industrial undertakings to invest a part of their profit in R & D. Such investments, according to Professor Brahmachari, would bring about a high magnitude of profit in the

future. Emphasising on the educational standards of West Bengal, Professor Brahmachari stated that the State has rich endowments in terms of technical and scientific institutions. The lack of a revamp in their curriculum and re-modification of the educational systems followed by them has deprived them of a world class status. Over the years, these institutions have been focusing on theoretical and job oriented knowledge. Therefore, an initiative towards re-structuring of these institutes should be taken up by either the Government or institutions such as the CSIR. There is also the need to motivate more students towards research, Professor Brahmachari felt.

Highlighting the role played by the CSIR on generating modern technology in India, Professor Brahmachari stated that the institution, after its foundation, had made generic drugs available to the common public at a cheap price. This was done on the eve of, the then Prime Minister of India, Mrs. Indira Gandhi's decision to change product patent to process patent. The low cost generic drugs made public by CSIR has increased the life expectancy of individuals. Further research on generic drugs to cure incurable ailments is being carried out by the institution. The CSIR is also working on the creation of a 'genome card' which would bear information about drug suitability for different individuals according to their body condition. This way Professor Brahmachari, stated that the institution has acted as a facilitator to industry, trying to generate new and unique techniques of production over the years.

Referring India as an attractive global investment destination, Professor Brahmachari underlined that the cost for getting an US patent in India in National Library chain system like CSIR is  $1/13^{\text{th}}$  as compared to the Chinese Academy of Science and  $1/7^{\text{th}}$  compared to Max Plank Institutes Germany or Institutes of France. The Government of India placed an opportunity for the scientists to become entrepreneurs and in continuation with his professional employment, a researcher can engage and enjoy equity stake in scientific enterprises. Researchers-mobility has been granted among industry and other scientific institutes, as well. He, thus, emphasised that India has the opportunity to set-up entrepreneurial enterprises using knowledge and technology.

Speaking on dengue outbreak in Kolkata, Professor Brahmachari observed that there are many challenges and lamented that the drug-discovery pipeline is drying up. He continued that more than 2 billion people, is affected with the tubercle bacilli and almost 3,70,000 people die of TB in India every year, which accounts 2 deaths in every 3 minutes. He also lamented that since the development of modern drug therapy in 1960, no major advancement in treatment has emerged. In the context, he highlighted various CSIR initiatives – Open Source Drug Discovery (OSDD) Project to provide affordable and inclusive healthcare. In the context, he invited the Chamber's support to set-up world class R&D centre in West Bengal.

Professor Brahmachari stated that there is an ardent need to make innovative institutions the 'temples of Indian growth'. It is only then can the country expect to reach a high growth trajectory in a very short time. The primary need for generating research, according to him was to tap the human resources lying unutilised at the grass root levels. Both rural India and the women workforce have been left untapped and uneducated. Talents among such individuals gain neither the opportunity of being educated nor the recognition. Inclusive growth, according to Professor Brahmachari can be attained if these unused human resources are utilised in an effective manner. By

giving the youth of India an opportunity to lead, innovations can be boosted, Professor Brahmachari felt.

Shri Sajjan Bhajanka, Senior Vice-President of the Chamber offered a hearty Vote of Thanks to Professor Samir K Brahmachari, Director General, Council of Scientific and Industrial Research (CSIR) and Secretary, Department of Scientific and Industrial Research (DSIR), Government of India.

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