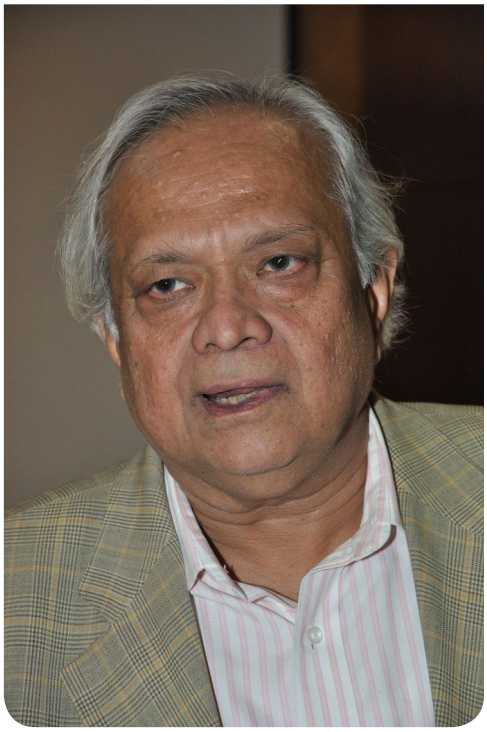
Obituary



Late Prof. Bikash Chandra Sinha
(1945 – 2023)

Bikash Sinha was born on the 16th June, 1945 in the famous royal family of Kandi (Murshidabad District) of West Bengal.

He was a brilliant student right from his early days. He had his schooling at the Scottish Church Collegiate School In Calcutta. He completed his B. Sc. with high marks in Physics (Honours) from the famous Presidency College in Calcutta in 1964. Then he proceeded to the internationally famous University of Cambridge in England to pursue higher studies. He enrolled in the reputed King's College there and obtained the B.A. degree in 1967 and the M.A. degree in 1968 (with a Physics Tripos). After that he went and joined the University of London as research scholar. He completed his research in Nuclear Physics and obtained the Ph.D. degree from London University in 1970. Thereafter he started working in the same University as a Senior Research Fellow and finally secured the D.Sc. degree in Physics from the University of London.

His main areas of interest were Nuclear Physics, High Energy Physics, Quark-Gluon Plasma, Nuclear Medicine, Precursory Signals of Earthquakes and recovery of Helium from Thermal Spring.

In 1976, at the invitation of Dr. Raja Ramanna, the then Director of the Bhabha Atomic Research Centre (BARC), Bombay, Dr. Bikash Sinha joined the 'Nuclear Physics Division' of the said institute as a Scientific Officer. He began his research at BARC by taking up studies on hot spots in nuclear collisions and density dependent delta function interactions. He stayed and worked in Bombay till 1983 and then came to Calcutta and joined the Variable Energy Cyclotron Centre (VECC) as a Senior Scientific Officer. In 1988 he became the Director of VECC and later on also became the Director of Saha Institute of Nuclear Physics (SINP). He held the prestigious 'Homi Bhabha Chair Professorship'.

He pioneered several projects in Calcutta during his tenure at VECC. He gave a momentum to the nuclear physics research through accelerators. Rejuvenation of the old room temperature K-130 cyclotron was done by him. The cyclotron now delivers beams of alpha, oxygen nucleus and other heavy ions throughout the year. Prof. Bikash Chandra Sinha was responsible for initiating several state-of-art experimental facilities, and detector laboratories. After realising the need for a powerful cyclotron in the field of nuclear research, He was instrumental for the construction of a 500K superconducting cyclotron. Apart from the construction of country's most energetic cyclotron he didn't stop there and moved forward to facilitate the most awaited medical cyclotron facility at that juncture. A 30 Me V medical cyclotron is operating now in Kolkata and continuously supplying the radio isotopes to several hospitals of the city. With the possession of several cyclotrons---- starting from the cyclotron

brought by Meghnad Saha at SINP, K-130 room temperature cyclotron, K-500 super conducting cyclotron, 30 Me V medical cyclotron, the "City of Joy" was usually referred to by him as "the City of Cyclotrons". Coming to the frontier areas of nuclear research, he initiated the radio-active ion beam (RIB) project and dreamt of ANURIB (Advanced National facility for Unstable Rare Isotope Beam) project.

Nuclear Astrophysics is another area which highly fascinated Prof. Sinha. He again became instrumental in setting up the Facility for Research in Experimental Nuclear Astrophysics (FRENA) at Saha Institute of Nuclear Physics (SINP) for the first time in India. It created opportunities for the researchers in the field of low-energy Nuclear Astrophysics. This facility consists of a high current 3 MV Tandetron, which will help understand the fusion processes of heavy-ions like ^{12}C, ^{16}O and ^{20}Ne. It will also help study the H and He -burning phases of stars.

Prof. Sinha put thrust on state-of-the-art facilities in research Institutes to remain competitive in the field of nuclear research at low and high energies. He not only pioneered the projects of low energy Nuclear Physics and Astrophysics at Me V scale, but his scientific leadership also created high energy Nuclear Physics group to work at GeV scale. He started the theoretical research group in the Quark-Gluon Plasma studies, which is now well known in the international community. Photon as a universal signal for the formation of QGP was proposed from this group. Starting from the proposal of photon study from late eighties, till the explanation of direct photons at SPS, RHIC and LHC, the group activity is quite visible. He persuaded the Indian scientific community to take part in the mega science project of experimental QGP study through international collaborations. For facilitating research in this area, he got the first detector, PMD (Photon Multiplicity Detector) to measure photons, built under a national collaboration at a leading facility at VECC and installed at CERN in Geneva, Switzerland and participated in WA98 experiment at Super Proton Synchrotron. Dr. Sinha also led his team to conduct experiments at the 'Relativistic Heavy Ion Collider' at the Brookhaven National Laboratory in the USA. It paved the way for India-CERN collaboration at Large Hadron Collider(LHC). PMD was installed at RHIC and LHC also. India became the 'Associate Member' of CERN from an 'Observer'. India also built another Muon-arm detector for the measurement of muons at Relativistic Heavy Ion Collider.

By initiating the 'Indo-FAIR' agreement, Dr. Sinha led the high energy community to play a major active role in the upcoming experiments at the 'Facility for Anti-proton and Ion Research' at GSI, Germany.

Multifaceted scientist Prof. Sinha also started a project related to Helium recovery from the hot springs at Bakreshwar and Tantloi in West Bengal.

He finally retired from both these Institutes in 2009.

Prof. Sinha has published over 160 research papers in peer-reviewed internationally famous scientific journals. There were 25762 reads and 3190 citations of his papers.

Prof. Bikash Sinha was a much honoured and decorated scientist. The Government of India honoured him with 'Padma Shri' title in 2001 and with 'Padma Bhushan' in 2010. He was the recipient of the 'S. N. Bose Birth Centenary Award' of the Indian Science Congress in 1994. He received the 'DAE : Dr. Raja Ramanna Prize' in 2001. In the same year he also delivered the 'Pandya Endowment Lecture Award' of the 'Indian Physics Association (IPA)' and the 'Rais Ahmed Memorial Lecture Award' of the Aligarh Muslim University, Aligarh.

He was a Member of the 'Scientific Advisory Council to the Prime Minister' during 2005-2009. The West Bengal Government conferred the 'Bangabibhushan Award' to Prof. Bikash Chandra Sinha in 2022, for his outstanding contributions in Physics and its applications for the benefit of human beings.

Prof. Bikash Sinha was elected a Fellow of the Indian National Science Academy (INSA) in 1989, the National Academy of Science, Allahabad and the Third World Academy of Science in 2002 and the Indian Academy of Sciences, Bangalore in 2004.

He was the recipient of Humboldt Research Award by the 'Humboldt Foundation' of Germany. He was also honoured as "Distinguished Visiting Scholar" to Christ's College, University of Cambridge, U. K. Prof. Bikash Chandra Sinha was elected to the Fellowship of the Institute of Physics, London, U.K.

He was an eminent scientist with a broad heart and vision, always eager to help young researchers in the various fields of Physics. He often regretted that the present generation of students were no longer attracted to the fundamental sciences. He inspired young research scholars by saying "May be you won't be clapped every time like a celebrity, but there is tremendous joy in making a breakthrough. Pursuing Science is like finding a ray of light in a dark tunnel."

Prof. Bikash Chandra Sinha believed in the philosophy of periodic scientific seminars and conferences to update with frontier developments and nurture the young scientists and researchers. So he created a legacy for the High Energy Nuclear Physics researchers in India. International Conference on Physics and Astrophysics of Quark Gluon Plasma (ICPAQGP), one of the most acclaimed periodical events among the global fraternity of heavy ion physicists, is a result of his dynamic efforts. The first conference was held at Mumbai in 1988 under his personal supervision and the eighth one of the series took place at Puri in February, 2023. In spite of his deteriorating health, Prof. Bikash Chandra Sinha was very much present at the last conference and delivered a memorable talk.

His recommendations and references opened the gates of greener pastures to hundreds of physicists in India. He was very proud and deeply knowledgeable about the Bengal Renaissance and possessed phenomenal understanding about the contributions of the multifaceted genius of India, Rabindra Nath Tagore. He was an ardent admirer of the Nobel Prize winning litterateur and philosopher. Prof. Bikash Sinha was instrumental in setting up "The Tagore Centre for Natural Science and Philosophy" in New Town, Kolkata. The West Bengal Government honoured Prof. Bikash Chandra Sinha with the prestigious "Rabindra Smriti Purashkar" for his contributions in highlighting and spreading the humanitarian and scientific views and messages of Gurudeb Rabindra Nath Tagore.

He was an excellent orator and one of the best science communicators of this country. He was internationally recognised, admired and respected for his deep knowledge in the disciplines of Physics and Philosophy. Prof. Bikash Sinha had a natural belief in the philosophical bonding of natural sciences.

Incidentally as this tribute to Late Prof. Bikash Chandra Sinha is being written on behalf of all the members of the 'Institute of Science, Education and Culture (ISEC)', it would be befitting to bring to the fore the close connection that our Society shared with the internationally famous scientist.

In spite of his super hectic schedule, Prof. Bikash Sinha delivered two excellent lectures on varied topics in two different Seminars organized by ISEC. In a Seminar titled "SWAMI VIVEKANANDA, VEDANTA PHILOSOPHY AND MODERN SCIENCE" organized by ISEC on the 9th July, 2012 at the Birla Industrial and Technological Museum (BITM) he had delivered the 'Inaugural Address'. Again in the Seminar titled "ICONIC SCIENTIFIC PERSONALITIES: PROF. S. N. BOSE, PROF. M. N. SAHA and PROF. P. C. MAHALANOBIS" jointly organized by ISEC and BITM on the 29th September, 2018 at the premises of the BITM, Prof. Bikash Sinha delivered an excellent talk titled "Prof. Satyendra Nath Bose, A legend in his lifetime". In his talk the noted physicist reminisced about his close connection with the legendary Prof. S. N. Bose. Both his talks delivered in flawless English made great impact on the audience.

Prof. Bikash Chandra Sinha was one of the best and most vocal defenders of nuclear energy as a renewable fuel. By neglecting and ignoring his relentless advice, we have become victims of horrific climate change visible all over the world. He gave a definite new direction to Nuclear Physics in India. It will remain imprinted in our memory forever. This was a formidable achievement in a world obsessed with Condensed Matter Physics.

On a personal note, I have very pleasant memories of my interactions with Prof. Bikash

Chandra Sinha. After carefully reading the book titled "History of the Calcutta School of Physical Sciences" [Purabi Mukherji and Atri Mukhopadhyay; Springer Nature: 2018], he profusely praised the book and advised me to write such books on Mathematical Sciences in modern India. I did listen to him and he always encouraged and inspired me in my venture.

As all human beings have to leave this world some day, Prof. Bikash Chandra Sinha too left for the unknown journey a few weeks back. After a prolonged illness, he passed away on the 11th August, 2023 in Kolkata leaving thousands of heartbroken students and admirers in India and abroad. Along with all the members of the Institute of Science, Education and Culture, I too offer my deepest respects to the departed scientist.

He brought immense glory to the state of West Bengal and India through his tireless, dynamic and excellent scientific research. But life is so fragile. So he had to go and the void will remain.

In the words of our iconic poet Rabindra Nath Tagore: "All things rush on, they stop not, they look not behind, no power can hold them back, they rush on."

His demise is a great loss to India. We pray that may the departed soul rest in eternal peace.

Purabi Mukherji†

†rubym1945@gmail.com
ORCID: Purabi Mukherji: https://orcid.org/0000-0002-6079-0126

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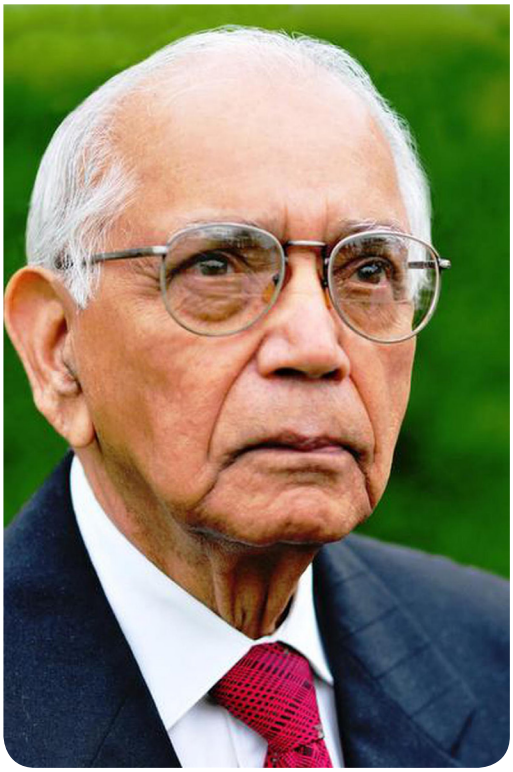

Late Prof. C. R. Rao, F.R.S
(1920 – 2023)

Just a few months back I wrote a salutatory article on Prof. C. R. Rao to pay our sincere tribute on behalf of all the members of the 'Institute of Science Education and Culture' (ISEC), when it was announced that the outstanding mathematician and statistician will be awarded the '2023 International Prize in Statistics', the highest and a very prestigious award in the said discipline. Some compare the award equivalent to a 'Nobel Prize' in Statistics.

What an irony of fate that on the day the Indian scientists of ISRO (Indian Space Research Organization) were successful in landing the Chandrayan – 3 on the South side of the moon, India lost her star statistician Prof. C. R. Rao. He passed away in USA on the dawn of the 23rd August, 2023.

My earlier article titled "Salutations to Prof. C. R. Rao F.R.S." was published in 'Indian Science Cruiser' [Volume 36, No. 6, November 2022]. Now within a few months, with deep sorrow and a sad heart I am writing an 'Obituary' of the departed scientist on behalf of all the members of the ISEC family.