

The Eighth Professor Asima Chatterjee Foundation Oration on 23rd September, 2022

The “Professor Asima Chatterjee Foundation, Kolkata” (PACFK) organised the Eighth Oration Lecture on the occasion of her 106th Birth Anniversary on 23rd September, 2022.. The programme was organised online on the Google Platform.

The webinar commenced at 6 pm, with the welcome address by Dr. (Mrs.) Sumitra Chaudhuri, Secretary, PACFK. Dr. Chaudhuri outlined the life and contributions of Professor (Mrs.) Asima Chatterjee - revered ‘Master’ as she was called. Professor Chatterjee was an outstanding scientist, academician and science policy maker of our country. She was internationally renowned for her contributions to research and teaching in Organic Chemistry and associated disciplines. Professor Chatterjee was the first lady recipient of the D.Sc. degree (1944) of any Indian University. She worked abroad in USA and Switzerland during the period 1947-50. Several of her students rose to positions of eminence in the scientific community. Google-doodle honoured her in 2017 on the occasion of her birth centenary.

Dr. Chaudhuri charted the career of Professor Chatterjee as founder-Head of Chemistry Department of Lady Brabourne College in 1940 at the age of 23. She joined the Department of Chemistry, University of Calcutta as Reader in 1954, promoted to Khaira Professor of Chemistry in 1962, being the first lady Chair Professor in West Bengal. She became Head of the Department in 1969, and initiated the UGC Special Assistance Programme on

Natural Products, which developed into a prestigious Centre of Advanced Studies (CAS). She served as Programme Coordinator of the CAS and continued working in Chemistry Department till the end of her days.

She was recognised by several awards and recognitions, notably - Fellow of the Indian National Science Academy (1960); Shanti Swarup Bhatnagar Award (1961); CV Raman Award (1985); Asutosh Mookerjee Award (ISCA, 1989). **She was elected General President of the Indian Science Congress Association (1975 Session) – the first woman scientist to hold this prestigious position.** She was honoured with **Padma Bhushan** by the Government of India (1975). **She was nominated by the President of India to the Rajya Sabha from 1982-1990 as a scientist-academician.** She contributed to formulation of science and technology policies in our country, during her tenure as General President, ISCA and then as member of Rajya Sabha.

Professor Chatterjee made seminal contributions to Natural Products Chemistry working on Indian Medicinal Plants. She developed the novel sedative and rehabilitation and anti-epileptic drug Ayush-56 and the antimalarial combination drug Ayush-64. The latter is in use now for treating mild to medium of COVID 19 infection and also as an antipsoriasis formulation. She was instrumental in establishing a multi-disciplinary Research Institute and Hospital on Ayurvedic Sciences affiliated to the CCRAS, with the help from both the Government of West Bengal and Ministry of Health and Family Welfare, Government of India.

She was also deeply involved in the popularisation of science. She had worked together with Professor Satyendranath Bose in the *Bangiya Bigyan Parishad*, and succeeded him as its President in 1974, on Professor Bose’s demise.

Dr. Chaudhuri reported that after her sad demise in 2006, the students and admirers of Professor (Mrs.) Asima Chatterjee established “Professor Asima Chatterjee Foundation, Kolkata” (PACFK) to perpetuate her memory among future generations for further upliftment of the



status of chemical education and research in our country. The PACFK organises scientific activities and conferences. Two International Conferences on Chemistry for Human Development (ICCHD) were organised in 2018 and 2020. Additionally seminars and webinars have been organised. Future activities also envisage scientific publications and research collaborations with leading Institutes. A major activity is the organisation of 'Oration Lectures' on her Birth Anniversary on 23rd September each year since 2015. Previous oration lectures have been delivered by Dr. A.V. Rama Rao, Professor Goverdhan Mehta, Dr. Ganesh Pandey, Dr. Tushar Chakrabarty, Dr. K.N. Ganesh, Dr. J.S. Yadav and Professor C.S. Mathela.

Dr. Chaudhuri then welcomed the Professor Shital Chattopadhyay, for delivering the Eighth Professor Asima Chatterjee Oration and the Chief Guest of the function Professor Sudhendu Mandal.

Professor Sudhendu Mandal, the Chief Guest of the function, is former Director of the National Library, Kolkata. Professor Mandal had a long association with Professor Asima Chatterjee. Other than being a former UGC Professor and Head, Department of Botany and Department of Biotechnology, he served in many other key positions at Visva-Bharati - Pro-Vice-Chancellor; Adhyaksha (Dean), Faculty of Science and Agriculture; Dean of Students Welfare, Director, Indira Gandhi Centre for National Integration, Director, Granthana Vibhaga, Santiniketan. Professor Mandal had a brilliant career securing First Class First positions in both BSc (Hons) and MSc (Botany) examinations from Visva-Bharati University. He received his PhD from the University of Calcutta (1980) and ISCA Young Scientist Award (1982), Commonwealth Academic Staff Fellowship (1991-1992) at UK. Professor Mandal served Birbal Sahni Institute of Palaeobotany - Lucknow, and PG Department of Botany - Darjeeling Govt. College, before joining Visva-Bharati. He has supervised 35 PhD students, with more than 275 research papers, and authored/co-authored/edited of 21 books including one on Tagore and Flowers by CSIR, New Delhi. Among his honours are the *Millenium Scientist Medal* at the 96th ISC Session, at the North Eastern Hill University from Hon'ble Prime Minister of India, Dr. Manmohan Singh; Professor EP Odum Gold Medal of International Association for Ecological Communication (2009); Professor S.C. Datta Memorial Award from Botanical Society of Bengal and University of Calcutta (2014); Paul Johannes Bruhl Gold Medal from Asiatic Society. Prof. Mandal was President, Indian Aerobiological Society, Delhi (2003-07). Presently he is the Vice-President, Plant Physiology Forum

and Editor-in-Chief, *Science and Culture*, Indian Science News Association.

The address of the Chief Guest Professor Sudhendu Mandal, an eminent academician and administrator followed.

Professor Mandal emphatically mentioned that Professor Asima Chatterjee was a legendary women scientist not only in the field of chemistry but also played a significant role in science development of India. She was born in 1917 which is a significant year for India because three celebrated women personality of India were born i.e. Professor Asima Chatterjee (b.23/09/1917), Dr. Kamal Ranadive (b.08/11/1917) and Smt. Indira Gandhi (b.19/11/1917). Acharya Jagadish Chandra Bose established Bose Institute, Calcutta in the same year i.e. on 30/11/1917. Professor Chatterjee opened the world's eyes to the power of medicinal plants working for more than 40 years of research in the field of organic chemistry specially phytomedicine i.e. alkaloids. She established most successful anti-epileptic drug "Ayush-56" from *Marsilea minuta*, anti-malarial drug from *Alstonia scholaris*, *Swertia chirata* and *Caesalpinia crista*. She has also developed Coumarins from Bel tree – a species of India for its fruits and barks – used for gastrointestinal diseases.

Professor Chatterjee was dedicated, devoted and dutiful for her research and teaching in the University of Calcutta for which she established the UGC SAP Programme and finally the Centre of Advanced Studies in Natural Products. Smt Indira Gandhi became the first women Prime Minister of India and Chancellor of Visva-Bharati. During her tenure as Chancellorship Professor Chatterjee was nominated by the President of India (Visitor) to the Executive Council of Visva-Bharati as Visitor's nominee when Professor Nemai Sadhan Bose was the Vice-Chancellor. Professor Chatterjee also contributed a lot for the proper development of science faculty at Visva-Bharati. As a botanist I had a long association with Professor Chatterjee and I pay my respectful homage to this great scientist for her pioneering research work in plant chemistry. Professor Chatterjee was also closely associated was ISNA for about 50 years (1956-2006) and served in different position and finally became the Vice-President of ISNA (1985-2006). As a world class Scientist she said at the last phase of her life "*I wish to work as long as I live*".

I would like to add that Dr. Kamal Ranadive was the first biomedical researcher of India best known for her ground breaking cancer research. She was the pioneer woman scientist in animal modeling of cancer development.

She for the first time established tissue culture laboratory in India in 1960 at the ICRC, Bombay.

Smt. Indira Gandhi received the **Bharat Ratna** (India's first highest civilian award) in 1972, Professor Asima Chatterjee received the **Padma Bhushan** (India's third highest civilian award) in 1975 and Dr. Kamal Ranadive also received the **Padma Bhushan** in 1982 by the Govt. of India.

Lastly Professor Mandal expressed his sincere thanks and gratitude to Professor Avijit Banerjee and Professor (Mrs.) Julie Banerjee for inviting him to act as the Chief Guest in the 8th Asima Chatterjee Oration lecture programme.

The Eighth Oration lecture was delivered by Professor Shital Chattopadhyay who is attached to the Chemistry Department, University of Kalyani as Faculty since 1999. He worked with Professor KC Majumdar for his PhD (1987, Kalyani University), then did post-doctoral research with Professors A. McKillop (University of East Anglia, UK), G. Pattenden (Nottingham University, UK) and T. Frejd (Umea University, Sweden) during the period 1990 to 1998 and was a Research Associate with Professor G. Mehta, IISc, Bangalore (1998-99). He is a Fellow of the WB Academy of Science and Technology, and visited University of London as RSC-INSA fellow. His research interests have been (i) Asymmetric synthesis of α -amino acids and cyclic peptides of biological significance; (ii) Total synthesis of chiral heterocyclic Natural Products of biological relevance; (iii) Development of metal-mediated synthetic methodologies for heterocyclic synthesis. He has supervised 24 PhD scholars, three DS Kothari postdoctoral fellows, and published 98 research papers. He has co-edited a book: *Heterocycles in Natural Product Synthesis*; contributed chapters to *Green Synthetic approaches for biologically relevant heterocycles*; and is Regional Editor, *Indian Journal of Heterocyclic Chemistry*.

The Eight Oration lecture was entitled "DOS-ING AROUND SOME PRIVILEGED NATURAL PRODUCT STRUCTURES AS EFFORTS TOWARDS DRUG DEVELOPMENT: THE LESSONS LEARNT". Professor Shital Chattopadhyay pointed out that Natural Products research had remained an important part of our scientific culture over the decades. Natural Products had enriched our knowledge of structural chemistry and their biosyntheses had provided valuable inputs into genetics and enzymology. The scientific challenges associated with their chemical synthesis had not only enticed the chemical community but also provided valuable knowledge for drug discovery and development.

It is estimated that 50-70% of drugs launched in the market are structurally correlated with organic compounds obtained from natural sources.. Synthesis of Natural Products is indeed as old as Organic Chemistry; nonetheless, its attraction has remained unabated. It has adapted itself with the progress in related fields and has become smarter during its journey from 'racemic synthesis' to 'asymmetric synthesis'. Some of the newer developments in drug discovery programme such as CombiChem, Library Synthesis and Diversity Oriented Synthesis have indeed somewhat challenged its efficacy in drug development; but this has also given us opportunities to explore. Efforts along these directions from scientific giants in the field over the globe have encouraged his research group to undertake a research programme on Diversity Oriented Asymmetric Synthesis of Natural Products of proven biological record.

His presentation included syntheses of few of the several structurally diversified and privileged Natural Products carried out in his laboratory. These structures were chosen based on available information on their mechanism of action ranging from antibiotic activity, enzyme inhibition to anti-cancer activity. Four major types of diversification such as appendage diversity, stereochemical diversity, skeletal diversity and functional group diversity commonly employed in drug development had been attempted to incorporate into the chosen natural products as applicable in each case. Efforts had been made to utilize only easily available chiral pool materials such as carbohydrates and amino acids with robust methods of asymmetric synthesis amenable for drug development. The biological activities of some of the diversified products were assayed through collaborative works.

PACFK Vice-President Professor Avijit Banerji spoke briefly on future plans of PACFK – holding seminars, bringing out publications, arranging the third ICCHD. He noted that in the two and half years COVID-19 pandemic, PACFK had continued its activities by arranging online Oration lectures and online Seminars.

Professor Sunil K. Talapatra, the President of PACFK, paid rich tribute to revered 'Master' in his Presidential address. He expressed his admiration reminding everyone that to Professor Chatterjee, teaching and research combined together, was the most exalted profession. According to her, in absence of zeal for research, there is no vitality in higher teaching. Her sincerity was radiant and a pillar to her students. She was a woman of advanced view, not of limited horizon, and a possessor of iconic quality. Professor Talapatra believed that the most pervasive and valuable defence is to believe in self and

life – which Professor Chatterjee had. She thus has been a source of inspiration to all her students.

Professor Sunil K. Talapatra expressed his sincere thanks to Professor Shital K Chattopadhyay for his acceptance to deliver the 8th Oration Lecture notwithstanding his pressing preoccupations. He mentioned that Professor Chattopadhyay is an inspired name in the chemical community of our country due to his outstanding contributions, especially for his important synthesis of heterocycles using naturally occurring molecules. He also highlighted the activities of PACFK since its inception.

Other than a large number of participants from West Bengal, participants came from Gujarat, Haryana, Rajasthan, Madhya Pradesh, Uttarakhand, Delhi, Tamilnadu as well

from USA. The programme lasted for two and a half hours.

The Vote of Thanks was moved by Professor Manas Chakrabarty, Assistant Secretary, PACFK. He thanked Professor Chattopadhyay for delivering the Eighth Foundation Oration Lecture and Professor Sudhendu Mandal for consenting to be the Chief Guest on this occasion. He thanked members of the Governing Body, PACFK for organising a successful programme. Finally, he thanked the participants of this Webinar for making it a grand success. □

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