B. P. Chandra (1946–2015)

B. P. Chandra, considered as the Father of Mechanoluminescence Research in India, died on 29 October 2015, while on his way to deliver a lecture 'Recent advances in physics' at SGG Govt PG College, Kurud in Chhattisgarh. He was born on 3 April 1946 in the remote village of Bargaon in Janjgir–Champa district of Chhattisgarh, then part of Central Provinces and Berar under British India.

I met Chandra for the first time in 1993 when I visited Rani Durgavati University, Jabalpur for a lecture tour during my sabbatical leave. He took me round his research facility in mechanoluminescence created by his own initiative in India. Later on, we met quite often during annual conferences of the Luminescence Society of India (LSI), which was his own creation as its founder President that Chandra is no more in this world.

Chandra belonged to a generation of Indians who were born just at the threshold of free India with hopes and aspirations of creating a vision for developing India into a comity of nations as a democratic, secular and prosperous country. He was born in a rural area which had hardly any facility for higher education. Just by dint of hard work, he rose to be an academician of highest calibre scoring top positions in pursuit of knowledge. He got his higher education culminating in Doctorate in Physics from Pt Ravi Shankar Shukla University, Raipur (MP) in 1974. He started his teaching career as a Lecturer in Government Post-Graduate College of Science in Raipur in 1974. After three years, he won National Scholarship by the Government of India for Post-Doctoral Research in USA from 1977 to 1979. He joined University of California, Los Angeles, to continue his pursuit of research in both theoretical and experimental aspects of mechanoluminescence. When his two-year stint ended in 1979, he was allowed to continue for another year on Post-Doctoral Fellowship extended by the University of California considering his contributions to research. Chandra also visited University of California, San Francisco; University of California, San Diego, La Jolla; Columbia University, New York; University of Illinois, Chicago; Washington State University, Pullman, during his stay in USA from 1977 to 1980.

On return to India, Chandra served in the same college for four years from where he had left for USA. In 1984, he was selected as Reader in Physics in Rani Durgavati University, Jabalpur (MP) and promoted as Professor in 1989. He served as Head of Department of Physics and Electronics for 6 years (1995–2001). It was in Jabalpur, Chandra engaged himself in setting up world-class facilities in mechanoluminescence research, guiding dozens of Ph D students and publishing research papers in national and international journals of repute.

He was awarded a D Sc by Rani Durgavati University in 1992, considering his immense contributions. Chandra has created a record of sorts in University academia by guiding 116 Ph D scholars in research and 35 candidates for M Phil dissertations. In my view, hardly anyone has accomplished this rare feat in India. C. V. Raman is known to have supervised around 80 students but I am not sure, all of them were registered for Ph D.

His reputation as a teacher, researcher and administrator won him the coveted post of Vice Chancellor of Pt Ravishankar Shukla University. This university had earned the dubious distinction of a campus in turbulence where all types of academic and administrative activities were paralysed due to student and teacher strikes. The university was looking for a Vice Chancellor (administrator) who can put on rail its academic activities. Chandra proved to be the man who brought academic semblance on the campus with university functioning in a most disciplined manner when he left after completing his full term.

Chandra made outstanding contributions to the field of solid state physics and electronics by his researches on luminescence, solar cells, photoconductivity, nanoparticles, organic light emitting diodes and IC-instrumentation. He was a pioneer in the field of mechanoluminescence, who established the mechanisms, parameters, experimental techniques and theory of mechanoluminescence. The mechanism of conversion of mechanical energy into cold light energy was quite unknown before he entered this field. His studies on laser technique for mechanoluminescence excitation, mechanoluminescence dosimetry and time-resolved fracture dynamics using mechanoluminescence have brought him recognition all over the world. In addition to mechanoluminescence, he also made significant contributions to other fields of luminescence, e.g. photoluminescence, electroluminescence, thermoluminescence, crystalloluminescence, bioluminescence and up-conversion luminescence. He also made contribution in the area of light emitting diodes.

In addition to the field of luminescence, Chandra worked in the field of solar cells and his contributions to the use of cadmium chalcogenide thin film as photo-anodes in photoelectrochemical solar cells are highly appreciated. He had also studied the optical properties of semiconductor nanoparticles and the photoconductivity of II–VI semiconductors. His contribution in the field of theoretical and experimental studies of fracture of solids is noteworthy. In addition to the solid state of physics, he also proved to be an innovative worker in the field of electronics by studying the IC-based function generators, and microprocessor and computer-controlled solid state devices. After retirement, Chandra was engaged in the study of optical properties of semiconductor nanoparticles, image storage phosphors, up-conversion phosphors, organic light emitting diodes, thin film electroluminescence display, low cost solar cells, photo-plastic effect and photo-plastic after-effect. He published about 250 research papers in national and international journals and about 350 papers in the Conference proceedings. When I was Guest Editor of *Trans Tech Journals in Switzerland* (2010–15), Chandra contributed 4 review

articles which proved to be benchmark for research workers in the area of luminescence. In connection with his research work, he visited important research centres of USA, Japan, France, England, Italy and Mexico.

Chandra wrote four books, out of which two were in Hindi, about two dozen articles in Hindi and delivered Radio Talks for popularization of science. As the Founder Director-General, Chandra established the Chhattisgarh Council of Science and Technology, Raipur in 2001. His involvement and dedication in promotion of Science in India was total. Let us hope his dedicated band of scholars carries the flame lit by Chandra forward.

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