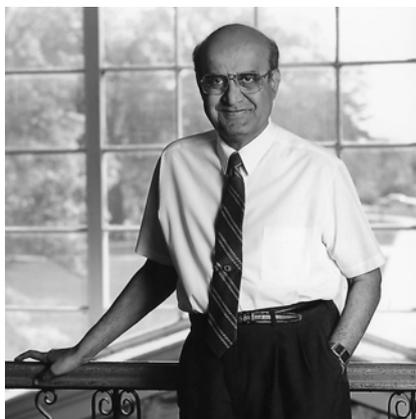


## L. K. Doraiswamy (1927–2012)

Lakshmangudi Krishnamurthy Doraiswamy, or LKD, as he was fondly referred to by his colleagues in India and LK by colleagues in America passed away at Danville in Pennsylvania, USA on 2 June 2012. He was born on 13 May 1927 in Bangalore. LKD was a gentleman scholar with a holistic vision and an eye for minute details. No wonder he impacted the lives of numerous people who came within the sphere of his influence. Acclaimed worldwide for his contributions to engineering science, he was one of the founding fathers of modern chemical engineering research and practice in India. After receiving his BS from the University of Madras in 1946 and a Ph D in chemical engineering from the University of Wisconsin in 1952, he joined the National Chemical Laboratory (NCL), Pune in 1954 – the premier research institute of the Council of Scientific and Industrial Research (CSIR) in chemical sciences. LKD steadily rose from the position of a senior scientist to become the first non-chemist director of the laboratory. After retirement in 1989, he joined as Glenn Murphy professor of engineering (1989–92) at Iowa State University and continued in the chemical engineering department where his final position was the Anson Marston distinguished professor of engineering (Emeritus). LKD's work at NCL was highly practical – often leading to the development of new process technologies that were commercially relevant. These short-term, time-targeted programmes generated more fundamental problems which he tackled with the help of his Ph D students, thus creating a complete theoretical and practical framework for the technologies developed during his time. He guided about 70 students for their Ph D programmes which included (a) students at NCL who submitted their thesis to various universities in India, (b) students who obtained their degrees from the Universities of Salford and Edinburgh in UK and (c) graduate students at Iowa State University.

His work in theoretical and experimental catalytic reaction engineering, gas–solid non-catalytic reactions, phase-transfer catalysis, sonochemical reaction engineering, adsorption, solid–solid reactions, gas–liquid and slurry reactions,

fluidization, stochastic modelling of reactions and reactors, thermodynamic and transport properties and strategies for rate enhancement led to seminal contributions. He was responsible for establishing organic synthesis engineering as a modern discipline. He developed a number of processes that have gone into commercial production. These include catalytic as well as non-catalytic processes in both batch and continuous modes. A novel catalytic process for dimethylaniline developed by him along with his team was applauded in the *Cementator* in the journal *Chemical Engineering*.



Half a dozen other processes developed by him as a leader have won awards of the Indian Chemical Manufacturers' Association (ICMA), the highest recognition for process development and engineering in India. LKD believed in bringing together groups of people who would cover the entire spectrum from the highly fundamental to development to design. The high level of creativity at NCL in the development of new, internationally competitive catalysts and process technologies has been proudly recognized in India. LKD travelled extensively to deliver special, endowment, plenary and other notable lectures. He served as a member of various prestigious editorial boards, company directorships and several selection committees, including those for election to various scientific academies.

He is the recipient of numerous awards in India and internationally, including the Padma Bhushan, the Jawaharlal Nehru Award for lifetime achievement in engineering and technology, the Diamond

Jubilee Award of the Indian Institute of Chemical Engineers honouring the 'legends' of Indian chemical engineering, the Richard H. Wilhelm and William H. Walker Awards of the American Institute of Chemical Engineers, and honorary doctorates from the University of Wisconsin, USA and the University of Salford. He has published about 180 papers in international journals many of which are frequently cited and some of which are incorporated as standard methods in textbooks. Most recently, he was elected to the US National Academy of Engineering. True to his character, until the very end LKD was co-authoring a graduate-level textbook on reaction engineering and writing a 'non-engineering book' on the nature of time. His panoramic breadth of knowledge is reflected in his 2010 book *Excellence in an Overlapping Culture: The Big History of India's National Chemical Laboratory*. To honour his remarkable career both in India and the US, the L. K. Doraiswamy lecture series was set up to enable an internationally recognized scientist or engineer to present seminars at both Iowa State University and NCL. His selflessness, penchant for impeccable English, sterling sense of ethics, gentle but strong guiding hand, whimsical humour and infectious enthusiasm will be irretrievably missed.

In the later part of his life LKD took to writing poems – although this part of his personality is not known to most people. Several of his poems, particularly the ones he wrote during the last five years and shared with me (in the strictest confidence) as one of his closest students reflect the purity of his heart and depth of his thinking.

Two things that especially distinguished LKD were: (a) his penchant for achieving excellence and a state of perfection, and (b) his ability to seek and identify people with talent. He always used to tell us his students and colleagues that excellence is a state of mind, that you cannot be excellent in one thing and not in others, and that excellence can be gained by repeated improvement and performance. Each one of us close to him remembers the enormous time he used to spend in repeatedly correcting the drafts of our articles until they reached a level

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of perfection that satisfied him. LKD also had a tremendous knack of identifying people with talent which helped strengthen NCL's place as a premier laboratory. He would recruit, encourage and create an empowering environment for them to flourish and help them rise to

a level of leadership in the chosen areas of their profession.

His legacy will live on through his varied professional achievements, the institutions he has built, and the many students, colleagues and family members he has mentored. He is survived by

his son, daughter and three grandchildren.

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## Radhey Shyam Ambasht (1936–2012)

Radhey Shyam Ambasht was an outstanding botanist and ecologist. He was born on 3 December 1936 at Gyanpur in Uttar Pradesh. He graduated in botany from the Banaras Hindu University (BHU) Varanasi and later obtained his Ph D under the guidance of R. Misra. His association with BHU as a Professor lasted several years and he served in various academic positions. He headed the Botany Department for two years and was also a Coordinator at the Centre of Advanced Study. After his superannuation, he was CSIR Emeritus Scientist, INSA Senior and Honorary Scientist and Emeritus Professor BHU.

He was an elected fellow of several scientific academies, such as the Indian National Science Academy, National Academy of Sciences and the National Institute of Ecology. He was a prolific teacher and guided 29 research scholars. His career as a researcher and teacher spanned over 41 years.

Some of the subjects which interested Ambasht were the study of plant species, biodiversity, productivity, energetics, nutrient cycling and adaptability in different ecosystems, such as the Eastern Himalaya plantation forests, tropical grasslands of the Vindhya, watersheds and wetland vegetation of several lakes and corridors of the rivers Ganges, Varuna and Rihand.

He developed new experimental methods for quantifying the soil, water and nutrient conservation values based on

simple experiments and formulae. These parameters have been used extensively for quantifying conservation values for the dominant species in the ecosystem and plant communities. He published over 200 papers mostly in international journals which remain extensively cited. In 2000, K. C. Pant (Deputy Chairman, Planning Commission) released *Ambasht's Festschrift Landmarks of Botany in India* at the Forest Research Institute in Dehradun.



Ambasht authored several books. *A Text Book of Plant Ecology* (15 editions) and *Environment & Pollution* (5 editions) dealt with basic concepts in ecology and environment for undergraduate and graduate students. He also edited three books for international publishers, namely

Backhuyes and Kluwer Academic/Plenum (now Springer) of Leiden (the Netherlands) and New York (USA). He was the Guest Editor for a special volume on wetland ecology brought out by the National Academy Sciences, India in 2008.

His contributions were well recognized both nationally and internationally. He chaired sessions at different international conferences and symposia, including the International Ecology Congress, Japan and UK and the International Wetland Congress, Australia. He was bestowed with several awards like the Birbal Sahni Gold Medal by the Indian Botanical Society; Swami Pranawanand Saraswati National Award of UGC for Ecology and Environment, and the Platinum Jubilee Lecture Award of the Indian Science Congress Association.

He delivered his last Presidential address on 15 October 2011 at a national conference in Aligarh. After prolonged illness he passed away on 3 January 2012 at Kanpur. He is survived by two sons and four grandchildren.

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