

## M. Santappa (1923–2017)

With the passing of Prof. Mushi Santappa on 26 February 2017 at the age of 93, we have lost a chemist of distinction and leader in macromolecular sciences in the country. He along with Santi Rangan Palit at the Indian Association for the Cultivation of Science, could be regarded as the creator of the first rigorous research schools for polymer science in India. He went on to practise the discipline with great distinction and further its cause. He trained a generation of coordination and polymer chemists in the country and brought visibility to research in Indian polymer science during the period between 1955 and 1990.

He was born on 2 October 1923 and obtained his BA degree in Chemistry from University of Madras (1943), an M Sc from Banaras Hindu University (1945) and Ph D (1949) from University of London in Organic Chemistry and a second Ph D from University of Manchester in 1951. He worked with M. G. Evans, FRS, a pioneer in photoinduced polymerization of vinyl monomers for his second Ph D. Evans passed away in 1952 and Santappa carried on the legacy in photoinduced polymerization. He returned to India in 1952 and joined as Reader in the University of Madras and became a Professor at the Madurai Extension Centre in 1958 and Head of the Physical Chemistry Department of University of Madras in 1962. He served as Senior Professor during 1966–80. He established one of the first and finest schools in polymer science in India.

Beginning in 1955, he published a series of over 150 papers on kinetics and mechanism of vinyl polymerization and determination of initiation rates and chain transfer constants for a host of initiators and vinyl monomers<sup>1</sup>. During his tenure as the Professor and Head of the Department of Physical Chemistry, University of Madras, he collaborated with a group in the neighbouring institution, Central Leather Research Institute (CLRI), during the early 1960s and pioneered the work on grafting of vinyl monomers onto collagen using various initiating techniques<sup>2</sup>. This technique has found applications in several areas from tanning to dentistry.

His scientific interests were broader than polymer science. He built a vibrant group in the study of coordination com-

pounds and investigated thermodynamic and kinetic properties of a large number of transition metal ions<sup>3</sup>. For his contributions in polymer chemistry, he was awarded the S. S. Bhatnagar prize for chemical sciences in 1967. He brought vigour and vibrancy to research in the University system. During the period between 1952 and 1972, the University of Madras enjoyed an unmatched level of vibrancy in research with people like G. N. Ramachandran, P. M. Mathews, T. S. Sadasivan, T. R. Govindachari, M. Santappa, S. Swaminathan and many more carrying out stimulating research in the university system.



In 1972, Santappa joined CLRI as its Director succeeding the legacy of Y. Nayudamma. He contributed to the development of Indian leather sector at CLRI during one of its most crucial phases. Following the recommendations of the Seetharamaiah committee<sup>4</sup>, export of processed intermediates and raw hides and skins was banned. Suddenly the industry had to absorb technologies and undergo transformation in a short span of time. In the period of transition, CLRI had to participate in an accelerated technological transformation of traditional industry like leather. The transition of the industry was hard. Santappa captained CLRI during the most challenging phase of leather sector. His leadership in CLRI empowered the entire leather sector to multiply value-realization from leather many-fold in spite of multiple challenges. Technology for lubricant formulations from synthetic oils (heavy normal paraffin) based on photo-chlorination

was designed and developed within a period of two years. Products developed then enjoyed a market share of more than 80% of the country. During his tenure at CLRI, annual exports from Indian leather sector grew from Rs 400 crores to Rs 4000 crores in a span of 7 years.

During his period, CLRI expanded its research focus to include synthetic polymers and new man-materials for footwear and other applications. Research on precursors for carbon fibre, composites and plastics was initiated. Expansion and diversification of the core strengths of CLRI were registered during his regime. I have had many opportunities in my professional life to experience the full impact of a thought leader in polymer science and a champion for technology-led growth of the country. He strengthened academy–research–industry partnerships in Indian leather sector. He brought the first ever IUPAC symposium in polymer to Madras (Chennai) and contributed to the global visibility of the work being done in the country.

He served as Vice Chancellor in two Universities namely, S.V. University, Tirupati (1979–1981) and University of Madras (1981–1984). His overall contributions to academic and research activities in the country in general and University sector have been stellar. It was during his tenure as the Vice Chancellor, the University of Madras established the Department of Energy and Department of Polymer Science and Technology. He was also a national professor and member of the University Grants Commission. He published more than 350 papers and guided a total of 59 students for doctoral research. He published an authoritative review on status of polymer research in India, which not only painted the national landscape in the knowledge domain as of 1989, but also gave a direction for further work in the field<sup>5</sup>. He championed for planned development of polymer science in the country.

Santappa was a leader in Indian science. He scouted talent and invested into them in shaping the research base of the institutions he served. He was the Director CLRI, when I was appointed as a scientist within 4 hours from the time of my landing at the Airport of then Madras, within 36 h of completion of my Ph D

viva voce examination at the University of Leeds, UK. There were many others whose careers in science took shape under his tutelage. The careers of many scientists and academicians blossomed and they occupied positions of Vice Chancellors, Directors of National Laboratories, etc. in later times. His good natured and kindred spirit was both transparent and mood elevating for the young scientists and fashioned them into future leaders. He belonged to a generation of Indian scientists for whom life with science was both a pleasure and means of purposeful living.

He won several awards and recognitions as a scientist and science manager. He was elected Fellow of all the major science academies and was the chairman of choice for those programmes of the Government where the social contract of science was the focus. His human qualities earned for him a place in the hearts of people who came into contact with him. He was fearless when it came to decision-making in matters of importance

to science and the institutions that he worked for.

He is survived by his wife Dhanalakshmi Devi, three daughters, two sons and their respective nuclear families. He lived a full and contented life; loved by his family, friends, students, colleagues and stakeholders of institutions led by him and any one coming into contact with him. We have lost a good human being in whom the expertise in polymer science and technology, leather science and inorganic and physical chemistry resided with ease. He contributed in no small measure to furtherance of frontiers of science and technology in general and polymer science and technology in particular. The Society of Polymer Science, India has named an award after Santappa as a tribute to his contributions to the knowledge domain. He was a role model for generations of polymer chemists and those shaping future of science and technology landscape in low resource setting. His memories would be cherished by those who knew him and came to know

of him for commitment to excellence and relevance that he stood for.

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3. Ramamurthi, S. and Santappa, M., *J. Sci. Ind. Res.*, 1972, **31**, 69; ISSN 0022-4456; Nair, M. S., Venkatachalapathi, K. and Santappa, M., *J. Chem. Soc.*, 1982, **3**, 555–559; Rajendra Prasad, D., Ramasami, T., Ramaswamy, D. and Santappa, M., *Inorg. Chem.*, 1982, **21**(3), 850–854.
4. Report of Seetharamaiah Committee submitted to the Ministry of Commerce, 1972.
5. Santappa, M., *State of the Art in Polymer Science and Engineering in India*, T.R. Publications, Madras, 1996.

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