

In Memoriam: Ranga Komanduri

Ranga Komanduri, Regents Professor and A. H. Nelson, Jr. Endowed Chair in Engineering at Oklahoma State University, passed away on September 6, 2011 at his home in Stillwater, Oklahoma. He is survived by his wife Sri, his daughter Sangeetha and son Mukund.



Ranga Komanduri (1942–2011)

Born in India, he studied engineering at the Regional Engineering College at Warangal, affiliated with Osmania University in Hyderabad, India, and received a bachelor's degree in mechanical engineering in 1964 and a Master's degree in heat power engineering in 1966. He then pursued his doctoral studies at Monash University in Australia under the guidance of R. H. Brown where the subject of his dissertation was the mechanics of chip segmentation in machining. After receiving his doctorate in 1972, he began his career as a research engineer and assistant professor in the mechanical engineering department at Carnegie Mellon University. It was at CMU that he began his collaborations and developed his lifelong friendship with Professor Milton Shaw. Their collaboration led to seminal publications in *Nature* and *Philosophical Magazine* on the wear of diamond in the grinding of ferrous metals. For his fundamental contributions to understanding metal build-up in grinding with aluminum oxide abrasives, he was awarded the F. W. Taylor Medal of CIRP in 1977. Ranga then moved to the General Electric Corporate Research and Development Laboratory in Schenectady, NY where he performed research on the machining of titanium and on high speed/high productivity machining. At the same time, he also held a position of Adjunct Professor at Rensselaer Polytechnic Institute. Then, during the period from 1986 to 1989, while on a research sabbatical from GE Corporate R and D, Ranga went to the National Science Foundation where he held positions of Program Director in several programs including Materials Engineering and Processing, Tribology and Manufacturing Processes. He also served in NSF's Division of Design, Manufacturing and Computer-Integrated Engineering (DMCE) as a Deputy Division Director and Acting Division Director. In the Fall of 1989, he joined Oklahoma State University and the School of Mechanical and Aerospace Engineering as Professor and MOST Chair in Intelligent Manufacturing where he remained on the faculty for 22 years.

While at OSU, Ranga's technical interests in advanced manufacturing and tribology were broad and diverse. His contributions included work on conventional machining and grinding, high-speed machining and ultraprecision machining. However, they extended beyond this to include studies on low pressure synthesis

of diamond coatings, laser assisted materials processing, molecular dynamics simulations of nanometric cutting, and thermal aspects of various manufacturing processes. His work resulted in over 230 technical publications and 22 patents.

Ranga was a Fellow of the American Society of Mechanical Engineers (ASME) and the Society of Manufacturing Engineers (SME) and an Emeritus Fellow of the International Academy for Production Engineering (CIRP). He was well-recognized for his leadership in the North American Manufacturing Research Institution (NAMRI/SME) as its President in 1992, and as Co-Organizer of NAMRC 21. In addition, he served ASME as Chairman of the Production Engineering Division (now the Manufacturing Division) and as Vice President of the Manufacturing Group from 1989 to 1993. It was under his initiative that the M. Eugene Merchant Manufacturing Medal of ASME/SME was established.

His national and international awards and recognitions were numerous and included ASME's Blackall Machine Tool and Gage Award (1981), Charles Russ Richards Memorial Award (1990) and William T. Ennor Manufacturing Technology Award (2002). In 2004, he also received the SME Albert M. Sargent Progress Award and the OSU Eminent Scholar Award, the highest award given at Oklahoma State University for academic and research excellence. It was particularly fitting that in 2011 he received the M. Eugene Merchant Manufacturing Medal of ASME/SME.

Dr. K, as he was affectionately known by his graduate students, served as a mentor to many young engineers and scientists. His care and compassion for his students and postdocs were well known. Over the years, he enthusiastically served as an unofficial mentor to many junior faculty members world-wide who have now gone on to highly successful careers in academia.

Ranga had a deep respect for history. He would often, with great excitement, discuss the scientific contributions of famous mathematicians and scientists such as Srinivasa Ramanujan or Sir C. V. Raman. One of his favorite accounts was that of the pioneering work of Sir Benjamin Thompson, Count of Rumford, on the nature of the heat generated in machining which played an important role in establishing the laws of the conservation of energy later in 19th century. It was in June of 2011 that Ranga presented the Founder's Lecture at the 39th NAMRC held at Oregon State University entitled "How to Conduct Research—The Rumford Way." Ranga's sense of the importance of history extended to the developments in manufacturing science and engineering. In his classes, he would carefully discuss the importance of the contributions of Merchant, Shaw, Field, Hahn, Thomsen, Chao and Trigger to name a few. It was in the Spring of 1993, to both honor these pioneers and to highlight their significant contributions, that Ranga organized the "Symposium on US Contributions to Machining and Grinding Research of the Twentieth Century" at Oklahoma State, with many of the pioneers of manufacturing research in attendance.

It has been said of Ranga that two of his greatest strengths were the depth of his concern about his students and his colleagues, and the eagerness with which he embraced and sought out new knowledge. This second strength was the genesis of numerous collaborations which endured and prospered during his career. The first was the reason the students, postdocs, and faculty with whom he worked functioned with such harmony and productivity. Ranga's energy, enthusiasm, work ethic, dedication to research and education, and easy smile will be sorely missed.

Don A. Lucca
Oklahoma State University

Shivakumar Raman
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