



C.N.R. Rao to receive 2017 Von Hippel Award for development of novel functional materials

The 2017 Von Hippel Award, the Materials Research Society's (MRS) highest honor, will be presented to Chintamani Nagesa Ramachandra Rao, from the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalor, India. Rao is being recognized "for his immense interdisciplinary contributions to the development of novel functional materials, including magnetic and electronic properties of transition-metal oxides, nanomaterials such as fullerenes, graphene and two-dimensional (2D) inorganic solids, and superconductivity and colossal magnetoresistance in rare-earth cuprates and manganates." Rao will present his award talk at the 2017 MRS Fall Meeting in Boston on Wednesday, November 29, at 6:30 pm, in the Grand Ballroom of the Sheraton Boston Hotel.

When Rao started his independent research efforts in materials chemistry in India, the subject was in its infancy. He investigated phase transformations of TiO_2 and CsCl and also carried out defect calculations. While working on rare-earth oxides, he had to make TbO_2 and PrO_2 , and did so by a simple solution route; this is an early example

of *chimie douce* (soft chemistry). Rao started working on metal oxides by building simple instruments, including a thermobalance and furnaces. In 1987, his group fully characterized the first N_2 superconductor ($\text{YBa}_2\text{Cu}_3\text{O}_7$) by using a home-built AC susceptometer.

Rao has a great interest in oxides because of their variety of phenomena. He has worked on various aspects of transition-metal oxides, including metal-insulator transitions, colossal magnetoresistance, and multiferroics. In the last two decades, he has been involved in the synthesis, characterization, and properties measurements of various nanomaterials, specifically 2D nanosheets (graphene and its inorganic analogues). As part of his interest in designing new materials, Rao has covalently cross-linked 2D sheets and other nanomaterials to derive new materials with novel properties. He has also been working on water splitting and reduction of CO_2 , besides using aliovalent anion substitution to generate novel inorganics (Zn_2NF in place of ZnO). Working on a variety of interesting problems over the years has given Rao great happiness and satisfaction.

Rao is the Linus Pauling Research Professor and Honorary President of the Jawaharlal Nehru Centre for Advanced Scientific Research. He also currently serves as the head of the Scientific Advisory Council to the prime minister of India. He is the director of the International Centre for Materials Science and serves on the Science Initiative Group. Rao is a member of 20 societies, including The Royal Society and the National Academy of Sciences, and holds more than six fellowships. He received the Hughes (2000) and Royal (2009) Medals from The Royal Society, the Dan David Prize for materials research from Tel Aviv University in 2005 (shared with George Whitesides and Robert Langer), and the August-Wilhelm-von-Hoffmann Medal from the German Chemical Society in 2010. The Government of India selected him for Bharat Ratna, the highest civilian honor in India, in 2013. He has authored approximately 1500 research papers and 45 scientific books.

Named after Arthur R. von Hippel (1898–2003), the award recognizes brilliance and originality of intellect, combined with vision that transcends the boundaries of conventional scientific disciplines. The MRS Von Hippel Award includes a \$10,000 cash prize, honorary lifetime membership in MRS, and a trophy. The award recognizes the qualities most prized by materials scientists and engineers—brilliance and originality of intellect, combined with a vision that transcends the boundaries of conventional disciplines, as exemplified by the life of Arthur von Hippel (www.mrs.org/vonhippel).

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