C. N.R Rao and his contributions

March 11, 2021
Former Prime Minister H D Deve Gowda released the biography of 'Bharat Ratna' Prof. C.N.R. Rao written in Hindi by renowned Journalist and Author Dr. Arvind Yadav in Bengaluru.The biography contains many incidents from the life of Prof. Rao which are not there in the public domain.

In news: Former PM Deve Gowda releases biography of Prof C N R Rao written by Arvind Yadav
Placing it in syllabus: Science & Technology
Dimensions:

- Prof. C. N. R Rao
- Biographical Details
- His Contributions and their importance
- Awards and Recognitions

Content:

Prof. C. N. R Rao:

- Chintamani Nagesa Ramachandra Rao, also known as C. N. R. Rao, is an Indian chemist who has worked mainly in solid-state and structural chemistry.
- He is described as a scientist who had won all possible awards in his field except the Nobel Prize.

Biographical Details:

- Prof. Rao completed BSc from Mysore University at age seventeen, and MSc from Banaras Hindu University at age nineteen.
- He earned a PhD from Purdue University at age twenty-four. He was the youngest lecturer when he joined the

Indian Institute of Science in 1959.

- After a transfer to Indian Institute of Technology Kanpur, he returned to IISc, eventually becoming its Director from 1984 to 1994.
- He was Chair of the Scientific Advisory Council to the Prime Minister of India during 1985 to 1989 and 2005 to 2014.
- He founded and works in Jawaharlal Nehru Centre for Advanced Scientific Research and International Centre for Materials Science.

His Contributions and their importance:

- Prof. Rao is one of the world's foremost solid state and materials chemists. He has contributed to the development of the field over five decades.
- His work on transition metal oxides has led to basic understanding of novel phenomena and the relationship between materials properties and the structural chemistry of these materials.
- Rao was one of the earliest to synthesise two-dimensional oxide materials such as La2CuO4.
- He was one the first to synthesise **123 cuprate, the first liquid nitrogen-temperature superconductor** in 1987.
- He was also the first to synthesize **Y junction carbon nanotubes** in the mid-1990s.
- His work has led to a systematic study of compositionally controlled metal-insulator transitions.
- Such studies have had a profound impact in application fields such as colossal magneto resistance and high temperature superconductivity.
- Oxide semiconductors have unusual promise.
- He has made immense contributions to nanomaterials over the last two decades, besides his work on hybrid materials.

Awards and Recognitions

- Prof Rao has honorary Doctorates from 71 Universities around the world.
- Prof. Rao has received most important scientific awards and honours including the Marlow Medal, Shanti Swarup Bhatnagar Prize for Science and Technology, Hughes Medal, India Science Award, Dan David Prize, and Royal Medal.
- He also received **Padma Shri and Padma Vibhushan** from the Government of India.
- In 2014, the Government of India presented him with **Bharat Ratna,** the highest civilian award in India, making him the third scientist after C.V. Raman and A. P. J. Abdul Kalam to receive the award.

Notable Awards include:

International Awards

- MARLOW MEDAL for outstanding contributions to Physical Chemistry, Faraday Society, England (1967).
- CENTENNIAL FOREIGN FELLOWSHIP of the American Chemical Society (1976).
- THE ROYAL SOCIETY OF CHEMISTRY (LONDON) MEDAL for outstanding contributions to Solid State Chemistry (1981).
- HEVROVSKY GOLD MEDAL, Czechoslovak Academy of Sciences (1989).
- ORDER OF THE RISING SUN, GOLD AND SILVER STAR by the Emperor of Japan (2015).
- THE HIGHEST AWARD FOR MATERIALS RESEARCH, THE VON HIPPEL AWARD BY THE MATERIALS RESEARCH SOCIETY, IN 2017.

National Awards

- BHATNAGAR PRIZE in Chemical Sciences, Council of Scientific and Industrial Research, India (1968).
- PADMA SHRI, National honour bestowed by the President of

India (1974).
- S.N. BOSE MEDAL for Physical Sciences, Indian National Science Academy (1980).
- PADMA VIBHUSHAN, National honour bestowed by the President of India (1985).
- MEGHNAD SAHA MEDAL, Indian National Science Academy (1990).
- GOLDEN JUBILEE PRIZE in Physical Sciences, Council of Scientific & Industrial Research, India (1991).
- KARNATAKA RATNA, Highest honour of the State of Karnataka (2001).
- INDIA SCIENCE AWARD (2004), First recipient of the highest scientific recognition of the Government of India.
- DHIRUBHAI AMBANI LIFE-TIME ACHIEVEMENT AWARD FOR INNOVATION (2011).
- BHARAT RATNA (Jewel of India), highest civilian award of India (2014).

Mould your thought: Write a short note on the achievements of Prof CNR Rao.***Approach to the answer:***

- Introduction
- Write about Prof CNR Rao
- Discuss his scientific Achievements and their importance
- Mention the awards and recognition
- Conclusion