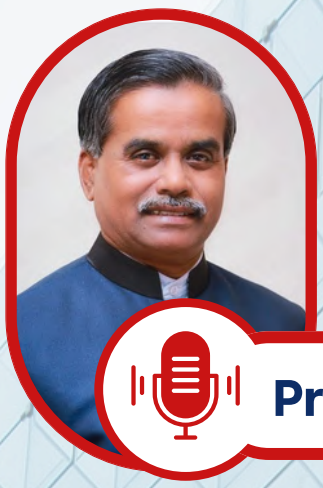
The Indian Institute of Metals
Metallurgy Materials Engineering

IIM Kalpakkam Chapter

cordially invite you to

IIM National Metallurgists' Day Special Lecture



Prof. U. KAMACHI MUDALI

Vice Chancellor
Homi Bhabha National Institute, Mumbai
Department of Atomic Energy

Relevance of Critical Minerals and Materials Towards Indian Nuclear Power Programme for Viksit Bharat 2047

Sarabhai Auditorium
IGCAR Kalpakkam

26 February, 2026
15:15 hrs

Google Meet link

IIM National Metallurgists' Day Special Lecture

Sarabhai Auditorium, Homi Bhabha Building, IGCAR

26 February 2026 | 15:15 hrs

WELCOME ADDRESS

Dr. Anish Kumar
Director, MMG & MSG, IGCAR, Kalpakkam

PRESIDENTIAL ADDRESS

Shri. Sreekumar Pillai
Director, IGCAR, Kalpakkam

INTRODUCING THE SPEAKER

Dr. V. Karthik
Chairman, IIM Kalpakkam

IIM NATIONAL METALLURGISTS' DAY SPECIAL LECTURE

Prof. U. KAMACHI MUDALI
Vice Chancellor
Homi Bhabha National Institute, DAE
Anushaktinagar, Mumbai

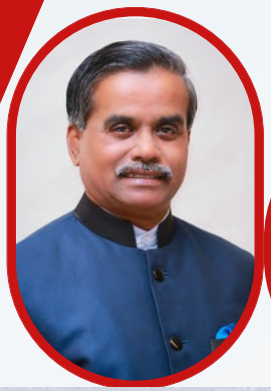
Relevance of Critical Minerals and Materials Towards Indian Nuclear Power Programme for Viksit Bharat 2047

VOTE OF THANKS

Dr Dipti Samantaray
Secretary, IIM Kalpakkam

Tea will be served at 15:00 hrs in the foyer

IIM National Metallurgists' Day Special Lecture



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Relevance of Critical Minerals and Materials Towards Indian Nuclear Power Programme for Viksit Bharat 2047

Abstract

Critical minerals and materials are those essential for the development of technologies, economy and security of a nation with a risk that its supply chains could be disrupted due to various reasons. These critical materials keep change depending on the nation's priorities and developments. Recently Government of India has released a list of 30 critical minerals, which are crucial for its economic growth and development across various industrial and strategic sectors, indicating the need to mitigate supply chain disruptions that could affect its access to these critical mineral resources.

Indian nuclear power programme is making significant developments in the recent past towards enhancing the supply of power to the national grid from the current 8,880 MW today which is about 2-3%. It is proposed that by 2030-31 the nuclear power produced would be around 22.4 GW and by 2047 it should be 100 GW. To meet the energy demand at the fastest possible pace Government of India has provided a fund of 20,000 crore INR and recently passed SHANTI Bill in the parliament (Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India) to permit private sector participation in building and operating nuclear power plants. These important steps will support the 100 GW nuclear capacity target by 2047 and strengthening regulatory safety.

In this presentation, the author highlights the emerging scenario of critical minerals and materials in India and challenges and opportunities towards industrial development, particularly in the nuclear power sector. The roadmap to safeguard the critical minerals and materials for the future development and looking at the opportunities to mitigate the demand-supply scenario through innovative approaches for the Indian Nuclear Power programme is discussed.

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IIM National Metallurgists' Day Special Lecture

Prof. U. KAMACHI MUDALI
Vice Chancellor
Homi Bhabha National Institute, Mumbai, DAE

Profile

Prof. U. Kamachi Mudali is currently the Vice Chancellor of Homi Bhabha National Institute (HBNI), Department of Atomic Energy (DAE), Mumbai. He was earlier Vice Chancellor of VIT Bhopal University (2021-23); Honorary Professor of Practice, IIT Madras (2021-22); and, Chairman & Chief Executive of Heavy Water Board (HWB), Mumbai, a flagship industrial unit of DAE, during 2017-2020. As an accomplished team leader, he has displayed excellent leadership at HWB for the production of strategic heavy water and specialty materials by managing seven plants located at different parts of country. He was at the Indira Gandhi Centre for Atomic Research, DAE, Kalpakkam during 1984-2017 and was finally the Director of Materials Chemistry & Metal Fuel Cycle Group. Prof. Mudali is a Distinguished Alumnus of both IIT Bombay & PSG College of Technology, Coimbatore, and Distinguished Professor of Eminence of PSG Institute of Advanced Studies, Coimbatore.

Dr. Mudali is an accomplished team leader and internationally renowned professional among the Metallurgical and Corrosion community in Academia, Research & Industry domains. He has made outstanding contributions in the field of Advanced Materials and Coatings; Surface Engineering and Modification; Corrosion Science, Technology and Engineering, with 478 journal publications, 25 edited books, 5 patents, 347 honour lectures to his credit. He has 15,150 citations with a h-index of 59 and i-10 index of 320. Successful collaboration of him with national and international academic and R&D institutions resulted in 21 collaboration projects, and supporting 162 B.E/B.Tech/ M.E/ M.Tech/M.Phil/Ph.D students from various institutions in India and abroad.

Dr. Mudali is recognized in the World's Top 2% scientists from India in Materials field since 2021 as per the report of Stanford University, USA. Dr. Mudali is a Fellow of 13 academic societies including 5 from abroad: The World Academy of Sciences, Italy; NACE International & ASM International USA; Asia Pacific Academy of Materials, China; International Federation of Heat Treatment & Surface Engineering, Switzerland. NACE International, USA honoured him with Frank Newman Speller Award, the highest recognition in Corrosion Engineering, and first person to get it from India. He is Honorary Fellow of Electrochemical Society of India & Indian Society of Analytical Scientists; Distinguished Fellow of Indian Institute of Metals (IIM), Kolkata.

Dr. Mudali has been decorated with many distinguished recognitions including: Lifetime Achievement Award of Ministry of Steel, Govt. of India, National Corrosion Council of India, Karaikudi; Electrochemical Society of India, Bengaluru & Rotary District 3234, Chennai; Homi Bhabha Science and Technology Award of DAE, Mumbai; National Metallurgists Day Award from Ministry of Steel, Govt. of India & IIM; GD Birla Gold Medal & Platinum Medal from the IIM, Kolkata; Indian Nuclear Society Gold Medal, SMC Gold Medal and CRS Gold Medal; DAE Group Achievement Award as Leader & Member (5 times); Best Scientist Award from Tamil Nadu State Council for Science & Technology, Madras; MASCOT National Award from Electrochemical Society of India, Bengaluru; ; ONGC Corrosion Awareness Award & 15th NIGIS Meritorious Contribution Award from NACE India Section; Meritorious Award in Corrosion from NCCI, Karaikudi; VASVIK Award from VASVIK Foundation, Mumbai; Distinguished Faculty Award from HBNI; AICTE-INAE Distinguished Visiting Professor of INAE, Delhi.

Dr. Mudali was Visiting Scientist and widely travelled in USA, Germany, Russia, France, UK, Japan, Malaysia, Israel, Bulgaria, Canada, and Singapore. Dr. Mudali has provided leadership and expertise to many national committees in academia, R&D, industry and Government of India including: Chairman of Expert Advisory Committee of ONGC Energy Centre, New Delhi; Advisory Committee of DAE - ICT Centre, ICT Mumbai; Committee on "Strengthening Recycling of E-waste", NITI Aayog, New Delhi; Expert Committee for Minor Specialization in Nuclear Energy by AICTE, New Delhi; Corrosion Protection & Finishes Sectional Committee, MTD 24, BIS, New Delhi; CII Corrosion Management Committee & Division, Chandigarh & Research Advisory Board of PSG Institute of Advanced Studies, Coimbatore. He was Governing Council Member of Indian National Academy of Engineering, President of Indian Institute of Metals, Electrochemical Society of India; and was Chairman of East Asia Pacific Area & Indian Section of NACE International, USA; ASM International, Chennai Chapter; India Area of AMPP, USA; and, Indian Institute of Chemical Engineers-MRC, Mumbai.