Tenth Lecture of the

PROF. E.G. RAMACHANDRAN Distinguished Lecture Series

7th April 2022; 1700 to 1800 IST

Qualification Pathways for Additively Manufactured Metallic Components - Basic Research to Deployment

Abstract: Additive manufacturing enables the design and production of structural metallic components with complex geometries. Recent work has shown that, in addition to complex geometries, site-specific microstructures can be achieved through careful control of processing conditions at every layer. The interactions between boundary conditions imposed by component geometry wide variations of thermal signatures are brought about by the mode of energy delivery and composition of the alloys. These phenomena are studied using computer modeling, in-situ monitoring, and ex-situ characterization tools. This talk will review case studies with reference to Ni-based alloys and the importance of thermal gradients, liquid-solid interface velocity and thermo-mechanical signatures.

About Prof. E.G. Ramachandran:
Prof. E.G. Ramachandran was born in the year 1925. He obtained his Ph.D. in 1947 (at the age of 22) from the University of Sheffield. After his doctorate, he had served as a faculty member in Dept. of Metallurgy, IISc, Bangalore for 9 years, and as Assistant Director at NML, Jamshedpur for 5 years; he moved to IIT Madras in 1961 and superannuated in 1985. As the first Professor as well as the first Head, he shaped the Dept. of Metallurgical Engineering at IIT Madras, over three decades, as a prominent place for teaching and research in Metallurgy. His academic excellence is evident from his numerous publications, including those in NATURE in the early 60s. As a teacher, he is the "Numero Uno" and inspired generations of metallurgists. His students are the torchbearers for his teaching excellence. He was instrumental in establishing the industrial metallurgy division in the Indian Institute of Metals and became its President in 1980.

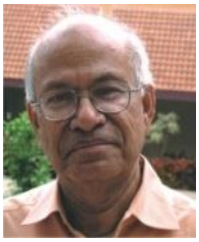
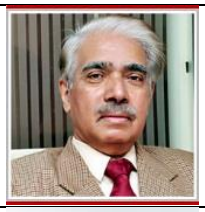
Speaker:
Prof. Sudarsanam Suresh Babu
The University of Tennessee, USA

About the Speaker:
Prof. S. Suresh Babu obtained his bachelor's degree in metallurgical engineering from PSG College of Technology and master's degree in industrial welding metallurgy - materials joining from IIT Madras. He obtained his PhD from University of Cambridge, UK in 1992. Later, Suresh held various research appointments with IMR (Japan), ORNL, UTK and Penn State and transitioned to a R&D staff at ORNL. From 2005 to 2007, Suresh served as technology leader at the EWI, Columbus, Ohio and became a Professor at The Ohio State University. In 2013, Suresh was appointed as UT/ORNL Governor's chair at the University of Tennessee, Knoxville, TN.

Online Webinar Link:
https://iitmadras.webex.com/iitmadras/j.php?MTID=mf3f720717d88f9149821af17c12ed6d5
Password: EGRL (3475 for phones)

Organized by Department of Metallurgical and Materials Engineering, IIT Madras & Indian Institute of Metals Chennai Chapter

Prof. E.G. Ramachandran Distinguished Lecture Series

	Speaker	Title	Date	
1.	Prof. S. Ranganathan *IISc Bangalore*	Imaging Molecules and Materials across Time and Space	17.04.2013	
2.	Sri B. Muthuraman *Tata Steel* *(formerly with)*	Institutional Transformation	05.05.2014	
3.	Prof. Dipankar Banerjee *IISc Bangalore*	Materials in Flight	08.05.2015	
4.	Padmashri Dr. C.G. Krishnadas Nair *HAL Bangalore* *(formerly with)*	Indian Aircraft Industry – Networking with R&D and Academic Institutions for Greater Self-Reliance in Materials and Process	03.05.2016	
5.	Prof. O. Prabhakar *IIT Madras* *(formerly with)*	A Journey in Metallurgy	27.06.2017	
6.	Prof. K.A. Padmanabhan *IIT Madras* *(formerly with)*	Integrated Computational Materials Engineering (ICME) for the Steel Industry	07.04.2018	
7.	Prof. G. Sundararajan *ARCI &* *IIT Madras* *(formerly with)*	The Plastic Deformation Behaviour of Nano Oxide Dispersion Strengthened Fe-18 Cr Steel at Elevated Temperatures	07.04.2019	

8.	Dr. G. Madhusudan Reddy *DMRL Hyderabad*	Innovative Approaches in Joining of Advanced Materials	11.07.2020	
9.	Prof. K. Narasimhan *IIT Bombay*	A Novel Approach for Process and Tool Design During Manufacturing of Industrial Sheet Metal Components	07.04.2021	
10.	Prof. Sudarsanam Suresh Babu *The University of Tennessee, USA*	Qualification Pathways for Additively Manufactured Metallic Components - Basic Research to Deployment	07.04.2022