

**Kalpakkam & Chennai Chapters of  
The Indian Institute of Metals  
cordially invites you to**



05.10.1940 - 31.08.2008

# **Dr. Placid Rodriguez Memorial Lecture - 2021**

by

## **Dr. B. VENKATRAMAN**

Distinguished Scientist & Director  
Indira Gandhi Centre for Atomic Research  
Kalpakkam

on

# **Role of Non-Destructive Testing in Materials Evaluation & Characterisation**

## **Hybrid Webinar**

**05 October, 2021 (Tuesday) at 15:00 hrs**

**Venue: Sarabhai Auditorium, IGCAR Kalpakkam**

**Webex details: Meeting ID: 2514 659 1831**

**Password: PRML2021**



# Dr. Placid Rodriguez Memorial Lecture - 2021



**Organised by  
Kalpakkam & Chennai Chapters of  
The Indian Institute of Metals**



## About PRML

To perpetuate the strong scientific spirit and the value system which Dr. Placid Rodriguez practiced during his life time, “Dr. Placid Rodriguez Memorial Lecture” was instituted by The Indian Institute of Metals (IIM), in 2009, under the pioneering leadership of [Late] Dr. Baldev Raj, then Director, NIAS, Bangalore and former President, IIM. Since then, this event is being organised annually by the Kalpakkam and Chennai chapters of The IIM.

Dr. Placid Rodriguez, born in Quilon, Kerala on October 5, 1940, obtained his B.Sc. from Kerala University, B.E.(Metallurgy) from the Indian Institute of Science, Bangalore, M.S. from University of Tennessee, USA, Ph.D. from IISc and MBA from IGNOU. He joined the Department of Atomic Energy in 1960 and moved to The Indira Gandhi Centre for Atomic Research, (then known as Reactor Research Centre) in 1974. He established one of the leading metallurgical research laboratory at Kalpakkam. He was Director of IGCAR, Kalpakkam from 1992 to 2000. Subsequently he served as the Chairman, Recruitment and Assessment Centre, DRDO, Delhi and Raja Ramanna Fellow and AICTE-INAE Distinguished Visiting Professor at IIT, Madras.

Dr. Placid Rodriguez had an exemplary career of four decades, leading research in metallurgy, materials development for fast reactor programme of our country, shaping up human resources in defence programme and academic institutions. Dr. Placid Rodriguez has been a member of Editorial Board of several reputed international journals in Metallurgy and Materials Science and was the Chief Editor of Transactions of The Indian Institute of Metals. Dr. Placid Rodriguez served as the President of many leading national, professional institutes. Dr. Placid Rodriguez has been a recipient of many national and international awards. He has been a Fellow of many prestigious Academies of our country.

Dr. Placid Rodriguez passed away in Chennai on 31st August, 2008.

### Previous Placid Rodriguez Memorial Lectures have been delivered by

- **Prof. Atul Chokshi**, Indian Institute of Science, Bangalore (2009)
- **Prof. Seeram Ramakrishna**, National University of Singapore (2010)
- **Dr. Srikanth**, Director, NML, Jamshedpur.(2011)
- **Prof. B.S. Murty**, IIT Madras, Chennai (2012)
- **Prof. Indranil Manna**, Director, IIT Kanpur (2013)
- **Dr. Amol A. Gokhale**, Director, DMRL Hyderabad (2014)
- **Dr. G. K. Dey**, Associate Director, Materials Group, BARC, Mumbai (2015)
- **Dr. A.K. Bhaduri**, Director, IGCAR, Kalpakkam (2016)
- **Dr. U. Kamachi Mudali**, Chairman & Chief Executive, HWB, Mumbai (2017)
- **Dr. Samir V. Kamat**, Director General, (Naval Systems) DRDO(2018)
- **Shri. S. Somnath**, Director, VSSC, ISRO, Trivandrum (2019)
- **Dr. Surya R. Kalidindi**, Georgia Institute of Technology, Atlanta, USA (2020)

## Curriculum Vitae



### **Dr. B. Venkatraman**

*Distinguished Scientist & Director IGCAR*

*Sr. Professor HBNI*

*President ISNT*

**Dr. Balasubramanian Venkatraman** post graduated in Physics from St. Joseph's College (Autonomous), Tiruchirapalli, Madras University in 1983. He then joined the 27th Batch of BARC Training School at Mumbai and on successful completion, joined the Radio Metallurgy Laboratory, Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam in 1984. With a research career spanning 37 years, he has combined the physics of Non Destructive Evaluation (NDE) with engineering and technology and consistently provided excellent R & D support and robust NDE based solutions to technologically challenging problems in the nuclear and other strategic and core industries. His significant milestone activities for nuclear industry include – Procedures for X-ray and neutron radiography of highly irradiated fuel pins, comprehensive NDE for evaluation of tube to tube sheet welds of PFBR steam generator and radiometric testing of shielding structures. He has been primarily responsible for establishing the conventional and digital X-ray, neutron radiography and thermal imaging facilities at the Indira Gandhi Centre for Atomic Research, Kalpakkam. He was part of the DAE team to review the QA aspects of KKNPP-1&2. For the strategic industries, the significant activities in which he had been associated include standardizing multi NDE techniques for evaluation and life extension of tail rotor blades of Mi-8 and Mi-17 defence helicopters, training of over 100 IAF personnel in NDE and review of QA, welding procedures and NDE methods during fabrication of rocket motor casing using DMR 1700 alloy. His expertise had also been utilised by Indian Space Research Organisation (ISRO) for solving challenging NDE problems pertaining to the initial PSLV and GSLV, qualification of Ti-6Al-4V alloy satellite gas bottles, and earth sensors of INSAT. He developed the Neutron radiography procedure for examination of pyro devices using KAMINI reactor. As a physicist, he has focused on applied R & D in the area of NDE for materials evaluation and characterisation related to radiation sciences and technology and infrared thermography. He has pioneered the application of IR thermography for deformation studies, online weld monitoring and early detection of breast cancer.

One of the unique contribution of **Dr. Venkatraman's** science and technology knowledge base has been the successful application of NDE methodologies and techniques for art, archeology and national heritage. He had been instrumental in the development and application of conventional and advanced NDE methods based on radiography and X-ray fluorescence for the characterisation and fingerprinting of ancient South Indian Bronzes. **Dr. Venkatraman** also made an in depth study into the ancient method of lost wax process used for casting such bronzes. The expertise and experience thus gained was successfully applied during the fabrication of the tallest Nataraja in the world which was gifted by DAE to CERN in June 2004. Recently he was part of the investigation team in Tamil Nadu for identification of fake icons, had also been invited by Mysore Palace authorities to investigate the gold leaf paintings and by ASI for evaluation of the the Kalasams of Brihadeeswara Temple, Thanjavur.

**Dr. Venkatraman** is the recipient of the DAE Homi Bhabha Science and Technology Award 2007 for Individual Excellence, Group Achievement Awards of DAE during 2008, 2009, 2010, 2011, 2012, 2015, 2016 INS Gold Medal 2005, ISNT-NDT Man of the Year Award (R & D) 2001, D & H Schereon Award, 1993, IIW Sharp Tools Award 2011, ISNT international recognition 2013, and has won more than 10 best paper awards. He has been invited to deliver many keynote/plenary/invited talks in national and international seminars including Asian Pacific Conference on NDT. He was a visiting scientist at Fraunhofer Indtitute of NDT Saarbrucken during 2006-2007.

He is Honorary Fellow of the Indian Society for Non-Destructive Testing, Fellow, Chennai Academy of Sciences, Executive Board Member, Asian Pacific Federation of NDT, Past President, 14th Asian Pacific Conference on NDT, Past Chairman, Quantitative Infrared Thermography Asian Subcommittee, President, Indian Society for Non-Destructive Testing, President, Indian Association for Radiation Protection, President American Society for NDT(ASNT) – India Section. He has over 300 publications in Journals and Conferences including two articles in Encyclopedia of Material Science, two monographs, three books and is the series editor along with Dr. Baldev Raj for the NDT handbooks published by NCB-ISNT.

He is presently Distinguished Scientist and Director, Indira Gandhi Centre for Atomic Research, Kalpakkam, Director, General Services Organisation, Kalpakkam and Chairman and Managing Director (In charge), Bharatiya Vidyut Nigam Limited (BHAVINI). He is also a Senior Professor in HBNI and has guided 5 students for their PhD and is presently guiding 3 students.



# Dr. Placid Rodriguez Memorial Lecture - 2021

## PROGRAMME

**DATE** 05 October 2021 (Tuesday)

**TIME** 15:00 hrs

**VENUE** Sarabhai Auditorium IGCAR

**WEBEX LINK** <https://iimkalpakkam.webex.com/iimkalpakkam/onstage/g.php?MTID=e994569993d86278640f2b531093e55a8>

### WELCOME ADDRESS

**Dr. M. Vasudevan**

Chairman, IIM Kalpakkam  
Head, MDTD, MMG IGCAR

### ABOUT DR. PLACID RODRIGUEZ MEMORIAL LECTURE SERIES

**Dr. M. Kamaraj**

Member, PRML Committee  
Dept. of Metallurgical & Materials Engg.,  
IIT Madras

### CHIEF GUEST ADDRESS

**Dr. Arun Kumar Bhaduri**

DAE Homi Bhabha Chair Professor  
Former Distinguished Scientist & Director  
IGCAR, Kalpakkam

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**Dr. Shaju K. Albert**

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Former Director, MMG & MSG  
IGCAR, Kalpakkam

### INTRODUCING PRML SPEAKER

**Dr. T. Sundararajan**

Chairman, IIM Chennai Chapter  
Wheels India Ltd, Chennai

### DR. PLACID RODRIGUEZ MEMORIAL LECTURE BY

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## **Role of Non-Destructive Testing in Materials Evaluation & Characterisation**

### VOTE OF THANKS

**Dr. Rani P. George**

Convener PRML 2021  
Former Head SMCS, CSTD IGCAR

**PRML Committee**