LS-SERIES'21

Lecture **S**eries on **Sc**ience & **E**ngineering **R**esearch leading to **I**nnovation, **E**ntrepreneurship and **S**cholarship

LS-SERIES

- Process Simulation & Modelling
- IoT & Sensor Networks
- AI & ML, Big data analytics
- Energy & Environment
- Innovation Management & Startups

CSIR - IICT *Touching Lives*

IEEE HYDERABAD SECTION
PES/IAS/PELS JOINT CHAPTER

IEEE GUNTUR SUB SECTION

IEEE ANATHAPURAMU SUB SECTION

Azadi Ka Amrit Mahotsav

TOPIC

A Future Hydrogen Economy - Reality or a PipeDream?

22nd Oct'21, 15:30 hrs

Dr. S. Srikanth

Formerly Outstanding Scientist CSIR and Director CSIR-NML Jamshedpur

Dr. S Srikanth obtained his B.Sc (Engg) from REC Rourkela, M.E. (1st Rank) & Ph.D in Metallurgy from IISc Bangalore, and Post Doc from McMaster University, Canada. **Dr. Srikanth joined CSIR-National Metallurgical Laboratory (CSIR-NML) Jamshedpur in 1990**, and worked in the area of process development for extraction of non-ferrous metals and thermodynamic modelling. His work on Oxygen potential measurement in Mattes and Non-equilibrium solidification studies, attracted the attention of The University of Leeds, and Czech Academy of Sciences, Prague. He shared his expertise with these universities as a Visiting Scientist. To keep tune with industrial R&D, Dr. Srikanth was on sabbatical at GE Global R&D during 2009-2010, and worked on Modelling of high temperature corrosion.

In 2010 Dr. Srikanth became the Director of CSIR-NML. After the completion of his 6-year tenure at CSIR-NML, he moved over to CSIR, New Delhi, and provided leadership in Research, Planning & Business Development for over two years.

Dr. Srikanth received several awards like Vasavik Award (2013), Distinguished Engineer IIE (2011), MRSI Medal (2006), Metallurgist of the year award (2005), CSIR Young Scientist award (1992), etc.

He is Fellow of major academies like INAE, National Academy of Sciences, etc.

VIRTUAL LINK

https://www.facebook.com/iictindia/live
https://www.youtube.com/csiriicthyderabad/live
https://www1.csiriict.in/lsseries2021

LS-SERIES'21

Lecture **S**eries on **Sc**ience & **E**ngineering **R**esearch leading to **I**nnovation, **E**ntrepreneurship and **S**cholarship

- Process Simulation & Modelling
- IoT & Sensor Networks
- AI & ML, Big data analytics
- Energy & Environment
- Innovation Management & Startups

Abstract:

The world adopted The Paris Agreement in 2015, which aims to address the threat of climate change by keeping a global temperature rise for this century well below 2°C (preferably 1.5° C) above pre-industrial levels. Presently, our planet is 1.1° C warmer than it was in the 1800s. To stay within the agreed Paris Agreement boundaries, the world can only afford 0.4°C to 0.9°C of additional global warming. GHG emissions must drop to 3 - 5% per year to keep temperatures from exceeding 1.5 - 2°C. A major part of the GHG emissions (65%) arises from energy production and use, which puts the energy sector at the core of efforts to combat climate change. Today, 84% of energy use comes from fossil (hydrocarbon) fuels, with 16% derived from renewables. It is projected that 65% of energy use could come from renewables by 2050, in order to meet the climate goals. While everyone agrees with the climate change goals and there is also concurrence on the larger share of renewables to the energy mix, there are differing opinions on the ways to achieve it. Energy efficiency and renewable energy are expected to be the main pillars of this energy transition. However, since the renewable energy is intermittent, transition to a predominantly renewable energy scenario will require large scale energy storage systems. Some groups have advocated a transition to a hydrogen economy to meet these goals.

Hydrogen in its pure form is not available in this planet. It is present as hydrocarbons and water, both essential for the sustainability of this planet. In the proposed hydrogen economy, hydrogen is not an energy source but an energy carrier or a storage medium because of its high gravimetric density. Any energy storage medium has two requirements: firstly store energy (rather than consume more energy in the storage cycle than the energy it stores) and secondly store it efficiently. From the climate change goal viewpoint, these two requirements must be met without any greenhouse gas emissions. The hydrogen economy life cycle in terms of production-storage-transport-use will be critically analysed from these two perspectives and compared with other energy storage technologies. The viability, consequences and implications of a hydrogen economy by 2050 will be presented.

AGENDA 22nd Oct'21

15:30 to 15:35 hrs	**Welcome Address**	**Prof. C. Harinatha Reddy,** Chairman IEEE, PES/IAS/PELS Hyderabad Section Joint Chapter
15:35 to 15:40 hrs	**Opening Remarks**	**Dr. S. Chandrasekhar** Director, CSIR-IICT
15:40 to 15:45 hrs	**Introduction of the Speaker**	**Dr. A. Seshu Kumar** Chief Scientist, CSIR-IICT
15:45 to 16:30 hrs	**Invited Lecture**	**Dr. S. Srikanth**
16:30 to 16:50 hrs	**Interactive Q/A**	Moderator **Ms. Beneyaz Ara Begum** Project Scientist, CSIR-IICT
16:50 to 16:55 hrs	**Concluding Remarks**	**Dr. Satyanarayana V Nandury,** CSIR-IICT
16:55 to 17:00 hrs	**Vote of Thanks**	**Ms. Beneyaz Ara Begum**

CSIR-INDIAN INSTITUTE OF CHEMICAL TECHNOLOGY
Council of Scientific and Industrial Research
Ministry of Science and Technology, Government of India

VIRTUAL LINK

https://www.facebook.com/iictindia/live
https://www.youtube.com/csiriicthyderabad/live
https://www1.csiriict.in/lsseries2021