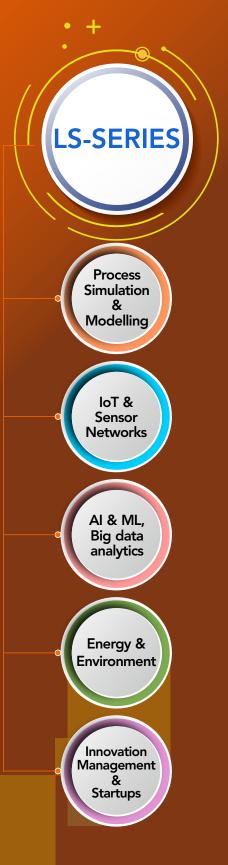
LS-SERIES'21

Lecture Series on Science & Engineering Research leading to Innovation, Entrepreneurship and Scholarship











IEEE



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.

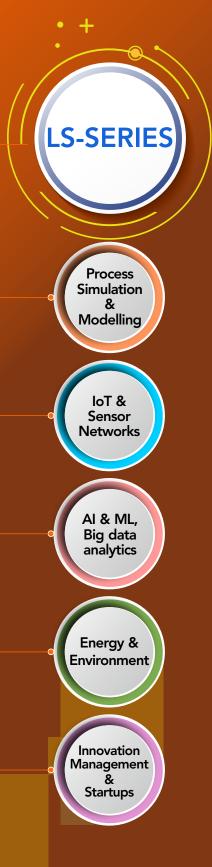
He is Fellow of major academies like INAE, National Academy of Sciences, etc.

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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 comb<mark>at</mark> climate change. Today, 84% of energy use comes from fossil (hydrocarbon) fuels, with 16<mark>%</mark> 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
16:50 to 16:55 hrs 16:55 to 17:00 hrs		Dr. Satyanarayana V Nandury, CSIR-IICT Ms. Beneyaz Ara Begum



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