



# ICEE - 2019



## International Conference on ENERGY AND ENVIRONMENT

4<sup>th</sup>-5<sup>th</sup> January, 2019

**Organized by:**

Department of chemical engineering,  
Vishwakarma Institute of Technology, Pune

In association with:



Savitribai Phule Pune  
University



Indian Institute Of Chemical  
Engineers, PRC

**REPORT**

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# INAUGRAL FUNCTION



**Shri. Bharat Agarwal, Managing Trustee,  
BRACT's Vishwakarma  
Institute of Technology, Pune**

**Prof. (Dr.) Rajesh Jalnekar,**  
Conference Chairman

**Prof. Dr. Manik P. Deosarkar,**  
Conference Vice Chairman

**Dr. G. G. Dongre,**  
Conference Vice Chairman

**Prof. Dr. Satchidanand Satpute,**  
Convener

## Keynote Speaker:

### 1. Dr. Prashant Valluri

School of Engineering, The University of Edinburgh, UK

### 3. Dr. Sandip Bankar

Aalto University School of Chemical Engineering, Finland

## Chief Guest:

### 1. Dr. R. R. Sonde ,

Executive Vice President of Research Technology and Innovation at Thermax Ltd.

# ADDRESSES



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# Dr. Ramakrishna R. Sonde

Chief Guest, ICEE

Executive Vice President of ResearchTechnology and Innovation, Thermax



Dr. R.R Sonde, mentioned the idea of "Rate of advancement of Technology" and its effect on today's world, about how the adaptability of man is changing with changing technology. He believed that reinventing yourself, adapting to the vigorous changes going around the world, working from out of one's comfort zone, plays an important role in shaping one's quality of life. He emphasized on various points such as one's need in developing emotional quotient to cope up with the changes around the world. The need of cross-pollination among all disciplines i.e. Multi-disciplinary approach to problems is the future to solution of various problems. The examples were given of biological system engineering, and how biological systems can shape the world. How other systems can be inspired from biological systems. He later described various inventions which were considered failure at first, but some people with there innovative minds converted that failed idea into a new one. The topic was then shifted to how innovation and innovative ideas changed the world. Few innovative ideas were discussed such as Hydrogen derivation from water and its usage as fuel which may help reduce carbon emission. He stressed on collaborative research to make new developments in various fields of optical design, increased speed of communication. Then he emphasized on how not only quantity of energy is important, its quality, which is called as Exergy is most important and its application on power exchange devices were discussed and how thermodynamics is very important branch to deal with. Then the prosthetic foot made in India is nearly 4<sup>th</sup> order magnitude less which implies how innovation makes the difference. He also believed how India as a country plays an important role in the world for bringing innovation to the world.

# KEYNOTE SPEAKERS

## DAY 1



# Prof. Dr. Prashant Valluri

Professor, School of Engineering, The University of Edinburgh,



Dr. Prashant Valluri of University of Edinburgh's Institute for Multiscale Thermofluids (UoE) is the UoE Head of the Graduate School, JSPS Invited Fellow at Kyushu University and the Chair of the UK Multiphase Flows and Transport Phenomena Special Interest Group (UK Fluids Network). He has completed his Bachelor of Technology from Dr. Babasaheb Ambedkar Technological University, Lonere, India and PhD in Chemical Engineering from Imperial College London, London, UK. He was invited as keynote speaker in International Conference on Energy and Environment 2019 organised by B.R.A.C.T's Vishwakarma Institute of Technology, Pune, Savitribai Phule Pune University (SPPU) and Indian Institute of Chemical Engineers (IICChE) Pune Regional Chapter.

Dr. Prashant Valluri is one of the world leaders in simultaneously applying direct numerical simulations and stability theory to two-phase flow system. He presented his work on evaporation of liquid mixtures, different patterns of evaporation, the mathematical models and the solver (TPLS 3.0) he has co-developed; he also presented his work on evaporation of single and multi-component liquid droplets and also showed the microscopic and infrared observations of evaporation of multi-component liquid droplets.

The entire talk of Dr. Prashant Valluri was full of knowledge and energy, everyone in the auditorium was listening to the talk with utmost attention. His also asked critical questions on the talks delivered by other keynote speakers. Other attendees, students, invited guests also talked with Sir regarding his project and discussed the possible advancements in the present technologies. The fascinating ideas and facts he presented in his talk was an eye opening experience for the audience.

# Prof. Dr. Sandip Bankar

Professor, Aalto University School of Chemical Engineering, Finland



**Dr. Sandip Bankar** is an Assistant Professor of Bioprocess Engineering laboratory, at Department of Bioproducts and Biosystems, Aalto University School of Chemical Engineering, Finland.

Dr. Bankar explained evaporation mechanism of water-ethanol mixture. In his study, he observed that while evaporating one drop of water, it expands and then contracts till it gets completely evaporated. But, mixture of water ethanol first contracts then get evaporated. He also observed that concentration of ethanol in different parts of water droplets and plotted 2D virtual diagrams. He explained this theory by using Navier-Stokes equation.

Everyone was highly motivated by his presence at the International Conference on Energy and Environment 2019 and he enlightened the event by his intellectual sharing to derive inspiration and guidance.

# Welcome Function - Day 2



# **KEYNOTE SPEAKERS**

## **DAY 2**

# Prof. Dr. Sanjay Mahajani

Professor, Chemical Engineering Department, IITB, Mumbai



At the International Conference on Energy and Environment 2019, Prof. Dr. Manik Deosarkar - Head of Chemical Engineering Department of VIT Pune felicitated Dr. S Mahajani. His talk at the conference was based on the topic of gasification of coal- “Gasification of Coal and Biomass: Cleaner way to harness energy.” His work included gasification of coal, Computational Fluid Dynamics (CFD) had a major part to play his project, the formation and study of pellet was one of the interesting research field of his. Dr. Mahajani firmly believed that to solve the issue of energy (fuel) consumption and to study pellets formation, the team had to visit places like Chandrapur and carry out the research. Some of the students from VIT Pune who had worked under the guidance of Dr. Mahajani also visited Chandrapur to carry out the research work.

The entire talk of Dr. Sanjay Mahajani was wonderful, everyone in the auditorium was keen to know more about this cleaner way to harness energy. Many guests, attendees, college students had a talk with Sir after his talk regarding the project, research work, etc. This talk was extremely an eye-opening talk and all the people in auditorium got to know the importance of energy conservation and one of the ways to harness that energy.

# Prof. Dr. Sunil Bhagwat

Professor, Institute of Chemical Technology, Matunga, Mumbai



Dr. Sunil S Bhagwat is a Professor and former Head at the Chemical Engineering Department, Institute of Chemical Technology (UDCT/UIC). He also holds the positions of Coordinator of Centre of Excellence in Process Intensification and Coordinator of Post Graduate Diploma in Chemical Technology Management.

He started this talk by sketching a picture of the general life style in early 19th century by describing it. First, he started with an example of how problem of horse excreta led to the invention of IC engine. He also underlined that all the inventions were made with a good motive, but it was human mishandling and negligence that has caused the problem. Another example given by him was about, excess of Ammonia produced during world war was later used for manufacturing of fertilizers which made sure that enough food is being generated for the increasing population. “Various inventions that are now creating a problem were made to solve a problem of that time” concluded Dr. Bhagwat. He later explained about how energy is traditionally produced by implementation of Rankine cycle. But the highlight of that part was numerous examples given by him, which concluded that, if we can combine two such different process cycles according to the system, we can significantly increase the efficiency of a power plant. He then addressed the present generation of students. Their generation has solved various problems but those invention are now creating a problem stated Dr. Bhagwat. “So now your generation has to solve these problems”, added professor. He then mentioned various problems where the present generation can contribute. It includes reusing or energy generation of biomass and organic waste that is generated while farming. He also briefly explained how can we reuse it in various ways and what should be our general approach.

# DAY 1



# DAY 2

