

**Department: ECE | Date: 12<sup>th</sup> – 14<sup>th</sup> December, 2019**

## **INTERNATIONAL CONFERENCE ON**

### **APPLICATIONS OF MEMS, NANO AND SMART MATERIALS (ICMNSM - 2019)**

MEMS is an interdisciplinary field engaged by almost all areas of Science, Engineering and Technology. As a well-established field of academic research, MEMS is quickly becoming a mature technology with a wide array of marketable applications. MEMS attempts to exploit and expand the fabrication techniques developed for the IC industry to add micromechanical elements to the electrical circuits. These mechanical elements are imperative for the ICs for perception and control of the physical world. Micromechanical devices and systems are inherently smaller, lighter, with faster response, and in some cases more precise than their macroscopic counterparts.

The term MEMS is now expanded to include optical, magnetic, thermal, chemical and biological elements. MEMS can also integrate radiating energy micro-devices such as antennas. In a nutshell, using micromachining techniques, MEMS integrate some or all of these microstructures, depending on the desired functions, in order to convert physical stimuli, events, and parameters to electrical, mechanical and/or optical signals and vice versa. Various combinations of the mentioned electrical and mechanical components have been used as sensors for pressure, temperature, velocity, mass flow, display optical system and chemical composition, and also as singular components for complex systems such as the system-on-a-chip, robots, micro-heat-engines and micro-heat pumps.

International Conference on MEMS, Nano and Smart Materials (ICMNSM-2019) is a dedicated programme to bring together a significant number of diverse scholarly events for presentation within the conference program.

As the leading meeting in the field, the MEMS Conference attracts world Research leads in MEMS by offering a top quality technical program of the current state-of-the-art papers combined with networking opportunities. The MEMS Conference has evolved into a premier annual event in the MEMS area by replicating the rapid growth of the MEMS field and the commitment and success of its research community.

This Conference reflects from the rapid proliferation of the commitment and success of the Microsystems research community. It provides ample opportunity for interaction between attendees, presenters and exhibitors.

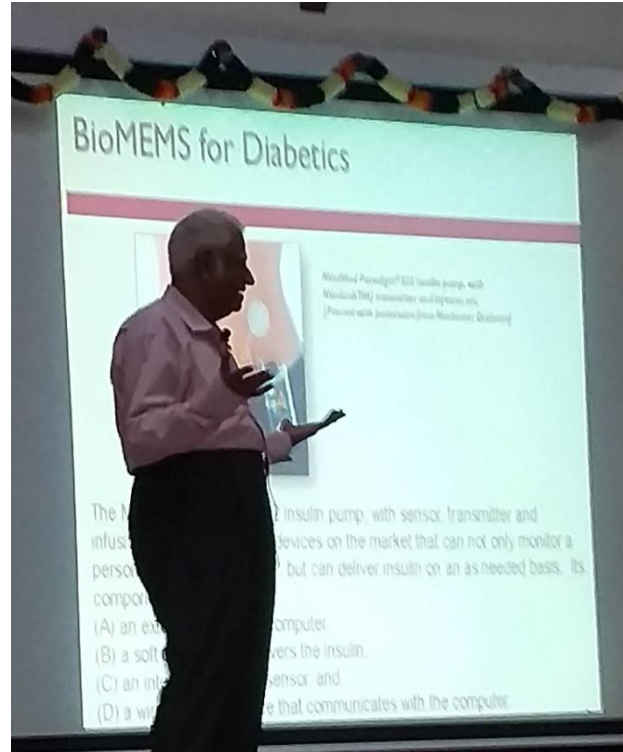
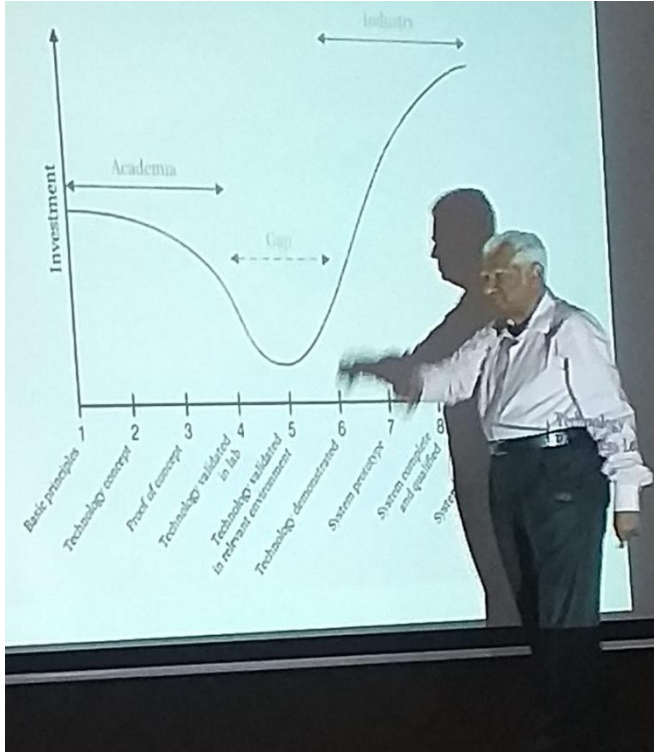
## THEME OF THE CONFERENCE

International Conference on MEMS, Nano and Smart Systems is a dedicated programme to bring together a significant number of diverse scholarly events for presentation within the conference program. This International Conference on MEMS, Nano and Smart Systems aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of MEMS, Nano and Smart Systems. It also provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of MEMS, Nano and Smart Systems. The emphasis is on current and future challenges in research and development in both academia and industry.

The conference consists of plenary/invited talks by eminent researchers in the field. Original technical papers are invited in the areas, but not limited to:

- Modelling, Signal Processing, and Control
- Nanoelectronics, Spintronic Devices and Systems
- Smart Sensor Technology and Measurement Systems
- Electro active Polymer Actuators and Devices
- Damping and Isolation
- Micro-fluidic Systems
- Nano-imaging, Scanning Probes, and Molecular Manipulation and Devices
- Active Materials: Behaviour and Mechanics
- Industrial and Commercial Applications of Smart Structure Technologies
- Smart Electronics, MEMS, and BioMEMS
- Smart Structures and Integrated Systems
- Nano-optics and Nano-photonic Devices
- Novel Fabrication Processes
- Laser Micromachining and Nanomachining
- Nano-composites
- Bio-electronics, Bionanotechnology, and Molecular Nanotechnology

**KEYNOTE ADDRESS**



**Special Guest Dr.T.Lazer Mathew delivering Key Note Address**

Special Guests Dr.T.Lazer Mathew presented his keynote address. He started with the basic introduction to MEMS and Nano technology. He emphasised the significance of nanotechnology by describing its size, distribution and about the father of the technology. “The miniaturization support of the technology converted Desktop computation to an implantable devices”, he stressed. “Nanotechnology is playing an important role in Current technologies in medical devices”, he added. In India, the technology has been in use in ayur vedic medicine since a long back. He explained the ongoing research in DRDO regarding the projects and the products developed, the operation of micro needle that had been converted Project as product. He highlighted the quote, “Mind to Market” and encouraged the young researchers to convert the idea to useful product.



***Felicitation to Key Note Speaker Dr. T. Lazar Mathew***

As a token of honour, Advisor of the conference, Dr. P. V. Ramana, Professor & HEAD of ECE, and Conference Chair, Dr. V. R. Anitha, Professor of ECE, felicitated the Special Guest.



***Presentation by Chief Guest Dr. Vitawat Sittakul, Thailand***

Vitawat Sittakul in his presentation took 5G for IOT as the title. Mobile communication has changed the way of life and helps the digital economy base – he started. He then explained why 5G and why 5G needs to be paid ten times as that of 4G. The utilization of 5G in Wide area coverage, its Hotspot high capacity, and application in Virtual reality, Machine to machine communication and smart Grid are few points that he briefed. The address ended with felicitation of the chief guest as honour.

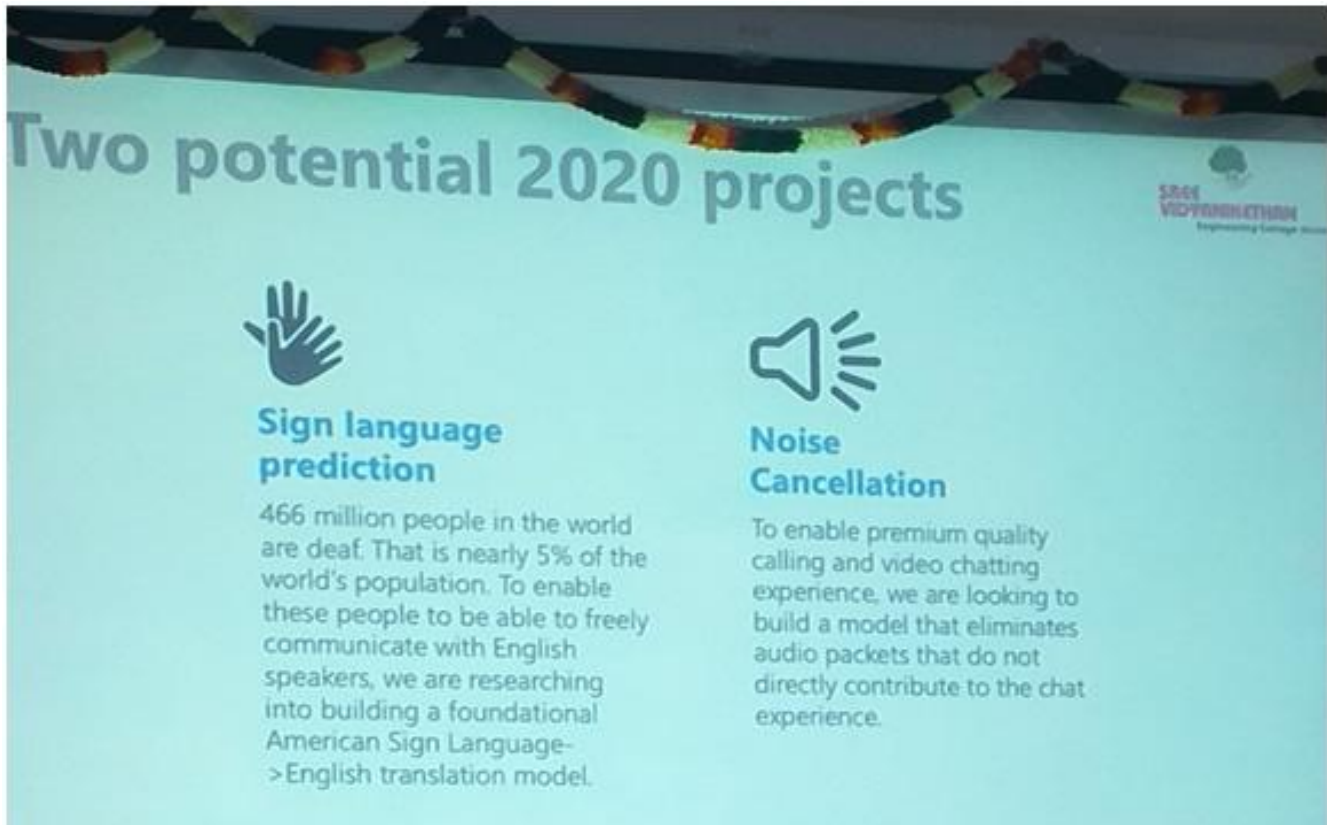


**Felicitations to Chief Guest Dr. Vitawat Sittakul from Thailand**



**Cultural program – Performance of Ms. Divya**

The International Conference has a custom of highlighting the culture of the hosting country. In this way, ICMNSM-2019 has staged the talents of young minds of Sree Vidyanikethan family.



***Presentation of Mr. Abhinadan Bhunia, Project Leader, Facebook, USA***

Lecture By Facebook resource person, Mr. Abhinadan Bhunia explored two potential 2020 projects. One is sign language prediction and the other is noise cancellation. The talk started with what is massive MIMO product overview. The effect of restructuring antenna array with  $5^\circ$  for better efficiency had been stressed.



***Dr.P.Bhanu Prasad, Advisor MD Ingenierie, France during his Invited Talk***

Dr.P.Bhanu Prasad during his Invited talk , inspired the audience with his speech on virtual reality and augmented reality. His projection of devices as products added one more feather to the crown of ICMNSM-2019. He introduced his fellow colleagues from France as real time examples.



***Ms.Komala Raveendran, CEO & Founder, Crew Aarkay Solutions & Services (p) Ltd.***

Ms.Komala Raveendran motivated the researchers with her life experience and explained the way how the Digital India and Digital health Care related with Augmented Reality.The session ended with felicitation to all the resource persons.



***Felicitation to resource persons from France***



***Dr.T.N.V.K.V.Prasad, A.N.G.Ranga Agricultural University  
during his speech about Agri Nanotechnology***

Dr.T.N.V.K.V.Prasad gave an introduction to the need for nanotechnology in agriculture. He explained the significance of the surface to volume ratio of nano materials that could be significantly used in agriculture to increase the yield.

He shared his research experience in the biological synthesis of Silver nano articles using Oak leaves. He added two cases, i) Applications of Nano scale Zinc Oxide to groundnut Case ii) Phloem transport of nanoscale CaO in groundnut through solution culture method.



***Prof.O.M.Hussain, S V University,  
explaining the role of Nano technology in the field of Energy storage.***



Under the title of "Nano structured carbonaceous transition metal oxide composites for high performance energy storage devices" , Prof.O.M.Hussain delivered his research talk. The details regarding supercapacitors, Binder  $\text{TiO}_2$ , growth of CNTs &  $\text{SiO}_2$  as nano rods were some of the doubts of the audience that he cleared. Prof.O.M.Hussain was falcitated by the program organizers.



***Invited Talk by Dr.J.B.V.Reddy, DST, New Delhi***



***Interaction of Dr.J.B.V.Reddy with the participant***

Dr.J.B.V.Reddy gave an overview of basic funding details and project formulation. He advised to add end users and to have tie up with any industries for the projects. He insisted to add the objectives in bullet form, to apply the projects for three years, to get quotations before adding the details and credentials of the investigators. He claimed to make 10 slides for 10 minutes for presentation. "The project may include preliminary simulation or modelling work published in journal or Conferences", he said. The speaker has been felicitated by the Principal-SVEC, Principal- SVDC, Vice-Principal-SVEC, HOD-ECE and Convener of the Conference.



**Felicitation to Dr.J.B.V.Reddy, DST-SERB**



**Dr.V.Sudhakar, Scientist, DRDO, Bangalore during his speech about MEMS in Avionics**

Dr.V.Sudhakar during his speech about MEMS in Avionics, shared his knowledge on Aerospace platforms, Systems and sensors, the importance of oil quality, 3D MEMS sensors systems. He explained the heat gained by the air flow in the air craft, loss of aircraft and various sensors involved with their significances.



***Prof..Nayak, Visiting Professor, CenSe, IISc Bangalore with his presentation about MEMS sensors***

Dr,M.N.Nayak in his address started with MEMS sensors for aerospace and other applications. He narrated the challenges with the design of sensors for aerospace systems. He included the cautions and steps to undertake while testing, Qualification and Field trials on MEMS Pressure Transducers. He added the research issue involved in the area and invited all the inspiring researchers for utilizing the facility at IISC, Bangalore.





***Technical Presentations***

## VALEDICTORY

During Valediction of ICMNSM-2019, Prof.Nayak insisted the audience about the importance and significance of conducting such program. He mentioned that these types of events provide good contact with concern experts supporting for interaction. The researchers were advised to plan for designing the products.

Dr.V.Sudhakar in his valedictory speech, insisted the objectives of interdisciplinary project and also had interaction with other contributors. "The young researchers have to take away the technology from such event", he added. The fuction ended with gratitude and National Anthem.



***Prof.Nayak and Dr.V.Sudhakar during Valedictory***