



IEEE Bangalore Section Sensors Council
presents

WORLD OF SENSORS

Hosted by **BMSCE IEEE PES and Sensors Council** in
collaboration with **IEEE RIT Student Branch**

20th & 21st November, 2021

The IEEE Sensors Council aims to promote and indulge in activities related to theory, design, fabrication, application of devices for sensing and transducing physical, chemical and biological phenomena with emphasis on electronics, physics, and reliability aspects of sensors and integrated sensor-actuators.

Women in Sensors (WiSe) aims to promote globally the presence and advancement of women in the technical area and professions related to sensors. It is targeted at professional women in sensing technology, from industry or academia, and provides opportunities to create communities to facilitate knowledge sharing through highly interactive sessions designed to foster discussion and collaboration.

This year, the BMSCE IEEE PES and Sensors Council in collaboration with IEEE RIT Student Branch is proud to host 'World of Sensors', a two day online symposium on sensors. We take pride to invite you to celebrate the excellency of women in the field of sensors on 20th & 21st of November, 2021.

Timeline of Events

Day-1 (20th November, 2021)

Keynote 1:

Topic: Fabrication techniques of microfluidic devices for biological applications

Panel Discussion:

Topic: Engineering and Pure Science Perspective on Sensors

Ideathon [final round]
(based on given themes)

Day-2 (21st November, 2021)

Keynote 2:

Topic: A sneak into surface acoustic wave devices

Workshop:

Topic: Design of MEMS Sensors and Actuators using COMSOL Multiphysics

Keynote 3:

Topic: MEMS based Temperature sensors, their Fabrication and Applications

Quiz:

Topic: Women in Science

Events of Day-1 (20th November, 2021)

[2:30 pm to 4:30 pm (IST)]

Keynote 1:

Topic: Fabrication techniques of microfluidic devices for biological applications

Speaker:



Dr. L Sujatha

Head of Centre of Excellence in MEMS & Microfluidics
Rajalakshmi Engineering College, Chennai

The talk gives an overview on fabrication of low cost MEMS Microfluidic devices using metal embossing technology on glass for Lab-On-Chip applications. The proposed fabrication technique uses a simpler approach of embossing on glass using thermo-compression process with patterned metal layers to define device structure.

Panel Discussion: [4:00 pm to 5:30 pm (IST)]

Topic- Engineering and Pure Science
Perspective on Sensors

This panel discussion enables a multidisciplinary approach for identifying opportunities and making realistic assessments of developments in sensor technologies.

Panelist 1:



Prof. R. Geetha Balakrishna

Director of Centre for Nano & Material Sciences,
Jain University, Bangalore

Panelist 2:



Dr. K. P. Lakshmi

Professor, Department of Electronics and Communication,
B.M.S College of Engg, Bangalore

Panelist 3:



Dr. Reena Sharma

Former Program Director & Scientist G,
Centre for Airborne Systems,
Defence Research & Development
Organization (DRDO), Bangalore

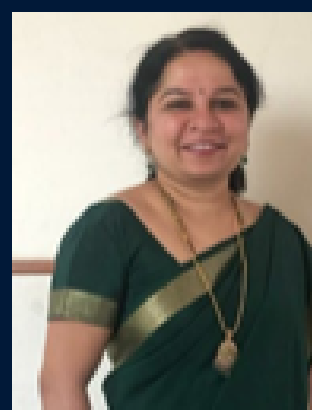
Panelist 4:



Dr. L. Sujatha

Head of Centre of Excellence in MEMS &
Microfluidics (CEMM),
Rajalakshmi Engineering College, Chennai

Moderator:



Dr. Shobha K.R.

Chair of IEEE Bangalore Section Sensors
Council Chapter
Associate Professor, Department of ETE
Ramaiah Institute of Technology, Bangalore

Ideathon: [5:30 pm to 7:00 pm (IST)]

As new technologies become common place, there is a case for exploring new value creation opportunities in the realm of application ideas. Explore and work through innovation and technology to use sensors in problem solving to win exciting prizes.

Choose one of the five themes and identify a problem in that theme, and devise a solution that uses sensors as a crucial component.

Rules:

- A team must consist of a minimum of 2 members or a maximum of 4 members.
- **Registration will close on 5th November 2021.**
- The problem identified by a team should not deviate from the theme.

- There will be two rounds;
 1. Preliminary round : Participants should submit a PPT with their identified problem and solution. The PPTs that have been submitted will be reviewed by an internal jury. **The submission will close on 15th November 2021.**
 2. Final round : Selected teams will be required to give a full fledged presentation going through all the details of their solution in 7 to 10 minutes on 20th November 2021. The presentation will be followed by a 5 minutes Q & A session. All team members must participate in this round. This round will be judged by an internal jury as well as an external jury composed of industry experts.
- Decisions taken by the jury members and BMSCE IEEE PES and Sensors Council remain final.
- Teams with plagiarized solutions will be immediately disqualified.

Themes:

Age of sensors in disaster management:

Disaster management is particularly difficult due to the movement and interaction of people, commodities, and energy. Sensor-based technologies are thought to give a new generation of approaches for improving disaster management since it is an effective way to gather, detect, and process data.

Health sensors: The future of healthcare

Sensor-based technologies are at the heart of this linked healthcare ecosystem because they allow for the collection of accurate data, giving medical personnel and patients access to crucial information about the patient's current status.

Sensors' love for the environment:

Environmental sensors can provide reliable data about various parameters like humidity, pressure, temperature, volatile organic compounds (VOCs), formaldehyde, particulate matter (PM2.5), CO₂, etc. These readings can be used to solve problems that develop as a result of environmental degradation or to address the causes that drive environmental degradation in the first place.

Sensors' Role in the Food Manufacturing and Processing Industry:

Sensor based systems in this industry help in multiple ways such as quality control, contamination detection, shelf life monitoring, consistency and product uniformity, etc. Systems like this can help make industry more efficient and thus help reduce the worldwide food shortage.

The future: More sensors are on the way

In today's world, intelligent sensor systems are everywhere. They ensure safety, save lives, and improve our standard of living. The value of innovative sensor technologies will grow in the future as more aspects of life become automated and networked.

Judging Criteria:

- Innovation
 - a) Is it solving the problem or not?
 - b) How 'innovative' is the idea?
 - c) Is this idea creative and progressive?
- Feasibility of the solution
- Visual appearance of PPT and presentation skills.
- Sustainability
 - a) How sustainable is the idea?
 - b) Is this idea cost-effective?
- Market Potential
 - a) Impact on the target market.
 - b) User experience of the solution.
 - c) What other improvements can be brought upon to improve the idea?

**Exciting prizes worth
15k to be won!**

Events of Day-2 (21st November, 2021)

[2:30 pm to 4:00 pm (IST)]

Keynote 2:

Topic: A sneak into surface acoustic wave devices

Speaker:



Dr. Veda S Nagaraj

Senior Research Scientist
Tyndall National Institute,
Piezo MEMS Group

The talk highlights the generation of surface acoustic waves in piezoelectric devices and the construction of surface acoustic wave devices using bulk and thin film based piezoelectric materials. The speaker also aims to address the challenges in generation of these waves and its applications.

Workshop: [4:00 pm to 5:30 pm (IST)]

Topic: Design of MEMS Sensors and Actuators using COMSOL Multiphysics

Instructor:



Prof. Bhavana H T

Assistant Professor Dept. ECE
BMSCE, Bangalore

The participants will receive insights on the COMSOL Simulation and Multiphysics applications. The simulation workflow includes setting up of model environment, creating geometric objects, specification of material properties, physical boundary conditions, creating the mesh, run simulation and post process results. The attendees will gain knowledge on the thermal actuator and microgripper design, simulation and analysis using COMSOL Multiphysics.

Keynote 3: [5:30 pm to 6:30 pm (IST)]

Topic: MEMS based Temperature sensors, their Fabrication and Applications

Speaker:



Dr. S A Gangal

Ex- ISRO Chair Professor,
ISRO Space Chair

The talk presents design, fabrication and applications of Micromachining and micro-electromechanical system MEMS based temperature sensors. Participants will receive insights on three different structures of MEMS based temperature sensors which are considered for design and fabrication. Some of its applications will also be discussed.

QUIZ: [6:30 pm to 7:00 pm (IST)]

Topic: Women in Science

The quiz has always been a test of wits and speed. This 'Women in Science' quiz does exactly that. **The first round will be conducted through google forms using 20 questions and giving the participants 20 minutes.** Top 6 will be included in a video meeting and a google form link to answer will be given. The final round will be conducted live through the video call while the participants answer through the google form in real time. They will be given 30 minutes for 20 questions.

Rules:

- Use of google or any other form of technology to aid in malpractice is prohibited.
- No extension will be given beyond the stipulated time limit.
- The organizer's decisions are final and no exceptions will be entertained.

**Exciting prizes worth
5k to be won!**

Register on the website:

<http://sensorscouncilbangalore.net>

or scan here to register:



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