SCDT – FlexE Centre Webinar Series

The webinars aim to bring together researchers in Flexible Electronics and allied areas from across India (and other countries) on a single platform to promote professional interaction.

Webinar by

Dr. Ruma Ghosh
Department of Electrical, Electronics and Communication Engineering
Indian Institute of Technology Dharwad

on
"2D nanomaterials based resistive sensors for vapor and protein biomarkers of lung cancer"

Date: 16th September, 2025
Time: 7:30 PM to 8:30 PM

Visit www.iitk.ac.in/scdt/webinars.html to access the zoom link to join the webinar.

The event will be chaired by
Dr Binita Nath
National Institute of Technology Silchar

Abstract of the Webinar

Lung cancer is the leading cause of cancer related deaths globally. One of the dominant reasons for the high mortality rates associated with the disease is that it gets diagnosed mostly at the advanced stages. The delayed diagnosis is due to the combined effect of lack of awareness among the population and lab-based and invasive diagnostics. In this talk, two potential ways of non-invasive detection of lung cancer would be presented. One on hand, 2D metal oxide based resistive sensors were developed for a few volatile organic compounds (VOCs) like methanol, acetonitrile, acetone, isopropanol, and toluene. These VOCs were reported to be indicators of lung cancer by multiple literature. The inherent limitation of poor selectivity of the metal oxides were mitigated by using a few machine learning algorithms to accurately classify and quantify the vapor biomarkers of lung cancer. On the other hand, novel, rapid, and label-free resistive biosensors were developed for two protein biomarkers of lung cancer - CEA and CYFRA 21-1. A lab-prototype was developed for the protein sensors to render those portability. The detailed findings and interesting observations made during this research would be presented in the talk.

Information about the speaker

Dr. Ruma Ghosh is currently an Associate Professor in the Department of Electrical, Electronics and Communication Engineering, Indian Institute of Technology Dharwad. She completed her PhD from Indian Institute of Technology Kharagpur in the year 2016 and joined the institute in December 2017. Her research interests include development of resistive sensors for three different applications – environmental monitoring, health monitoring and precision agriculture. Her group is also engaged in developing portable biosensors for different cancer biomarkers. She has successfully executed three externally funded projects and is currently working on four different projects that are funded by Science and Engineering Research Board (SERB), Board of Research in Nuclear Sciences (BRNS), Department of Science and Technology (DST), and Indian Council of Agricultural Research (ICAR). She has filed 7 Indian patents, out of which 2 got granted and the remaining are currently under review. She has more than 40 publications in peer reviewed journals, 2 book chapters and a few conference publications in her name.

Samtel Centre for Display Technologies (SCDT) and the National Centre for Flexible Electronics (FlexE Centre) of IIT Kanpur are dedicated to flexible electronics research and commercial deployment respectively

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