# 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. Shree Prakash Tiwari**
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Indian Institute of Technology Jodhpur


On **"High Performance Flexible Organic Field-Effect Transistors for Biodegradable Electronics"**

**Date**: 15th March, 2022
**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. Garima Agrawal**
Indian Institute of Technology Mandi

## Abstract of the Webinar


Flexible electronics has been enormously explored due to advantages of low temperature and large area processing and for various promising applications towards smart textiles and wearable electronics for the current era of internet of things. Organic field-effect transistors (OFETs) receive significant attention as a key device for flexible electronics due to their potential use for circuit and sensing applications. In recent times, these devices are being explored for eco-friendly and green electronics, which is essential for reducing the impact of increasing e-waste which has become a severe environmental issue. Along with a suitable substrate, one or many biocompatible or nature inspired material components can be incorporated during the fabrication process to enhance the eco-friendliness of a device. Paper has been demonstrated as one of the most suitable substrates to achieve biodegradability. Moreover, various plant or animal based proteins such as cellulose, silk fibroin, gelatin, chitosan, and chicken egg albumen can be suitable gate dielectric candidates. However, multiple processing challenges have to be addressed for demonstrating high performance devices suitable for green electronics. In this talk, firstly, approaches for designing high performance flexible OFETs will be discussed. Moreover, demonstrations of high performance devices with biodegradable substrate and natural dielectric component will be presented. Many of these devices have shown potential to be used for real time health monitoring and other circuit and sensing capabilities.


## Information about the speaker

Dr. Shree Prakash Tiwari joined IIT Jodhpur in May 2011 where he is currently working as Associate Professor in Electrical Engineering Department. Prior to joining IIT Jodhpur, he worked as a Postdoctoral Fellow at School of ECE, Georgia Tech., Atlanta, USA for 3 years, from 2008 to 2011. He had received Ph.D. in 2008 from Department of Electrical Engineering at IIT Bombay. During Ph.D., he had also worked at NTU Singapore for about 7 months. Dr. Tiwari is a Senior Member of IEEE, and Visvesvaraya Young Faculty Research Fellow of Ministry of Electronics and Information Technology (MeitY) for 2018-2023. His research includes development of high performance organic transistors and resistive random-access memory devices for flexible electronics. He has published over 100 research articles, including more than 50 in peer-reviewed journals of high repute including many in IEEE Transactions of Electron Devices, Organic Electronics, Applied Physics Letters, and ACS Applied Materials and Interfaces. At IIT Jodhpur, he leads the Flexible Large Area Microelectronics (FLAME) Research Group, with focus towards demonstration of flexible devices and systems for eventual biodegradability and green electronics.