DEPARTMENT OF BIOMEDICAL ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

(Institute of National Importance)

G. E. Road, RAIPUR (Chhattisgarh) 492 010

Details of Expert Lecture

An invited Expert Lecture of Dr. Debasish Maji, Associate Professor in the Department of Sensors and Biomedical Technology, VIT University, also associated with TIFAC Core (VIT Chapter) and INFAB Semiconductor Pvt. Ltd. was conducted by the Department of Biomedical Engineering as per the following schedule.

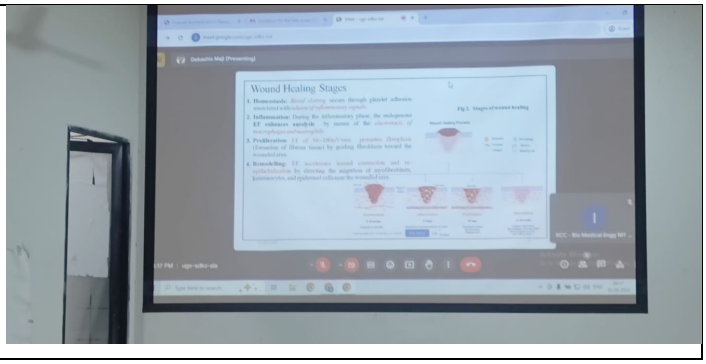
Topic of the Lecture: **"Smart Microelectrode Patch for Accelerated Wound Healing"**

Date: 12th September (Thrusday) 2024

Time: 4.00 pm onwards

Venue: E – Classroom, NIT Raipur

The lecture was grounded on the effective wound care management system, which demands emergence of smart bandages with novel wound healing techniques. The main emphasis was on the Electrical stimulation (ES) based wound healing that has shown excellent results in faster wound closure by mimicking the endogenous electric field naturally produced at the sight of wound and assisting the same. According to the speaker, the present work highlights the development of flexible copper based micro-electrode array (MEA) patch over polyimide substrate for triggering ES induced accelerated wound healing for applied DC potentials. The presentation demonstrated simulation results highlighting the ES optimization for varying maximum DC potentials of 0.2 volts, 0.4 volts and 1.0 volts, respectively towards generation of effective electric field induced electrotaxis. Furthermore, the proposed patch was fabricated using a novel screen-printing technique involving use of polyvinyl chloride (PVC) ink as a masking material over a copper-polyimide film to realize the MEA structures. An integrated pH sensor was also fabricated using screen printing of Ag/AgCl ink over the same to monitor in-situ blood pH levels. The developed low-cost MEA patches showed good electrical continuity as well as excellent flexibility and skin conformality.



Dr. Mainak Basu
IICC Departmental Coordinator
Department of Biomedical Engineering