Department of Electrical and Computer Engineering

TEXAS TECH UNIVERSITY
Edward E. Whitacre Jr.
College *of* Engineering

Spring 2025 Seminar Series

Seminar Title: ***Magnetics, Nanotechnology & Healthcare: My Research (so far!) in a Nutshell***

Time: 2:00-2:50 PM, Monday, Mar 3, 2025
Location: ECE 101

Speaker:
Renata Saha
Dupont

Abstract:
Spatially selective and galvanic contact-free neurostimulation coupled with MRI-safe implant performance make micromagnetic stimulation (µMS) so unique. First, I will discuss the designing and testing of two micromagnetic implants – Magnetic Pen (MagPen), and Magnetic Patch (MagPatch). The efficacy of µMS using MagPen has been tested on rodent models, in vivo and in vitro. The MagPatch array offer cellular level µMS. I will conclude this section by discussing its clinical application supported by NIH Blueprint Medtech Program for spinal cord injury (SCI) patients. Second, I will highlight my transition to an R&D scientist role within industry. It will feature my leadership in developing a reliable infrared (IR) sensor-based direct measurement technique to improve the evaluation of electrocaloric cooling technologies. Following this, I'll focus on prototyping, testing and analyzing ECG data from wearable electrodes. Furthermore, I will outline my contributions to the PFAS-free medical device market, de-risking this change in the catheter industry.

Speaker Bio:
Dr. Renata Saha is a Senior Scientist at DuPont located in Wilmington, DE. She holds a PhD in Electrical and Computer Engineering from the University of Minnesota, Twin Cities, which she earned in August 2023. Dr. Saha is the recipient of 3-year College of Science & Engineering Fellowship, Women in Technology Scholarship 2021-2022 from Cadence Design Systems, and the Graduate Neuromodulation Research Fellowship 2022-2023 from MnDRIVE. She was also elected an iREDEFINE Fellow in 2022 by ECEDHA and was named a Rising Star in EECS. She has published over 27 journal articles, 3 US patents, and 2 book chapters. Between 2016-2018, she served as the CTO and co-founder of her own award-winning start-up in India that focused on developing wearable cardiac monitors. Her expertise and research interests involve designing and developing microelectromechanical systems (MEMs) for neuromodulation and cardiovascular monitoring, characterizing nanoparticles for potential biomarkers and electrocaloric (ECE) cooling.