



Dear Shruti, Could you please introduce yourself?

I am Dr. Shrutidhara Sarma, an Assistant Professor in the Department of Mechanical Engineering at the Indian Institute of Technology Jodhpur (IITJ) in India (<https://iitj.ac.in/>).

I am currently leading the Flexible Sensors from Nanocomposites (FERN) Laboratory, which I established at IITJ (<https://www.shrutidhara.com/>). My research interests lie in the areas of thin-film gauges, layered nanocomposite materials, and flexible sensors. We design and fabricate highly reliable and mechanically robust physical sensors based on novel nanocomposites with applications in wearable sensors for health monitoring, energy-saving devices, and smart structures. Our focus areas include investigating novel nanocomposite materials, striving to understand their structure-property relationships, enhance sensing properties using micro/nano-structures, and design and fabricate high performance sensors for various applications.

- What is WISER?

WISER stands for "Women Involvement in Science and Engineering Research." It is a research grant that aims to support and promote women researchers or entrepreneurs in academic/ research institutions/ industrial research organisations in India to participate in collaborative research in Germany.

Why did you come to TUBS?

I came to Institut für Mikrotechnik (IMT) of Technische Universität Braunschweig (TUBS), Germany as part of my WISER grant. The grant allows me to visit TUBS for a month every year throughout the duration of the project (2023-2026). I chose IMT because it is renowned for its expertise in the development and

- What is your project about?

Under the WISER grant, my project focuses on developing high performance flexible strain sensors with high sensitivity and a broad dynamic range, particularly for biomedical applications. Strain sensors are essential for translating mechanical forces, such as tension, compression, and pressure, into electrical signals that can be used to monitor physiological parameters like breathing and muscle movements. This project is a part of the SmartNIV project, led by Prof. Andreas Dietzel at Institut für Mikrotechnik (IMT). The overarching goal of the SmartNIV project is to develop a highly elastic and intelligent sensor patch for collecting respiration-related measurements from premature infants. These measurements are then transmitted to a ventilator, allowing for better adjustment and synchronization of the ventilator with the infant's breathing patterns. By integrating advanced flexible strain sensors into the system, we hope to contribute to improved healthcare outcomes for these vulnerable infants. Successful implementation of the project would have a profound impact in India and has the potential to significantly reduce mortality rates in Neonatal Intensive Care Units (NICUs).

fabrication of complex microsystems including flexible and stretchable foil-type sensor systems. It has excellent research facilities and hosts expert faculties in the field like my collaborator Prof. Andreas Dietzel. It provides a conducive environment for collaboration and knowledge exchange, which will enhance my research capabilities and contribute to the advancement of my work.

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Work at the electro spinning machine, ITT Jodhpur

- What do you plan to do within the period of the grant?

Within the period of the grant, I plan to collaborate closely with researchers at TUBS. We will conduct experiments, analyse data, and publish research papers in reputable international journals. I also intend to engage in knowledge sharing and academic exchanges with the faculty and students at TUBS, fostering collaborations and promoting the advancement of research in the field of flexible sensors.

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