

# SEMINAR SERIES

Supported by The Department of Biomechanics and  
The Center for Research in Human Movement Variability (MOVCENTR)



## Fit-for-Purpose Stretchable Electronic Skins

Featuring Dr. Eric Markvicka  
University of Nebraska - Lincoln



Friday, April 28 | 12:00 - 1:15 pm | BRB 167

### PRESENTATION ABSTRACT

The advancement of wearable computing, human-machine interaction, and robotics requires the development of soft-matter technologies, such as rubbers, gels, and fluids, which can provide a comfortable, conformal, and unobtrusive interface with the human body and surrounding environment. These technologies have the potential to revolutionize various fields, including health monitoring, human performance augmentation, and adaptation to changing environments. However, creating soft-matter technologies that are structurally conformal, comfortable to wear, and aesthetically appealing poses a significant challenge. In this presentation, I will discuss recent progress in developing wearable electronic skins for existing robotic platforms and long-term human health and activity monitoring. Our work in this area focuses on creating new soft-matter sensors, stretchable electrical wiring, and holistic fabrication techniques to produce fully untethered and stretchable electronic skins that are not only highly functional but also visually pleasing. Our research has led to the development of soft sensors that can be used to detect various physiological signals, such as pulse and muscle activity, with high sensitivity and accuracy. We have also created soft electronic skins that can be integrated into existing robotic platforms, enabling more natural human-robot interactions. Overall, our work demonstrates the significant potential of soft-matter technologies in wearable computing and human-machine interaction and provides new avenues for developing comfortable and aesthetically appealing wearable electronic devices.

### ABOUT DR. MARKVICKA

Dr. Eric Markvicka is an Assistant Professor of Mechanical and Materials Engineering at the University of Nebraska-Lincoln (UNL). He holds a courtesy appointment in the School of Computing and Department of Electrical and Computer Engineering. Eric is also the director of the Smart Materials and Robotics Laboratory, an interdisciplinary research lab that focuses on the development of soft multifunctional materials. These materials exhibit unique combinations of mechanical, electrical, and thermal properties, which are crucial components for emerging technologies like wearable computing, soft robotics, and robotic materials. Before joining the faculty at UNL, Eric received his B.S. and M.S. in Mechanical and Materials Engineering from UNL, and his M.S. and Ph.D. in Robotics from Carnegie Mellon University.

more info at [cobre.unomaha.edu](http://cobre.unomaha.edu)

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