



## Wolfson Department of Chemical Engineering Seminar

Monday, June 8<sup>th</sup>, 2026 at 13:30

Zoom link: <https://gtiit.zoom.us/jc/99738424991>

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# Interface-stable Flexible Bioelectronics for Long-term Electrophysiological Monitoring

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**PhD final Seminar**

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Long-term electrophysiological monitoring is critical for tracking human physiological states over extended periods and under real-life conditions. It enables continuous assessment of cardiovascular activity, brain activity, sleep, and daily physiological changes, providing valuable information for personalized healthcare and disease management. However, reliable long-duration recording remains challenging due to unstable bioelectronic interfaces, including dehydration, sweat accumulation, motion artifacts, impedance drift, and discomfort during prolonged wear.

In this seminar, I will present my research on interface-stable flexible bioelectronics for long-term electrophysiological monitoring. The work focuses on conductive hydrogel electrodes with high breathability, stable electrode–skin/scalp coupling, mechanical softness, and water retention. Through material and interfacial engineering, the developed hydrogel-based electrodes can maintain intimate contact with biological tissues and improve signal stability during prolonged use. The capability of this platform is demonstrated through 7-day continuous electrocardiography (ECG) monitoring and 8-day continuous 16-channel electroencephalography (EEG) monitoring under daily-life conditions, highlighting its potential for stable, comfortable, and long-duration biopotential acquisition in wearable healthcare, cardiovascular assessment, brain monitoring, sleep analysis, neurological healthcare, and personalized digital medicine.