

Seminar

Laser-induced Graphene-based Non-enzymatic Sensor for Detection of Hydrogen Peroxide

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Venue: B6605, Yeung Kin Man Acad. Bldg.,
City University of Hong Kong

Abstract

Hydrogen peroxide (H₂O₂) is one of the most common molecules in biological tissues and is an important bridge in intracellular and intercellular signaling. In this study, a laser-induced graphene (LIG) loaded platinum nanoparticles (PtNPs) was prepared for precise, rapid and non-enzymatic electrochemical detection of hydrogen peroxide (H₂O₂). The commercial polyimide (PI) films were used as the substrate of LIG, a layer of PtNPs catalyst was fabricated through a magnetron sputtering process on the surface of LIG (PtLIG). Under optimized conditions, a linear relationship between H₂O₂ reduction current and H₂O₂ concentration was recorded, the correlation coefficient R² is 0.9919 with the detection limit of 0.1 μM (S/N=3) and sensitivity of 248.4 μA mM⁻¹cm⁻². Moreover, the PtLIG exhibits excellent selectivity, reproducibility and repeatability. Because of these remarkable advantages, we believe that PtLIG will provide a wider range of applications in biosensors and bioelectronics devices.

About the speaker

Wang Jiaqi received his Ph.D degree from Dalian University of Technology, China. After that, He was working at School of Microelectronics, Dalian University of Technology as a Senior Researcher until now. From 2014 to 2016, he worked in “Centre for Biosystems, Neuroscience, and Nanotechnology (CBNN)” of City University of Hong Kong as Postdoc of Prof Stella Pang. He was tilted as “Hong Kong Scholar”. His research focused on sensor design, fabrication and application, mainly including the pressure sensor, the gas sensor and some biosensors.