

Metal Nano Particle modified Nitrogen Doped Amorphous Hydrogenated Diamond-Like Carbon Film for Glucose Sensing

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Electrochemical method have been employed in this work to modify the chemical vapour deposited nitrogen doped hydrogen amorphous diamond-like carbon (N-DLC) film to fabricate nickel and copper nano particle modified N-DLC electrodes. The electrochemical behaviour of the metal nano particle modified N-DLC electrodes have been characterized at the presence of glucose in electrolyte. Meanwhile, the N-DLC film structure and the morphology of metal nano particles on the N-DLC surface have been investigated using micro-Raman spectroscopy, X-ray photoelectron spectroscopy and atomic force microscopy. The nickel nano particle modified N-DLC electrode exhibits a high catalytic activity and low background current, while the advantage of copper modified N-DLC electrode is drawn back by copper oxidizations at anodic potentials. The results show that metal nano particle modification of N-DLC surface could be a promising method for controlling the electrochemical properties of N-DLC electrodes.

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