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Metallic nickel nitride nanosheet: An efficient catalyst electrode for sensitive and selective non-enzymatic glucose sensing

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Abstract

It is significantly important to design enzyme-free electrocatalyst for sensitive and selective detection of glucose (Glu). In this paper, we report that metallic nickel nitride nanosheet on Ti mesh (Ni₃N NS/Ti) behaves as an efficient three-dimensional catalyst electrode for Glu electro-oxidation under alkaline conditions. We further demonstrate the use of such Ni₃N NS/Ti as a non-enzymatic electrochemical Glu sensor superior in analytical performances. The introduction of the Ni₃N NS/Ti can provide a high surface area and lead to high sensitivity to Glu. This sensor shows a fast amperometric response toward Glu and can achieve steady state current density within 5 s, a detection range of 0.2 μM to 1.5 mM, a detection limit of 0.06 μM (S/N

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