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## Preparation of One Dimensional Silver Nanowire/Nickel-Cobalt Layered Double Hydroxide and Its Electrocatalysis of Glucose

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### Abstract:

A novel silver nanowire/nickel–cobalt layered double hydroxide (AgNW/NiCo LDH) nanocomposite was successfully synthesized, after which a glucose sensor was fabricated. AgNW was synthesized by ethylene glycol as reductant in presence of  $\text{Fe}^{3+}$ , and NiCo LDH grafted vertically along the 1D AgNW by slow hydrolysis of urea. The morphology and composition of AgNW/NiCo LDH were characterized by Scanning electron microscopy, energy dispersive X-ray spectroscopy, X-ray diffraction and Fourier transform infrared spectroscopy. The electrochemical investigation showed that the AgNW/NiCo LDH/GCE exhibited excellent electrocatalytic ability to glucose oxidation, with a linear range from 0.002 mM to 6 mM at a low applied potential of 0.4 V (vs. SCE) and a low detection limit of 0.66  $\mu\text{M}$  at the signal-to-noise ratio of 3. It is expected that the AgNW/NiCo LDH nanocomposites appear to be a promising catalyst for non-enzymatic glucose sensor.

Key words: Silver nanowire; Layered double hydroxide; Glucose oxidation; Electrochemical sensor; Glucose.

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