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# Fabrication of sensitive non-enzymatic nitrite sensor using silver-reduced graphene oxide nanocomposite

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## Abstract

There are increasing demands of more sensitive sensors for monitoring potential hazards in real water that may cause serious problems to human health. Herein, we report the development of a non-enzymatic nitrite sensor using nanocomposite of reduced graphene oxide decorated with silver nanoparticle (Ag-rGO). First, Ag-rGO nanocomposite was synthesized using a facile and cost-effective microwave-assisted approach. Then, as-synthesized Ag-rGO nanocomposite was used to modify glassy carbon electrode (GCE) and applied for the sensitive and selective detection of nitrite in the aqueous medium with increasing concentration of nitrite. Under optimized conditions, sensor achieved high sensitive response ( $18.4 \mu\text{A}/\mu\text{M}\cdot\text{cm}^2$ ) in a wide linear range (0.1 to 120  $\mu\text{M}$ ), low limit of detection ( $\sim 0.012 \mu\text{M}$ ), and good selectivity using differential pulse voltammograms (DPV). The applicability of fabricated non-enzymatic nitrite sensor was checked in real sample with satisfactory results.

**Keywords:** reduced graphene oxide; silver nanoparticle; nanocomposite; non-enzymatic; sensitive; nitrite sensor

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