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**Electrocatalytic and New Electrochemical Properties of
Chlorpromazine in to SilicaNPs/Chlorpromazine/Nafion
Nanocomposite: Application to Nitrite Detection at Low Potential**

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Abstract

In this study, the electrochemical behavior of chlorpromazine at glassy carbon (GC) electrode modified with silica nanoparticles/chlorpromazine/ Nafion (SNPs/CPZ/Nf) nanocomposite was investigated. The apparent electron transfer rate constant (k_s), transfer coefficient (α) and surface concentration (Γ_c) were found to be 0.56 s^{-1} , 0.49 and $3.49 \times 10^{-7} \text{ molcm}^{-2}$, respectively. Cyclic voltammetry technique has been used for stabilization of nanocomposite on the surface of GC electrode. Electrochemical impedance spectroscopy (EIS) and transmission electron microscopy (TEM) techniques were used to confirm the successful stepwise assembly procedure of the electrode. The modified electrode showed electrocatalytic activity toward nitrite electro-reduction at 0.12V. The detection limit (signal to noise) and sensitivity are $7 \mu\text{M}$ and $0.0007 \mu\text{A}/\mu\text{M}$, respectively. The advantages of the nitrite amperometric detector based on the SNPs/CPZ/Nf nanocomposite GCE are a low detection limit, reduction in low potential in particular, high sensitivity and inherent stability at pH2, catalytic activity for nitrite reduction antifouling property toward nitrite and its

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