

عنوان مقاله:

A novel carbon paste electrode for the potentiometric analysis of Cu^{2+} in water and soil samples

محل انتشار:

چهاردهمین کنگره ملی مهندسی شیمی ایران (سال: 1391)

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خلاصه مقاله:

In this project, zinc oxide nanoparticle loaded on activated carbon (ZnO-NP-AC) has been synthesized and characterized by different techniques including XRD and SEM. Then A new simple, reliable, rapid and reproducible carbon paste electrode (CPE) for copper ions based on a new Schiff' base as carrier was prepared and fully characterized in terms of composition, usable pH range and response time. ZnO-NP-AC was added to the electrode before pasting. The influence of variables including pH, membrane ingredients was optimized and set as graphite powder: carrier (ligand): sodium tetrphenylborate (NaTPB): amount of ZnO-NP-AC: Nujol with the mass (g) ratio of 0.125: 0.01: 0.003: 0.03: 0.05. At optimum values of all variables the electrode response is linear in the concentration range of 5.0×10^{-7} to 1.0×10^{-1} mol L⁻¹ with detection limit 1.5×10^{-7} mol L⁻¹ with nernstian slop of 30.3 mV/decade over the pH range of 2.0-5.0. The proposed sensor reveals good selectivity toward Cu^{2+} ion with respect to many alkali, alkaline earth, transition and heavy metal ions. It was applied to the determination of Cu^{2+} in water and soil samples.

کلمات کلیدی:

Carbon paste electrode, Copper selective electrode, Potentiometric sensor, Zinc oxide nanoparticles

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