

Title:

**CARBON NANOTUBE-CACO₃ NANOPARTICLE COMPOSITES
FOR THE CONSTRUCTION OF AMPEROMETRIC BIOSENSORS**

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Abstract: (Your abstract must use **Normal style** and must fit in this box. Your abstract should be no longer than 300 words. The box will 'expand' over 2 pages as you add text/diagrams into it.)

Biosensors are formed by immobilization of biological molecules on transducers. They are of great importance in **medical diagnostics and environmental monitoring**. An interesting approach is the immobilization of biological molecules in a **friendly CaCO₃ matrix**^{1, 2}. The aim of this work was to combine CaCO₃ and carbon nanotubes (CNTs) in order to **amplify the electrochemical transduction** phenomenon. CNTs have a high specific conductive surface which can provide high biomolecule loading and enhanced electrochemical properties making it a material of choice for the biosensor building^{3,4}.

We performed the immobilization of **polyphenol oxidase (PPO)** that allows the oxidation of catechol in ortho-quinone and allowed the amperometric detection of catechol in aqueous solution (pH 6) at -0.2V vs. SCE (ortho-quinone reduction); CNT/CaCO₃/PPO electrode increases the sensitivity and detection limit in comparison with GC/CaCO₃/PPO electrode. After the successful detection of catechol we performed the detection of neurotransmitters such as dopamine (used in anxiety prevention in the medical field) with the system CNT/CaCO₃/PPO.⁵ Permeability improvements of electropolymerized polypyrrole films were obtained by using dissolvable nano-CaCO₃ particle templates.⁶

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