



## Electrochemical sensors based on diaminonaphthalene and carbon nanofiber composites modified carbon paste electrode

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### Abstract

A great challenge in the area of heavy metal trace detection is the development of electrochemical techniques and devices which are simple, environmentally friendly, robust, and selective with low detection limit and allowing fast measurements. During the last decades, different approaches have been used to develop high-performance electrochemical sensors based on carbon nanostructures and conducting polymers. The combination of carbon materials with polymers is expected to improve the properties of these materials for electroanalytical purposes. The aim of this work is the development of nanocomposites based on Carbon nanotube (CNT) or carbon nanofibers (CNF) and conducting polymers. The oxidative electropolymerization of diaminonaphthalene derivatives in a simple way and reproducible one-step procedure into carbon paste electrode (CPE) modified with carbon nanofibers leads to a conducting polymer that can be applied for chemicals sensing. This work reports two applications related to polydiaminonaphthalene [poly (DAN)] or polypyrrole prepared on carbon paste electrode and carbon nanofibers in the presence of Nickel Nanoparticles (NiNPs). The strategies

applied to improve the property of conducting polymer obtained are discussed. The dispersion, morphology, conductivity and structure of the modified electrode are characterized by scanning electron microscopy, cyclic voltammetry, quartz crystal microbalance and electrochemical impedance spectra. The resulting polymer is conducting with specific proprieties and shows a good selectivity toward different ions and was used for detection of heavy metals or electrocatalytic oxidation of methanol.

### Biography

Mama El Rhazi obtained her PhD in electrochemistry in 1992 from the University Pierre et Marie curie, France. She started her career by teaching chemistry in the university of Versailles saint-Quentin (France). She is currently full professor of chemistry in Faculty of Sciences and technologies of Mohammedia. She is President of Moroccan Society of Analytical Chemistry. Her research interests include electroanalysis, modified electrode by conducting polymers for detection of heavy metals or organic compounds. She has published more than 40 papers in reputed journals and has supervised more than 9 Ph.D. students.