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Importance and Use of Electrochemical Sensors for the Determination of Heavy Metals in Blood Tests

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ABSTRACT

Electrochemical sensors have important and interesting applications in clinical, environmental, industrial and medicinal analysis. Mostly, electrochemical sensors based on complexes such as blood are of particular importance and development as they improve our ability to make a connection between the relationship of chemical exposure evaluation and the outcomes of diseases that may appear. Among toxic metals, lead continues to be one of the most problematic. Despite considerable efforts to identify and eliminate sources of exposure to lead, this metal remains an important health concern, especially for young children. Ongoing research focuses on the development of metal analyzers that have many advantages over current technologies available, thus potentially representing the next generation of toxic metal analyzers. The main objective in this research was the construction of a new electrochemical sensor, for the determination of vital elements and especially, for the determination of lead in blood, using as working electrode carbon based sensor unmodified and modified with copper micro-particles. This study performed the optimization and evaluation of the electroanalytical method and were demonstrated the electroanalytical capabilities of the carbon-based sensors. This type of study on sensor platform is important and is needed to measure chemical exposure as well as to make its final connection with the disease. Performing blood tests will be more accurate, simpler, easier and less costly. This versatile, accurate and extremely compact integrated sensor will bring about dramatic change in healthcare as every molecule that we monitor addresses various processes and systems of the body.

Keywords: Blood Tests, Chemical Exposure, Copper micro-particles, Electrochemical Sensor, Heavy Metals

About the presenter:

Manjola Bani graduated Chemistry in Albania. She describes herself as intelligent, with strong character and principles. She works hard, in a systematic way, with passion and dedication. For many years, she has been active in research and scientific studies in the field of chemistry and related subfields. She worked as a chemist, chemistry lecturer, trainer for teaching (physical and online) in many conferences, seminars and training courses. She authored several scientific works, served as board in many conferences and international scientific journals, speaker in many leaders' forums, won in many competitions and olympiads, and served as lecturer in many educational platforms to teach chemistry. She won first prize in the chemistry competition with participants from 50 different countries.