**Tittle: Carbon Nanotube Assemblies for Lead Detection in Drinking Water**

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Lead exposure concerns have spread among multiple developed countries, high concentrations of Lead in drinking water have been reported in the North America, Europe and Asia.[1] In America, detection of heavy metals in water has become a high priority for societies, particularly those living in cities where water infrastructure was developed built prior 1986.[2] Rapid detection or continuous monitoring of lead, in drinking water is needed to ensure safe drinking water supplies for our communities. This talk will highlight the current progress toward the development of an electrochemical sensor based on carbon nanotubes from synthesis to applications in Lead and other heavy metal detection. The unique physical properties of individual Carbon Nanotubes (CNTs) surpass the properties of many advanced materials available today. Due to their large surface area, chemical stability, and electrical conductivity, they are the most promising candidates for a large number of electroanalytical applications. A material for sensor applications requires high purity CNT assemblies like fibers and films, that have good electrical conductivity, in some case additional insulation coatings.[3] Polymer coated CNT fiber was used as the working electrode; bare CNT thread was used as the auxiliary electrode; and a pseudo-reference electrode was fabricated by electroplating CNT fiber with Ag that is subsequently anodized in chloride solution to form a layer of AgCl. This all-carbon CNT fiber three electrode cell is evaluated for simultaneous detection of trace levels of heavy metal ions by anodic stripping voltammetry (ASV). $Hg^{2+}$, $Cu^{2+}$ and $Pb^{2+}$ in $H_2O$ were detected successfully, and the detection limits are 1.05 nM, 0.53 nM and 0.57 nM for $Hg^{2+}$, $Cu^{2+}$ and $Pb^{2+}$, respectively.[4] These electrodes significantly reduce the dimensions of the conventional three electrode electrochemical cell and have the potential to become low cost and on-site lead sensor.

**II. Reference:**

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