TECHNOLOGY OVERVIEW

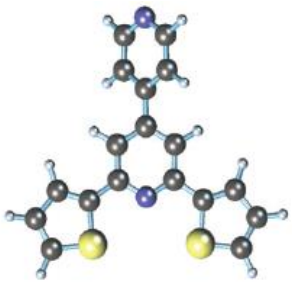
Methods for Mercury Detection and Removal

Background

The detection of mercury ions (Hg^{II}) is a crucial challenge facing modern society. Mercury is a toxic metal ion found in natural and human-made sources. Mercury can transform into its most toxic form, neurotoxic organic mercury, and accumulate in the food chain, causing detrimental effects. Water and soil contamination by these ions poses significant risks to ecosystems and human health. Current monitoring methods like atomic absorption spectroscopy and inductively coupled plasma-mass spectrometry are not portable. Developing portable electrochemical and optical methods, including nanoparticle-based systems and molecular receptors, is important for effective and selective detection and removal of mercury ions, ensuring environmental protection and human well-being.

Technology Overview

Olena Zenkina and Ontario Tech researchers have pioneered a revolutionary nanomaterial-based technology featuring chemical receptors for the detection and removal of mercury ions. The unique aspect of this dual-purpose solution lies in the magnetic properties of the nanomaterial, enabling effortless removal using a simple magnet. The technology has undergone the process of filing a US patent application, recognizing its innovative nature. Industrial applications encompass water control, food quality control, and the elimination of heavy metal contamination from naturopathic products and herbal extracts. Looking ahead, Zenkina plans to expand the technology's capabilities by further developing other ion detection methods and exploring other metals, including arsenic and lead. By addressing a wider range of metal ions, this technology holds substantial potential for mitigating environmental and health risks associated with metal ion contamination, thus contributing to a safer and healthier world.



Business Opportunity

Ontario Tech University looks to work with companies in a way that helps develop a relationship that is tailored to their interests. Thus, are happy to explore collaborations, licenses, options, assignments, etc. It is the belief that only through enabling the company to utilize its business model will Ontario Tech University technology be able to make an impact within the marketplace.

Inventors:

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Publication:

US Patent: 20210131972A1
Canadian Patent: CA3060874A1

A novel material for the detection and removal of mercury (II) based on a 2,6-bis(2-thienyl) pyridine receptor

About Ontario Tech University

Ontario Tech University conducts high-quality, rigorous research designed to meet the research and development needs of business and industry and benefit society. Whether the focus is on developing hydrogen-from-nuclear or fuel-cell technologies, improving network security, or understanding youth crime, we are committed to interdisciplinary research and development that addresses social, environmental, health, and economic challenges.