Office of Technology Transfer

Auburn University

New Materials for Ion Sensing

Contact

Brian Wright
Auburn University
Office of Technology Transfer
334-844-4977
brian.wright@auburn.edu
http://ott.auburn.edu/
Reference: Ion Sensing

Lead Inventor

Dr. Eric Bakker
Professor

Click here for a listing of Auburn's available life science technologies

Click here for a listing of Auburn's available physical science technologies

Receive new technology notices via email: _Sign up_ for Auburn's "Tech Notice"

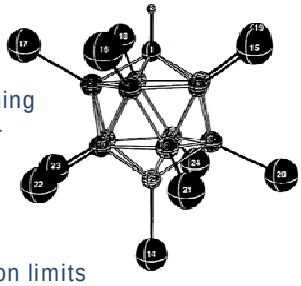
AUBURN UNIVERSITY

Overview

Auburn University is seeking a licensee or development partner for new materials for improved detection of ions. These self-plasticizing copolymers allow for the assessment of a wide variety of ions without experiencing the negative effects of leaching, typically caused from using plasticizers. The key application for these sensors are for the detection of low levels of ions in bodily fluids for medical testing and research.

This technology has potential applications in the following economic sectors:

- Medical Diagnostics and Testing
- Biochemical, Biomedical & Pharmaceutical Research



Advantages

- Copolymers used are plasticizer-free, eliminating plasticizer leaching that hinders detection limits and decreases lifespan of the sensor
- Ion-selective electrodes (ISE) based on this technology show increased response times and improved selectivities relative to conventional ISEs
- Highly sensitive, allowing for ultra-trace (sub nanomolar) detection limits
- Capable of detecting a wide variety of ions
- Observable color transformation allows for optical measurements

Description

Ion-selective electrodes (ISEs) are widely used for a variety of tests and analyses including water quality, food chemistry and medical diagnostics. In the medical arena, more than one billion ISE measurements are performed annually world wide in clinical laboratories. However, traditional tests suffer from a variety of drawbacks, including the use of plasticizers which can raise detection limits, interfere with biocompatibility and shorten sensor lifespan. As sensors become smaller, the leaching rates of plasticizers increase, magnifying these negative effects.

With the use of a novel, self-plasticizing co-polymer, the need for a plasticizer is eliminated, as are the undesirable effects from plasticizer leaching. Additionally, these sensors have shown increased response times and improved selectivities over conventional ISEs.

Finally, this technology can be combined with another novel approach for improved anion-detection. This novel copolymer system covalently binds the anion detection molecule (known as metalloporphyrins) to prevent dimer formation. Such dimer formation causes sensor readings to deviate from theoretical models, which affects accuracy, reliability and lifespan of the sensors. This material can also be used independently of the plasticizer-free copolymer.

Status

- Several US patents have issued or are pending on the plasticizer-free copolymer technology, including US 7,201,876, 7,208,121 and 7,226,563
- US Patent 7,678,252 has issued and several other applications are pending for the metalloporphyrin-based anion-detection technology
- Additional US Patents (7,247,489; 7,651,858) target flow cytometry applications
- Selective ion detection verified in the lab; further work on intracellular imaging is planned

Licensing Opportunities

- This technology is available for exclusive or non-exclusive licensing
- Joint development opportunities include funded research or a joint venture