

# AUBURN UNIVERSITY

## INNOVATION ADVANCEMENT & COMMERCIALIZATION

### Novel Materials for Ion Sensing *Immediate non-exclusive licensing*

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Reference: Ion Sensing

#### Lead Inventor

Dr. Eric Bakker  
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#### Status

- Selective ion detection has been lab verified

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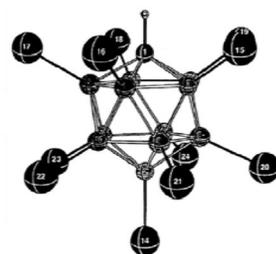
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#### Overview

Auburn University is seeking licensees for patents related to 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. Other diagnostic and research applications, including flow cytometry, also exist.

#### 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 these technologies 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.

#### Licensing Opportunities

- Issued US Patents:
  - Plasticizer-free copolymer technology:  
[7,201,876](#); [7,208,121](#); [7,226,563](#)
  - Additional ion detection technology:  
[8,242,203](#)
- Any combination of these patents is available for [immediate non-exclusive licensing](#) through Auburn's customizable ["Ready to Sign" licensing program](#).