



# Solid Contact Electrochemical Sensor (20140304, Dr. Philippe Buhlmann)

**IP Status:** Issued US Patent; **Application #:** 14/716,564

## Low-cost Ion Selective Electrode with Solid Contact

A new type of solid-contact ion-selective electrode (ISE) introduces low-cost colloid-imprinted mesoporous (CIM) carbon material as the solid contact. The CIM carbon, which is inexpensive and easy to manufacture, acts as an intermediate layer between a gold electrode and an ionophore-doped ISE membrane. The CIM carbon's open and interconnected pore texture offers significantly higher capacitance than current technology.

### MN-IP Try and Buy

#### Try

- Up to twelve month trial license
- Fee is \$10,000 for twelve months
- Fee is waived for MN companies or if sponsoring \$50,000+ research with the University
- No US patent expenses during trial period

#### Buy

- \$15,000 conversion fee (TRY to BUY)
- Royalty rate of 3% (2% for MN company)
- Royalty free for first \$1M in sales

## Technology ID

20140304

## Category

Engineering & Physical Sciences/Chemicals  
Engineering & Physical Sciences/Instrumentation, Sensors & Controls

## Learn more



## Electrochemical Sensor Requires Little Calibration

The new sensor requires minimal calibration. This benefit is due to a redox couple incorporated into the ISE, yielding a standard deviation of  $E^\circ$  as low as 0.7 mV. In addition, the CIM carbon's high purity, hydrophobic characteristics and low number of redox-active functional groups give the ISE excellent potential stability and resistance to light, oxygen, carbon dioxide and water interference.

### BENEFITS AND FEATURES OF SOLID CONTACT ELECTROCHEMICAL SENSOR:

- Requires minimal calibration
- Excellent resistance to interference from light, oxygen, carbon dioxide and water
- Long-term stability and excellent reproducibility
- Colloid-imprinted mesoporous (CIM) carbon is inexpensive and easy to manufacture
- Open and interconnected CIM carbon pore structure leads to higher capacitance

**Phase of Development** - Prototype Development

## Researchers

Philippe Buhlmann, PhD

*Professor, Chemistry, College of Science and Engineering*

[External Link](http://www.chem.umn.edu) (www.chem.umn.edu)

Andreas Stein, PhD

*Professor, Chemistry, College of Science and Engineering*

[External Link](http://www.chem.umn.edu) (www.chem.umn.edu)