

Applications

- Electrochemical measurements in biological fluids
- Point-of care diagnostic and monitoring
- Drug development
- Environmental testing
- Research tool

Advantages

- Resists biofouling and electrode passivation
- Real-time, continuous measurements
- More accurate and rapid measurements of redox potential

Inventors

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Market Need

Conducting electrodes are used for a wide range of electrochemical measurements in clinical and environmental settings. One of the main disadvantages of existing, traditional flat metal electrodes when measuring complex biological samples is its tendency to passivate due to absorption and biofouling. This leads to a decreased accuracy of the electrochemical information obtained. Measurement of redox potential, which is an important clinical measurement, comparable to pH, has been hindered because of electrode passivation. Currently available probes designed to measure redox potential in purified samples do not work in complex media such as blood. Therefore, new electrodes are needed that resist biofouling, allowing for reliable electrochemical information to be obtained in biologic media such as blood, plasma and tissue.

Technology Summary

Researchers at Virginia Commonwealth University have developed a novel class of electrodes that resist passivation and biofouling, allowing for accurate and rapid monitoring of biological media including blood, tissue and environmental samples. Preliminary testing has shown that these electrodes not only resist biofouling but allow for more accurate and rapid measurements of redox potential than traditional electrodes. This technology opens the door for real-time testing and monitoring of critically ill and injured patients but also has utility for many disease states, as well as new drug development. The figures show Cyclic voltammetric curves from electrodes demonstrating change in current flow at various time after addition of bovine serum albumin

Technology Status

Preliminary testing on technology has been completed and is ready to be published.

Patent pending: U.S. and foreign rights are available.

This technology is available for licensing to industry for further development and commercialization.

