

TechBriefs

Savannah River National Laboratory

U.S. DEPARTMENT OF ENERGY • SAVANNAH RIVER SITE • AIKEN • SC

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Benefits

- > Early identification of biofilm growth
- > Detect early stage corrosion to prevent systems failure

Applications

- > Environmental remediation
- > Corrosion monitoring
- > Contamination monitoring

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Non-contact Monitoring of Biofilms and Corrosion on Submerged Surfaces

Technology Overview

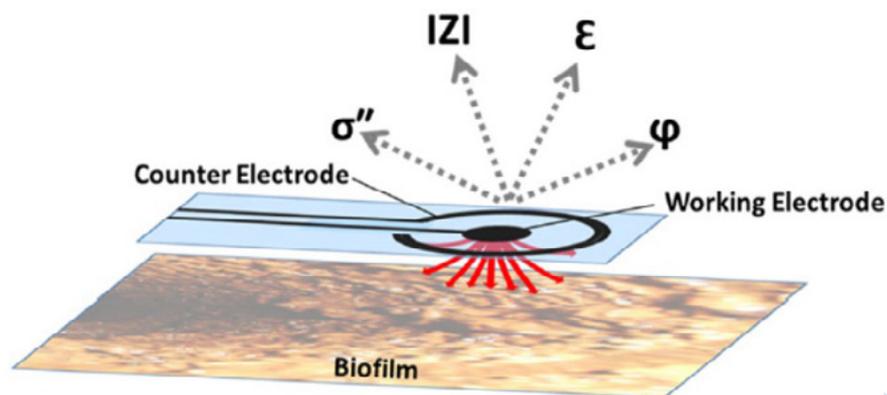
Savannah River National Laboratory (SRNL) has developed systems and methods for monitoring microorganisms on a surface in submerged mediums.

Description

Monitoring biofilms and corrosion on surface is important for applications such as bioremediation and waste containment. Monitoring the presence and growth of a biofilm, corrosion, and/or bio-corrosion is particularly useful in identifying contamination events leading to or resulting from spills, leaks, or other events. A flat, patterned electrode can be positioned proximate the surface to monitor and detect biofilm growth. This electrode uses electrochemical impedance spectroscopy to evaluate the impedance of a surface by applying an alternating current signal with a variable frequency through a pair of electrodes while measuring the resulting current. Changes in conductivity can correspond to cellular and microbial activity on the surface.

Intellectual Property

This technology and methods for its use have been granted U.S. Patent No. 10,234,376 B2 (March 19, 2019) "Non-Contact Monitoring of Biofilms and Corrosion on Submerged Surfaces with Electrochemical Impedance Spectroscopy" and is available for licensing.



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Technology transfer

The Savannah River National Laboratory (SRNL) is the U.S. Department of Energy's (DOE) applied research and development laboratory at the Savannah River Site (SRS).

With its wide spectrum of expertise in areas such as homeland security, hydrogen technology, materials, sensors, and environmental science, SRNL's cutting edge technology delivers high dividends to its customers.

The management and operating contractor for SRS and SRNL is Savannah River Nuclear Solutions, LLC. SRNS is responsible for transferring its technologies to the private sector so that these technologies may have the collateral benefit of enhancing U.S. economic competitiveness.

Partnering opportunities

SRNS invites interested companies with proven capabilities in this area of expertise to develop commercial applications for this process under a cooperative research and development agreement (CRADA) or licensing agreement. Interested companies will be requested to submit a business plan setting forth company qualifications, strategies, activities, and milestones for commercializing this invention. Qualifications should include past experience at bringing similar products to market, reasonable schedule for product launch, sufficient manufacturing capacity, established distribution networks, and evidence of sufficient financial resources for product development and launch.

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