TechBriefs

Savannah River National Laboratory

Benefits

> Increased accuracy and stability of optical absorbance measurements

> Improved performance consistency across instruments

> Reduced costs in method development and implementation

Applications

> Industrial process monitoring and laboratory-based analytical methods based on absorbance spectroscopy

Contact Information

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High Accuracy Absorbance Spectrophotometers

Technology Overview

Savannah River National Laboratory (SRNL) has developed technology to provide for automatic, self-calibrating spectrophotometers suitable for use in process monitoring and laboratory applications. The instrument configuration and calibration algorithms support robust performance and easy, correction-free

transfer of analytical methods between different instruments of this type.
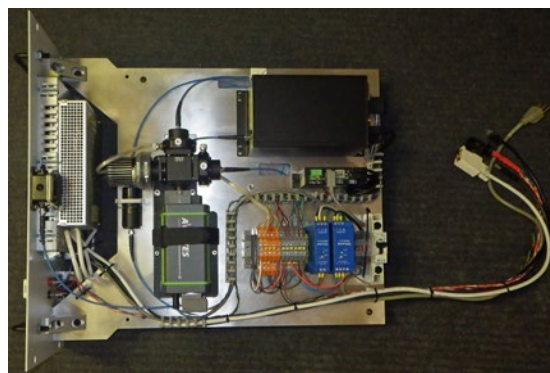
Description

Spectrometers based on array detectors are widely available and produce spectra quickly and conveniently. However, they are generally used in single beam mode, where reference and sample measurements are taken at different times, making absorbance measurements susceptible to drift. SRNL has developed a double beam diode array spectrophotometer which uses real-time wavelength and intensity calibration of individual diode arrays to produce more accurate absorbance measurements than commercially available single beam systems. These techniques also standardize spectral response between different instruments, allowing method calibrations – including multivariate chemometric methods – to be transferred without adjustment between instruments and with little to no loss in method performance. This feature ensures performance consistency when instruments are deployed in multiple locations across a process or laboratory and can save money in method development and maintenance. The instruments are compatible with optical fiber systems.

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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 SRNL is Battelle Savannah River Alliance, LLC. BSRA 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.

Intellectual Property

This technology and methods for its use have been granted US Patent No. 10,151,633 B2 (December 18, 2018), "High accuracy Absorbance Spectrophotometers" and is available for licensing.

Partnering opportunities

SRNL 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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