Education & Training

Field Portable Smartphone Device for Water Quality Monitoring

WiSys: T150032US02

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WiSys is seeking strategic partners interested in further developing this portable water quality measuring technology for application-specific or broader based commercialization.

Overview

• Water quality monitoring is often done by scientists at universities or government agencies who either collect samples in the field and transport them to stationary laboratories for analysis or install expensive in-situ sensors for data collection. The long processing time and high cost of these options may serve as barriers to broader application of water quality monitoring, which could address issues with regard to recreation, agriculture, commercial fishing, and more.

The Invention

A University of Wisconsin-Green Bay professor of chemistry has developed a portable, accurate, low cost, smartphone-based analytical device for the field-measurement and geographical mapping of environmentally relevant water quality parameters. In its current embodiment, the device is a colorimeter for measuring absorbance that includes a visible light source with onboard power, imaging filters, a sample cuvette, and a mounting mechanism for attachment to a smartphone or tablet. An accompanying app is used to record camera images of samples and convert them to numerical absorbance data for analysis. The app will be further developed to allow integration with an online ArcGIS platform for uploading and mapping the data.

Applications

- Water quality monitoring in the field;
- Academic research and education – university, high school, middle school
- Industrial wastewater process monitoring
- Beverage industry and healthcare

Key Benefits

- Simple design
- Low additional cost – target price of less than $100
- Compatible with a broad range of smartphones and tablets – uses their high-quality cameras
- GPS mapping capability

Stage of Development

A prototype of the device has been shown to work for absorbance measurement of colored solutions and for determining iron and ammonia in water. The prototype has compared well with more costly, commercially available research-grade instruments for these applications. A preliminary fluorescence experiment has also been conducted. Continued development for measuring fluorescence and turbidity and further app refinement is underway.

Tech Fields

- Analytical Instrumentation, Methods & Materials : Sensors
- Clean Technology : Monitoring, remediation & waste reduction
- Education & Training : Medical & health

For current licensing status, please contact Jennifer Souter at jennifer@wisys.org or (608) 316-4131