



Field Portable Smartphone Device for Water Quality Monitoring

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WiSys: T150032US02

Patent applied for.

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

OVERVIEW

Currently, water quality monitoring is 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 a relatively small number of expensive in-situ sensors for data collection. The lack of portability, high cost and long processing time of these options serve as barriers that prohibit broader groups of people from gathering real-time water quality data for addressing a wide variety of issues such as tourism, agriculture, commercial fishing, drinking water, 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.

BUSINESS OPPORTUNITY

THE WISYS ADVANTAGE

WiSys Technology Foundation serves the University of Wisconsin System comprehensive campuses by patenting and licensing discoveries to leading companies in Wisconsin, the United States and worldwide. Established in 2000 by the Wisconsin Alumni Research Foundation (WARF) and the UW System, WiSys is building the next generation of patent and licensing opportunities by fostering collaborations among campuses, private research organizations and industry, facilitating high-tech research with grant programs, and promoting student training for employment in a knowledge-based economy. WiSys's income is distributed to the UW campuses, the inventors and their departments to grow future discoveries and educational opportunities.



Globally, the water testing and analysis market was valued at approximately USD 3.2 billion in 2017 and is expected to generate revenue of around USD 4.5 billion by the end of 2024, growing at a CAGR of around 5.0% between 2017 and 2024. This growth is driven by trends such as increasing government regulations for water quality, environmental concerns, and increasing industrialization and urbanization.



APPLICATIONS

- Water quality monitoring in the field;
- Rural home drinking water testing;
- Education – university, high school, middle school;
- Academic research;
- Industrial wastewater process monitoring;
- Law enforcement – field drug testing;
- Beverage industry – color and turbidity monitoring;
- Health diagnostics – urine color analysis;
- Citizen science projects.

KEY BENEFITS

- Field portable;
- Low cost – target price of less than \$100;
- Compatible with a broad range of smartphones and tablets;
- Simple design;
- Facilitates crowdsourcing of scientific data; less reliance on large agencies for data;
- App-based data collection;
- GPS mapping capability;
- Allows use of high-quality smartphone cameras;
- Accuracy comparable with more expensive, stationary laboratory instruments.

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.

ADDITIONAL INFORMATION

Tech Fields

Clean Technology - Environmental monitoring

Analytical Instrumentation - Sensors

Education & Training - Medical & health

CONTACT INFORMATION

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

