Skysong Innovations
Advancing the Arizona State University Knowledge Enterprise

1475 N. Scottsdale Road, Suite 200
Scottsdale, AZ 85287-3538
Phone: 480 884 1996 Fax: 480 884 1984

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Inventors

Jeffrey LaBelle
Bin Mu
David Probst

Contact

Jovan Heusser
jovan.heusser@skysonginnovations.com

Biosensors for Continuous Detection of Analytes

Diagnosing and monitoring diseases and health often requires detecting and measuring concentrations of one or more analytes in a patient. Frequent trips to a healthcare facility are onerous and expensive and at home testing is painful, sometimes laborious and time consuming. All of this may lead to a lack of regular testing, and could mean missed diagnoses or in some disease states it could result in serious and life threatening consequences. Thus, continuous detection of one or more analytes is desired for greater compliance and more accurate disease and health monitoring.

Researchers at Arizona State University have developed novel biosensors and methods, utilizing biodegradable materials, for continuous detection of analytes in bodily fluids. These biosensors can detect multiple analytes, simultaneously, with continuous intermittent measurements over the life of the sensor. The sensor lifetime can be configured from one week to possibly up to 6 months.

These multi-analyte continuous biosensors could have a huge impact on the current healthcare model and provide new avenues for at home monitoring for accurate diagnoses and disease management.

Potential Applications

- Continuous detection of multiple analytes
  - Diabetes monitoring and management
  - Kidney function monitoring
  - Metabolism monitoring
  - Real time detection of pathogens
  - Fitness monitoring
  - Drug efficacy monitoring

Benefits and Advantages

- Can take continuous, intermittent measurements every 1-60 minutes
- Can be operably liked to an external device for recording and/or displaying the data
- Capable of simultaneous multi-analyte measurements
- The lifetime of the sensor can be tuned (1 week or up to 6 months)
- Monitoring fluctuations in different analytes could enable more accurate and timely diagnoses
- Utilizes biodegradable and biocompatible materials

For more information about the inventor(s) and their research, please see Dr. La Belle's laboratory webpage

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