Wearable device for continuous blood glucose monitoring

Technology #cu16026

Accurate monitoring of blood glucose levels is critical for the management of diabetes. Continuous, real-time blood glucose monitoring is a promising strategy for patients to monitor their diabetes, but current wearable devices for continuous blood glucose monitoring are often cumbersome, painful, and difficult to use. This technology is a device that uses an integrated microfluidic and polymer-based fluorescent detection system for accurate monitoring of blood glucose levels in real time. Additionally, the technology is highly miniaturized, allowing it to be integrated into wearable devices such as watches or fitness bands. This technology can be used to develop a device for high precision, continuous monitoring of blood glucose levels in diabetic patients, leading to improved symptom management.

Microneedle-based blood collection system decreases pain and improves patient monitoring

Collecting blood samples for glucose monitoring is often a tedious and painful process. This technology meets those challenges by using an array of microneedles connected to a pump to reduce the pain and time associated with blood collection. This microneedle array integrates with sensors and all other components needed for continuous blood glucose monitoring to create a device less than 20 mm thick, making it low-profile enough to be incorporated into most wearable devices. The combined result is a pain-free device that a patient can use to easily monitor their glucose levels in real time. This technology could help improve adherence to recommended treatment of diabetes by providing constant information about blood glucose, leading to improved quality of life for patients.

A prototype of this device has been developed and validated in in vivo systems.

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Applications:

- Wearable device for blood glucose monitoring
- Integration with phone and computer apps for remote monitoring of infants or children with diabetes
- Incorporation into fitness bands or athletic watches for glucose monitoring during exercise
- Point-of-care device for continuous monitoring of hospitalized patients’ blood glucose levels
- Sensors for glucose monitoring in laboratory research settings
- Translation of core technology for monitoring of other analytes like hormones

Advantages:

- Small size allows integration with other wearable devices
- Microneedle system minimizes the pain of blood collection
- Ease of use and low pain could improve patient compliance with diabetes management guidelines

Patent Information:

Patent Pending (US 20160029937)

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Related Publications:

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