

Implantable Biocompatible SiC Sensors

Researchers at the University of South Florida have developed an implantable silicon carbide (SiC) biosensor for the continuous sensing and monitoring of glucose in a patient.

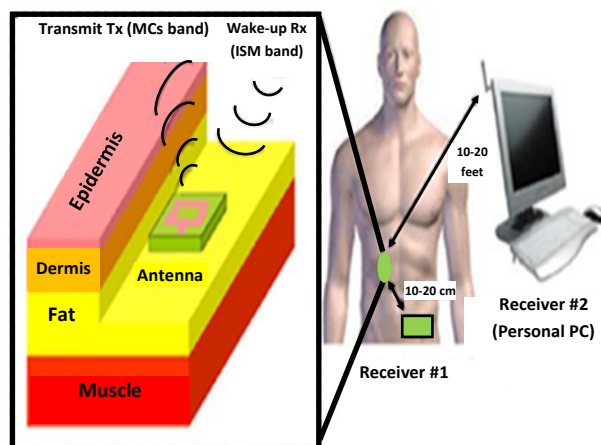
In recent years, considerable progress has been made in developing implantable biosensors that can continually monitor different health care issues such as glucose levels of a diabetic patient. However, to be truly beneficial, the implanted sensor must be able to function properly for an extended period of time. The biosensors developed thus far typically only remain functional for 10-30 days after implantation into the body. Contributing factors for this loss of functionality include the degradation and fouling of the sensor and the changes in the tissue surrounding the sensor such as fibrosis and inflammation. While researchers explore potential solutions to improve the current implantable biosensors, there is an urgent need to investigate alternative technologies and materials of choice.

USF inventors have developed an implantable subcutaneous blood glucose level biosensor comprised of a controller, sense antenna, radiating electrode and power source. The radiating electrode can be fabricated from doped 3C-SiC or 4H-SiC. This device is able to continuously monitor glucose levels long-term, thus remaining functional in the body for years. When implanted under the skin, the biosensor will monitor glucose levels and transmit the data to a nearby personal computer via the biosensor's antenna. The device has the potential to impact the lives of 25.8 million patients in the United States alone living with diabetes. It may also reduce the number of hospitalizations due to complications from poor diabetic management, thereby saving millions of healthcare dollars.

ADVANTAGES:

- Long-term glucose monitoring
- Improved sensing potentiality
- Reduced chronic diabetic complications
- Will reduce hospitalization rates

Long-Term Glucose Monitoring in Patients



The Proposed Implantable RF Antenna Sensor (In-Vivo) Communicating with an External Receiver

Tech ID # 11B150

Patent #: [10,278,629](#)