



Inventors

Bruce Towe

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Wireless Biotelemetry Using Piezomaterial-Diode Coupled Systems

AzTE Case # M08-119

Invention Description

Recording of bioelectrical event from the brain, spine and nervous system in a wireless and minimally invasive manner is an important capability that has received much attention over the years. Investigations of the neural system of the body are both fundamentally enabled, as well as, limited by modern electrophysiological tools. Effective biotelemetry obviates the need to pass neural signals through the wired connectors on the skin or skull. Wires are not only undesirable but can harbor infection sites, lead to mechanical failure, and present dangers of being scraped by abrasion or caught and torn by clothing or environmental objects.

Professor Bruce Towe of Arizona State University has developed a method and means of constructing a micro-implantable transmitting device of an exceptionally small size and for powering them by way of ultrasound applied to the body surface. The invention is not a typical transmitter that radiates a signal from inside the body outward into space for remote reception. It is a form of an electrical link that eliminates wires from the interior of the body to and through the skin surface. It encodes the bioelectrical activity inside the body onto the carrier wave that allows the biosignal to be detected on the skin where it can then be utilized or transmitted remotely by conventional means.

Potential Applications

- Neuroprosthetics
- Medical rehabilitation
- Therapeutics
- Diagnostics
- Human-machine interfaces

Intellectual Property

Status:

Patent Pending

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Benefits and Advantages

- Wireless technology limits complications associated with wired biotelemetry: mechanical failure, infection, abrasion etc.
- Powered by ultrasound, allowing for multiple implants to be addressed independently and simultaneously