Wireless Powering of Implanted Bioelectronic Devices (A)

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Technology description

Electronic medical implants require a power source, such as an internal battery or external coaxially coupled magnetic induction coils, thus requiring a larger form factor and more invasive surgical implantation. Furthermore, internal power sources tend to have shorter service life the smaller they are and magnetic coils are hindered by low coupling coefficients and limited functional energy transfer at higher depths. It would be ideal to have electronic medical implants that could be powered externally, have a small form factor and be implanted non-surgically.

Professor Bruce Towe of Arizona State University has developed a method of efficiently powering implanted electronic medical devices in a wireless manner. Because energy is wirelessly transferred from an external source to the implants, it allows for small neurostimulator designs, non-surgical injectable implantation and higher flexibility of implantation site.

Because this technology allows for such miniaturization of electronic medical devices it may serve as a core technology to promote the basis for further development of complex medical devices with sophisticated biomedical microelectronic functionality.

Application area

Implanted electronic medical devices including:

Stimulators

Sensors

Pacemakers

Actuators

Advantages

Small form factor – doesn’ t require use of bulky battery

Amenable to non-surgical syringe injection

Increased implant depth – allows for greater flexibility of implant site

Replacement for inductive coils that take up a large area

Institution

Arizona State University

Inventors

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