Powering Implantable Sensors and Devices

Title: Nano-wired Ultra-Capacitor Power Sources For Implantable Sensors and Devices

Invention: This invention seeks to create both a more convenient and economical alternative to existing systems of portable power storage that are necessary for powering implanted sensors and devices. The proposed technology employs Nano-wired Ultra Capacitors (NUC) composed of a dielectric membrane placed between two thin, metal films that is capable of charging within seconds and has a significant life span before degradation.

Background: Existing batteries, especially those used in current implantable sensors, are expensive and inconvenient to employ for an extended amount of time. In addition, these battery systems are toxic and must be recycled post useful lifespan. With the increase in medical procedures requiring constant monitoring, demand is also subsequently increasing for implantable sensors or devices equipped to provide up-to-date information regarding a patient's condition.

Applications:
- Medical devices

Advantages:
- Composed of non-toxic and non-explosive materials
- Enhanced ecology and environmental safety
- Long life (measured by the number of charge/discharge cycles before degradation)
- Rapid charging (seconds and minutes versus hours)
- Employs readily available and inexpensive materials
- Charging and discharging processes are safe, stable, and produce no toxic emissions
- Simply manufactured
- Higher self-discharge resistance

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• Higher capacitance density

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