

7. Energy harvesting for Implantable Bioelectronics

Introduction: The goal and theme of the proposed special session. Energy harvesting for implantable bioelectronics is a means of powering biomedical devices by scavenging many low grade ambient energy sources such as heartbeat, respiration, and chemical energy from the redox reaction of glucose, light, salinity, moisture gradient and wireless energy transmission, and their conversion into useable electrical energy to power the implanted devices.

Energy harvesting is a promising technology for powering implantable biomedical devices. It enables the generation of electric energy from the surrounding environment through direct energy conversion. The development of implanted devices is essential because of their direct effect on the lives and safety of humanity. Currently, implanted batteries provide the energy for implantable biomedical devices. However, batteries have fixed energy density, limited lifetime, chemical side effects, and large size. Thus, researchers have developed several methods to harvest energy for implantable devices.

Topics:

- Kinetic energy harvesting for implantable bioelectronics
- Thermal energy harvesting for implantable bioelectronics
- Wireless power transfer for implantable bioelectronics
- Moisture-enabled electric generation for implantable bioelectronics
- Biodegradable materials and devices
- Energy storage and hydrogel bioelectronics

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