# Article information:

Recent Progress on Piezoelectric and Triboelectric Energy Harvesters in Biomedical Systems - Zheng - 2017 - Advanced Science - Wiley Online Library
<https://onlinelibrary.wiley.com/doi/full/10.1002/advs.201700029>

# Article summary:

1. Implantable medical devices (IMDs) have become indispensable tools for improving the quality of life and prolonging patient lifespan, but they face challenges such as size, weight, and battery life.

2. Biomechanical energy harvesters based on piezoelectric and triboelectric effects offer a solution to these challenges by converting mechanical energy into electricity for self-powered IMDs.

3. Piezoelectric and triboelectric devices also have potential applications as mechanical nanosensors in biomedical fields, such as monitoring cardiac function or blood pressure.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article "Recent Progress on Piezoelectric and Triboelectric Energy Harvesters in Biomedical Systems" provides an overview of the recent advancements in energy harvesting devices for biomedical applications. The article highlights the challenges faced by implantable medical devices (IMDs) and the need for self-powered devices that can harvest energy from natural sources or artificial power around the patient. The article discusses various methods to reclaim energy from electrical, thermal, chemical, and mechanical processes in vivo.

The article focuses on piezoelectric and triboelectric energy harvesters as promising candidates for biomedical applications due to their flexibility, biocompatibility, and cost-effectiveness compared to other types of mechanical energy conversion means. The article explains the mechanism of piezoelectricity and triboelectricity & electrostatic induction in detail.

However, the article has some potential biases and missing points of consideration. Firstly, the article only focuses on piezoelectric and triboelectric energy harvesters while ignoring other potential sources of energy such as thermal or chemical processes. Secondly, the article does not provide a comprehensive analysis of the limitations and risks associated with these technologies. For example, there is no discussion about potential adverse effects on human health due to long-term exposure to electromagnetic fields generated by these devices.

Moreover, the article seems to be promotional in nature as it highlights only positive aspects of these technologies without discussing any potential drawbacks or limitations. Additionally, there is no exploration of counterarguments or alternative perspectives that could provide a more balanced view of these technologies.

In conclusion, while the article provides valuable insights into recent advancements in piezoelectric and triboelectric energy harvesters for biomedical applications, it has some potential biases and missing points of consideration that limit its overall credibility. Therefore, readers should approach this information with caution and seek additional sources before making any decisions related to these technologies.

# Topics for further research:

* Limitations and risks of piezoelectric and triboelectric energy harvesters in biomedical applications
* Alternative sources of energy for implantable medical devices
* Long-term effects of electromagnetic fields on human health
* Biocompatibility of piezoelectric and triboelectric energy harvesters
* Cost-effectiveness of different types of mechanical energy conversion means
* Counterarguments to the use of piezoelectric and triboelectric energy harvesters in biomedical systems

# Report location:

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