

9. Vibration Energy Harvesting Based Wireless Sensing and Applications

Introduction: With the continuous development of the Internet of Things (IoT), this technique has greatly expanded the information interconnection between individuals and been widely applied in smart transportation, smart cities, medical and health fields, wearable devices and military products. As the key nodes of the IoT system, the wireless sensor nodes have been developed rapidly. According to Machina Research, the number of IoT-related devices will exceed 25 billion around 2025. The vast majority of sensor nodes are powered by chemical batteries. However, it is difficult to recharge or replace the batteries.

There are many clean energy sources available in the ambient environment, among which the vibration energy can be harvested regardless the weather and locations. Intensive attentions were paid on optimizing the efficiency, operational bandwidth, multiple directional vibration energy harvesting. In recent years, self-powered wireless sensing systems are developed powered by the vibration energy. Numerous researches were carried out focusing on the synthesized integration, operational algorithm, optimization and applications of the vibration energy based self-powered sensing systems. This special session intends to present some of the contemporary challenges, solutions and insights of the vibration energy harvesting based wireless sensing and its applications. The conference papers collected in this section would cover qualifying and quantifying the performances of vibration energy harvesting systems and potential applications in wireless sensing within their respective application areas.

Topics:

- Power output performance optimization of vibration energy harvesting
- Circuit interface and power output of vibration energy harvesting
- Wireless sensor node and power management algorithm
- Application of vibration energy harvesting

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