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Visualizing the Knowledge Profile on Self-Powered Technology

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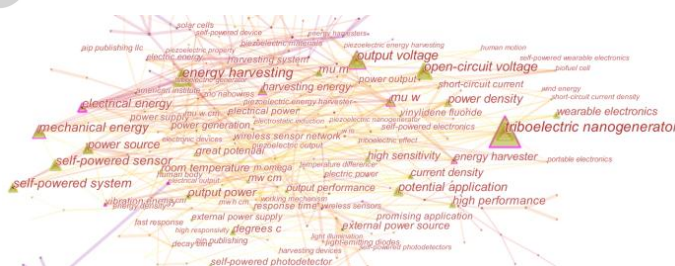
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Abstract

Since the 1990s, self-powered technology (SPT) for micro devices has gained more attention in niche academic circles; however, breakthrough research was very rare until the piezoelectric nanogenerator (PENG) was invented around 2007. Recently, with substantial development of pervasive/ubiquitous computing technology in recent decades, the relevant applications in areas such as cloud computing, the Internet of Things, remote sensing, and remote healthcare have entered people's lives and gradually become prevalent. Furthermore, determining how to continuously supply power to those micro devices or components embedded into vehicles, mini-sensors, or heart pacemakers has also become a critical issue. Self-powered technology based on nanogenerators appears to be a promising development opportunity, particularly after another better nanogenerator; namely, the triboelectric nanogenerator, was invented around 2011, at which point the relevant studies of SPT appeared to enter a new era. To further visualize the knowledge profile of SPT, an integrated approach is proposed in this paper, and knowledge-mapping of SPT is also illustrated. Accompanying the SPT knowledge profiling, new phenomena and implications are revealed.

Graphic Abstract



Keywords

Self-powered technology; Knowledge profile; Nanogenerator; Knowledge base; Research fronts

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