

Special Issue on  
**Backscatter Communications for  
Battery-Free IoT Networks**

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With the rapid development of communication technology and the rapid growth of mobile devices, the Internet of Things (IoT) will be ubiquitous in every aspect of our daily life. One of the significant challenges for IoT is the limited network lifetime due to massive IoT devices powered by batteries with finite capacities. Even though wireless energy harvesting has been proposed to power the IoT devices, the conventional radio architecture of IoT nodes comprises power-hungry RF chains, e.g., oscillators, mixers, and digital-to-analog converters, which can hardly be supported by the energy from wireless energy harvesting alone.

Backscatter communications (BackComs), which rely on passive reflection and modulation of an incident radio-frequency (RF) wave, have been proposed as a promising solution for energy-constrained IoT devices to realize battery-free communications. However, the contemporary BackCom has several major limitations, such as short transmission range and low data rate. Although these limitations have been tackled in the recently proposed bistatic BackComs and ambient BackComs, the associated signal modulation, interference cancellation, and resource scheduling aspects have not been sufficiently studied.

The aim of this Special Issue is to collate innovative research on technical challenges and recent results related to BackCom-enabled battery-free communications. Researchers and practitioners working in this area are invited to discuss and express their views on the current trends, challenges, and state of the art solutions addressing various issues in the applications of BackCom in IoT networks. Original research and review articles are welcome.

Potential topics include but are not limited to the following:

- ▶ Signal detection for BackComs in IoT
- ▶ Hardware and testbed for BackComs
- ▶ Performance analysis for BackComs
- ▶ Emerging technologies with BackComs including THz, VR, and edge learning
- ▶ Channel estimation for BackComs
- ▶ Modulation and demodulation for BackComs
- ▶ Security and jamming issues for BackComs
- ▶ Standards and network protocols for BackComs
- ▶ Multi-access edge computing and BackComs
- ▶ Full-duplex based BackComs
- ▶ Millimeter-wave-based BackComs

Authors can submit their manuscripts through the Manuscript Tracking System at <https://review.hindawi.com/submit?specialIssue=313444>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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