

IEEE Transactions on Cognitive Communications and Networking
Call for Papers
Energy-Harvesting Cognitive Radio Networks

Cognitive radio plays an important role in the fifth generation (5G) of wireless networks thanks to its ability to considerably increase the utilization of spectrum resources and thus reduce the current spectrum scarcity. In cognitive radio, secondary users are allowed to share the spectrum owned by the primary users according to the design criteria of spectrum overlay, spectrum interweave, or spectrum underlay, which enables a more flexible and efficient use of the spectrum resources. On the other hand, energy efficiency has become one of the critical aspects for the successful design and deployment of the 5G and beyond wireless networks. The key idea is to support the efficient utilization of the available energy so as to significantly increase the network device lifetime (up to 10 years for low-power IoT devices) and drive down operational expenditure by several orders of magnitude. The energy consumption is expected to further increase with the growing number of devices and the exploding data traffic so that there is a significant need to develop energy-efficient architectures and transmission techniques/protocols. Thus, owing to the spectrum scarcity and increasing energy consumption expected in 5G and beyond wireless networks, the integration of energy harvesting (EH) technologies to cognitive radio networks (CRNs) arises as an interesting solution since it provides a spectrum and energy-efficient wireless communication system, where secondary users are capable of harvesting energy from the primary (or external) sources to support the dynamic spectrum access to the licensed bands owned by the primary users. In addition, cognitive radio techniques can be used to improve the energy management of future wireless networks, providing consequently a more efficient use of both spectrum and energy resources.

The purpose of this special issue is to address fundamental and practical challenges for the analysis and design of EH CRNs, proposing new efficient protocols and techniques. More specifically, this special issue will bring together leading researchers and developers from both industry and academia to present their views on the current trends and challenges, addressing various issues related to EH CRNs. Prospective authors are invited to submit original manuscripts on topics including, but not limited to:

- Fundamental theory of EH CRNs
- Methodologies, algorithms, and architectures for EH CRNs
- Signal processing techniques for EH CRNs
- Cooperation and relaying in EH CRNs
- Full-duplex in EH CRNs
- Physical layer security in EH CRNs
- NOMA in EH CRNs
- Massive MIMO systems in EH CRNs
- Simultaneous wireless information and power transfer in CRNs
- Wireless power transfer in CRNs
- Interference exploitation and management in EH CRNs

- QoS provisioning and resource allocation methods for EH CRNs
- Cross-layer optimization for EH CRNs
- Network economics for EH CRNs
- Practical testbeds for EH CRN
- EH from natural sources in CRNs

Prospective authors should submit their manuscripts following the IEEE TCCN guidelines at <https://www.comsoc.org/tccn/submit-a-manuscript>. Authors should submit a PDF version of their complete manuscript to <https://mc.manuscriptcentral.com/tccn> according to the following schedule:

Manuscript Due: August 30, 2018

Acceptance Notification: November 30, 2018

Final Manuscript Due: January 30, 2019

Publication Date: First Semester, 2019

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