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Editorial

Wireless Sensor Networks Based on Environmental Energy Harvesting

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With the development of wireless sensor networks (WSNs), more complicated and challenging applications now can be targeted by small and smart systems. Although most of these applications require little power, the gradual degradation of the batteries further decreases the useable lifetime of WSNs. Aside from relying on revolutionary development of battery technologies, one of the most important ways to improve the system lifetime is to "*harvest*" energy from ambient environmental energy sources. Energy harvesting devices efficiently and effectively capture, accumulate, store, condition, and manage this energy and supply it in a form that can be used to perform a helpful task.

There is in fact a constant need to design practical distributed and centralized algorithms and introduce novel theoretical models or evaluation methodologies to challenge various kinds of research problems originating from environmental energy harvesting for WSNs. Although there are a large number of developed applications using energy harvesting system power that are now practically available, there are still many problems that lead to considerable challenges in WSNs based on energy harvesting. To collate the recent advances and contributions from various perspectives on this issue, this special issue has been launched to publish a selection of high quality research papers. The objective is to push the theoretical and practical research forward for a deeper understanding in the fundamental algorithm, modeling, and analysis techniques of energy harvesting.

We had received a large number of manuscripts from all over the world, of which only few manuscripts could be selected for this special issue through a rigorous and thorough review process. These selected papers address different critical problems on different problems related to WSNs based on environmental energy harvesting. They are listed below.

(i) "*A Novel data classification and scheduling scheme in the virtualization of wireless sensor networks*" (E.-N. Huh and Md. M. Islam).

(ii) "*Battery-less 6LoWPAN-based wireless home automation by use of energy harvesting*" (A. M. Efendi et al.).

(iii) "*Thermoelectric energy harvesting for building energy management wireless sensor networks*" (W. Wang et al.).

(iv) "*A nonclairvoyant real-time scheduler for ambient energy harvesting sensors*" (H. E. Ghor et al.).

(v) "*On adaptive energy-efficient transmission in WSNs*" (N. Javaid et al.).

We are very hopeful that these papers will prove to be useful source of reference for both the researchers and the practitioners.

Acknowledgments

We are thankful to all those authors who considered submitting their works to this special issue, irrespective of whether their papers could be accepted or not. We are thankful to all the referees, who painstakingly reviewed the papers. Without their hard work and dedication, it would not have been possible to select these high quality papers within the given time limits of this special issue.

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