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## Editorial: security issues on sensor networks

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**Biographical notes:** Dr. Yang Xiao is an IEEE Senior Member. He was a voting member of IEEE 802.11 Working Group from 2001 to 2004. Currently, he serves as Editor-in-Chief for *International Journal of Security and Networks* and *International Journal of Sensor Networks*. Currently, he is an Associate Editor or on editorial boards for five other journals. He served as a Guest Editor for eight journals special issues. His research areas include wireless networks, mobile computing and network security. He has published more than 70 journal papers with more than 40 papers published in various IEEE journals. He has edited/co-edited ten books on wireless networks and security.

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## 1 Introduction

Security in Sensor networks differs from those in other traditional networks in many aspects such as limited memory space, limited computation capability, etc. Therefore, sensor network security has some unique features, which do not exist in other networks. The need to address security issues and provide timely, solid technical contributions of security solutions in sensor networks establishes the motivation behind this Special Issue.

This Special Issue is dedicated to sensor network security. Specific areas of interest of this Special Issue include key managements in sensor networks, secure routing in secure networks, lightweight encryption and authentication in sensor networks, attacks and solutions in sensor networks and other areas, which are related to both security and sensor networks.

Five papers were selected for this Special Issue with the acceptance ratio of 25 percent. We introduce them as follows. The first paper, 'Elliptic curve cryptography-based access control in sensor networks', by Wang et al.

presents a public-key access control in a sensor network using elliptic curve cryptography as well as an evaluation. The second paper, 'A lightweight encryption and authentication scheme for wireless sensor networks', by Zheng et al., discusses the security of IEEE 802.15.4 and the ZigBee Alliance and proposes a security architecture based on a lightweight public key scheme, called Derivable Public Key. The third paper, 'Analysis of routing security-energy tradeoff in wireless sensor networks', by Al-Karaki, proposes a secure routing protocol for a large-scale wireless sensor network, considering both security and energy efficiency. The fourth paper, 'Load-balanced key establishment methodologies in wireless sensor networks', by Arazi and Qi provides elliptic curve cryptography for key-establishment methodologies for securing ad hoc clusters of sensor nodes. The last paper, 'Limiting DoS attacks during multihop data delivery in wireless sensor networks', by Deng et al., addresses a particular class of DoS attacks and proposes a solution using oneway hash chains.

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