

# **Wireless and Sensor Network Security (*WSNS 2009*)**

## ***Message from the Workshop Chairs***

**W**elcome to WSNS 2009, the 5<sup>th</sup> IEEE International Workshop on Wireless and Sensor Networks Security held in conjunction with the 6<sup>th</sup> IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS 2009).

Wireless networks have experienced an explosive growth during the last few years. Nowadays, there is a large variety of networks spanning from the well-known cellular networks to non-infrastructure wireless networks such as mobile ad hoc networks and sensor networks. Security is a central concern for achieving secured communication in these networks. Interest has increased in this area. This includes attacks and countermeasures, authentication and access control, computer-aided tool for security, cross-layer design for security, cryptographic protocol, denial of service (DoS), key management, information hiding, intrusion detection and response, malicious behavior detection and analysis, privacy and anonymity, secure localization and synchronization, security and performance tradeoff, security policy and enforcement issues, security protocols analysis, design, and proof, secure routing/MAC, surveillance and monitoring, trust establishment and management, and so on. This one-day workshop aims to provide a forum for continued activity in such an area, to allow interaction of security researchers and developers, and to give attendees of MASS 2009 an opportunity to network with experts in wireless sensor networks security.

In response to the call for papers of this workshop, 25 papers from 14 different countries and regions were submitted. Each paper was reviewed by 3-5 experts including program committee members and external reviewers. The program committee made selection based on the received review reports and space and time limitation. As a result, 11 regular papers are accepted and 9 of them will be presented at WSNS 2009.

The technical program for WSNS 2009 is the result of the hard work of many authors, reviewers, program committee members. We are grateful to them for their help and investing time and energy in the development of the very high quality technical program. We thankfully acknowledge the MASS 2009 Workshops Chair, Professor Ivan Stojenovic (University of Ottawa), and MASS 2009 Local Chairs, Professor Zhiguo Gong and Professor Jingzhi Guo (University of Macau) for the help in organizing this workshop. We also appreciate the advices and supports from our WSNS 2009 Steering Committee members, Professor Dharma Agrawal (University of Cincinnati), Professor Sajal Das (University of Texas at Arlington & US National Science Foundation), Professor Yong Guan (Iowa State University), Professor Thomas La-Porta (Pennsylvania State University), and Professor Jie Wu (Temple University).

We hope you will enjoy and benefit from the presentations and discussions of WSNS 2009!

October, 2009

***Falko Dressler, University of Erlangen, Germany***

***Zhen Jiang, West Chester University, USA***

***Wensheng Zhang, Iowa State University, USA***

# **WSNS 2009**

## **Workshop Organization**

### **Workshop Chairs**

*Falko Dressler, University of Erlangen, Germany*  
*Zhen Jiang, West Chester University, USA*  
*Wensheng Zhang, Iowa State University, USA*

### **Steering Committee**

*Dharma Agrawal, University of Cincinnati, USA*  
*Sajal Das, University of Texas, Arlington, USA & US National Science Foundation*  
*Yong Guan, Iowa State University, USA*  
*Thomas La-Porta, Penn. State University, USA*  
*Jie Wu, Florida Atlantic University,*

### **Program Committee**

*A. Agah, West Chester University, USA*  
*L. Bao, University of California at Irvine, USA*  
*L. Burgazzi, ENEA, Italy*  
*S. Chen, Florida International University, USA*  
*X. Chen, Texas State University, USA*  
*Y. Chen, State University of New York, Binghamton, USA*  
*Y. Chen, Stevens Institute of Technology, USA*  
*H. Choi, Sprint Advanced Technology Labs, USA*  
*E. Fernandez, Florida Atlantic University, USA*  
*Q. Gu, Texas State University, USA*  
*F. Kargl, Ulm University, Germany*  
*F. Li, IUPUI, USA*  
*Q. Li, William and Mary College, USA*  
*Y. Chen, State University of New York, Binghamton, USA*  
*C. Liu, Florida Atlantic University, USA*  
*D. Liu, University of Texas at Arlington, USA*  
*W. Lou, Hong Kong Polytechnic University, Hong Kong, China*  
*Q. Ma, Juniper Networks, USA*  
*V. Misic, University of Manitoba, Canada*  
*P. Nikander, Helsinki University of Technology, Finland*  
*G. Noubir, Northeastern University, USA*  
*D. Ostry, CSIRO ICT Centre, Australia*  
*H. Shen, University of Arkansas, USA*  
*H. Song, Frostburg State University, USA*  
*P. Traynor, Pennsylvania State University, USA*  
*Y. Wang, North Carolina University, Charlotte, USA*  
*Y. Xia, University of Florida, USA*  
*S. Yang, Rensselaer Polytechnic Institute, USA*  
*S. Zhong, State University of New York, Buffalo, USA*  
*X. Zou, IUPUI, USA*



## WSNS'09 Workshop Program

Monday, October 12<sup>th</sup>, 2009  
Macau, SAR, P.R. China

### Opening Session (9:00 – 9:10): Introduction to WSNS'09

**Dr. Falko Dressler**  
University of Erlangen-Nuremberg,  
Germany

**Dr. Zhen Jiang**  
West Chester University  
USA

**Dr. Wensheng Zhang**  
Iowa State University  
USA

### Session 1 (9:10 – 10:00) : Key Management & Security Schemes,

**Chair: F. Dressler (Univ. of Erlangen-Nuremberg, DE)**

1	Design and Implementation of a Security Manager for WirelessHART Networks	Shahid Raza; Thimo Voigt; Adriaan Slabbert (Swedish Institute of Computer Science, SE); Krister Landernäs (ABB Corporate Research Västerås, SE)
2	A Per-Hop Security Scheme for Highly Dynamic Wireless Sensor Networks	Syed Taha Ali; Vijay Sivaraman; Ashay Dhamdhare (University of New South Wales, AU)

### Break (10:00 – 10:30)

### Session 2: Quality & Performance, Chair: J. Li (National Cheng Kung University, TW)

3	Quantum Communication in Distributed Wireless Sensor Networks	Jung-Shian Li; Ching-Fang Yang (National Cheng Kung University, TW)
4	Randomly Directed Exploration: An Efficient Node Clone Detection Protocol in Wireless Sensor Networks	Zhijun Li; Guang Gong (University of Waterloo, CA)
5	Performance Impact of and Protocol Interdependencies of IEEE 802.15.4 Security Mechanisms	Feng Chen (Siemens AG Automation and Drives, DE); Xiaolong Yin; Reinhard German; Falko Dressler (University of Erlangen, DE)

### Lunch (12:00 – 13:30)

### Session 3: Privacy Issue & Localization, Chair: Z. Jiang (West Chester University, US)

6	A Principal-Agent Method to Prevent Selfish MAC Layer Behavior in Wireless Networks	Kai Shi; Yantai Shu (Tianjin University, CN); Oliver Yang (University of Ottawa, CA); Chunfeng Liu (Tianjin University, CN)
7	Private Cluster Head Election in Wireless Sensor Networks	Levente Buttyan; Tamás Holczer (Budapest University of Technology and Economics, HU)
8	SecMCL: A Secure Monte Carlo Localization Algorithm for Mobile Sensor Networks	Yingpei Zeng (Nanjing University, CN); Jiannong Cao (Hong Kong Polytechnic Univ, HK); Jue Hong; Shi-Geng Zhang; Li Xie (Dept of Computer Science and Technology, Nanjing University, CN)
9	A new Group Key Management Scheme based on DMST for Wireless Sensor Networks	Yingzhi Zeng; Yan Xia; JinShu Su (National University of Defence Technology, CN)

### Final Discussions