# FOREWORD

## Special Section on Smart Radio and Its Applications in Conjunction with Main Topics of SmartCom

Aiming at tackling with the rapid growth of mobile traffic and consequently the spectrum scarcity problem, research and development on highly efficient spectrum resource utilization have become more and more active. Meanwhile, discussions for next generation wireless networks such as 5G and beyond mobile communications have been started which could support a wide variety of applications including Machine-to-Machine (M2M), Internet of Things (IoT), etc. Such multi-functional wireless terminals and/or advanced wireless networks can be treated as Smart Radio. The concept of Smart Radio covers: reconfigurable software defined radio; cognitive radio and dynamic spectrum access functionality; heterogeneous and cooperative wireless networks; and their integrations. Under such circumstances, the workshops on Smart Radio technologies (SmartCom) have been held since the year of 2014. In order to further promote research and development in the field of wireless communications and build up emerging technologies for the next generation wireless networks with Smart Radio, this special section was planned.

In response to a call for papers, 17 papers were received. Based on peer-to-peer review, two invited papers on the latest research results on Wi-SUN communication systems and Orbital Angular Momentum Multiplexing both of which are expected to be key enablers of future wireless communications, and 5 papers were accepted for the publication. These papers cover a wide range of topics from fundamental technologies of modulation and sensing to system level investigations. The editorial committee hopes that this issue will provide useful information and promote innovation in the field of Smart Radio and its applications.

As the guest editor-in-chief, I would like to express my sincere appreciation to all the authors for their contributions and to all the editors and reviewers for their voluntary activities.



Fumiyuki Adachi, Guest Editor-in-Chief

***Fumiyuki Adachi*** *(Fellow)* received the B.S. and Dr. Eng. degrees in electrical engineering from Tohoku University, Sendai, Japan, in 1973 and 1984, respectively. In April 1973, he joined the Electrical Communications Laboratories of Nippon Telegraph & Telephone Corporation (now NTT) and conducted various types of research related to digital cellular mobile communications. From July 1992 to December 1999, he was with NTT Mobile Communications Network, Inc. (now NTT DoCoMo, Inc.), where he led a research group on wideband/broadband CDMA wireless access for IMT-2000 and beyond. He contributed to the development of 3G air interface standard, known as W-CDMA. Since January 2000, he has been with Tohoku University, Sendai, Japan. He was a full professor until March 2016 and is now a specially appointed professor for research at Research Organization of Electrical Communication (ROEC), Tohoku University. His research interest is in the area of wireless signal processing and networking including broadband wireless access, equalization, transmit/receive antenna diversity, MIMO, adaptive transmission, channel coding, etc. He is an IEICE Fellow and is a co-recipient of the IEICE Transactions best paper of the year award 1996, 1998, and 2009 and also a recipient of Achievement award 2003. He is an IEEE Life Fellow and is a VTS Distinguished Lecturer since 2011. He is a co-recipient of the IEEE Vehicular Technology Transactions best paper of the year award 1980 and again 1990 and also a recipient of IEEE VTS Avant Garde award 2000. He is a recipient of Thomson Scientific Research Front Award 2004, Ericsson Telecommunications Award 2008, Telecom System Technology Award 2009, Prime Minister Invention Prize 2010, British Royal Academy of Engineering Distinguished Visiting Fellowship 2011, KDDI Foundation Research Award 2012, IEEE VTS Conference Chair Award 2014, C&C Prize 2014, and Rinzaburo Shida Award 2016. He is listed in Highly Cited Researchers 2001 (http://highlycited.com/archives/).