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Guest Editorial Special Issue on Radio-Frequency Identification (RFID), Sensing, and Imaging

Citation for published version:

Georgiadis, A & Tentzeris, MM 2016, 'Guest Editorial Special Issue on Radio-Frequency Identification (RFID), Sensing, and Imaging', *IEEE Transactions on Microwave Theory and Techniques*, vol. 64, no. 7, pp. 2292-2293. <https://doi.org/10.1109/TMTT.2016.2576580>

Digital Object Identifier (DOI):

[10.1109/TMTT.2016.2576580](https://doi.org/10.1109/TMTT.2016.2576580)

Link:

[Link to publication record in Heriot-Watt Research Portal](#)

Document Version:

Peer reviewed version

Published In:

IEEE Transactions on Microwave Theory and Techniques

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Guest Editorial on Special Issue Part II: Radio Frequency Identification (RFID), Sensing and Imaging

As the demand for low cost, flexible, and power-efficient broadband wireless electronics increases, materials and integration techniques become critical and face more challenges, especially with the ever growing interest for “cognitive intelligence” and wireless applications, married with RF identification (RFID) technologies. This demand is further enhanced by the need for inexpensive, reliable, and durable wireless RFID-enabled sensor nodes, driven by applications such as logistics, aero identification (aero-ID), anti-counterfeiting, supply-chain monitoring, space, healthcare, and pharmaceutical, and is regarded as one of the most disruptive technologies to realize truly ubiquitous ad-hoc networks.

Over the last decade RFID-enabled sensing systems have received an increasing level of attention due to their relative simple system architecture, that consist of simple sensing tags and interrogation readers facilitating their integration with other existing Wireless Sensor Networks (WSN) and RFID infrastructure. Integrating sensors with the RFID tags renders the whole system capable of not only tracking, but also providing real-time cognition of aspects of its status or its environment (e.g., storage conditions of perishable items, such as food). The ultimate goal is to create an easily deployable and rugged intelligent network of RFID-enabled sensors encompassing active (battery-enabled), semi-active (batteryless/energy harvesting) and passive architectures. RFIDs can constitute low-power wireless platforms with broad sensing capabilities including temperature, gas, strain and humidity sensing. Electronics utilizing low-power RFID-enabled motion sensors can be turned on at user’s presence or need, which leads to energy saving. Such sensor systems can be used as a smart skin for strain, ambient conditions and biomonitored sensing applications or a bio-monitoring sensor as well as a Machine-to-Machine (M2M) communication node. RFID-enabled sensor systems could potentially be one of the most enabling factors to implement realistic large-scale topologies of Internet of things (IoT) in the future.

Finally, we would like to thank the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES Editors in-Chief Dominique Schreurs and Jenshan Lin, as well as Associate Editor Nuno Borges Carvalho and all the reviewers for their support of this Special Issue.

Apostolos Georgiadis, Guest Editor

Apostolos Georgiadis received the Ph.D. degree in electrical engineering from the University of Massachusetts at Amherst, in 2002. In 2007, he joined Centre Tecnologic de Telecomunicacions de Catalunya (CTTC), Barcelona, Spain, as a senior researcher. In 2013-2016 he Coordinated the Microwave Systems and Nanotechnology Department at CTTC. In 2016 he joined Heriot-Watt University, UK as an associate professor. He has contributed to over 150 publications: books, book chapters, technical journals and conferences. His research interests are energy harvesting, wireless power transfer, RFID technology and active antennas and arrays. He serves as an Associate Editor of the IEEE Microwave Wireless Components Letters, and Editor in Chief of Cambridge Wireless Power Transfer journal. He is past Chair of the MTT-24 Technical Committee on RFID and member of MTT-26 on wireless energy transfer. He received the 2014 IEEE RFID-TA Best Paper Award and the 2015 IET Microwaves, Antennas and Propagation Premium Award. He is EU Marie Curie Fellow, and Vice-Chair of URSI Commission D. He is Distinguished Lecturer of IEEE Council on RFID.

Emmanouil M. Tentzeris, Guest Editor

Manos M. Tentzeris received Ph.D. degree in electrical and computer engineering from the University of Michigan, Ann Arbor. He is currently a Professor with School of ECE, Georgia Tech, Atlanta, GA. He has published more than 600 papers in refereed Journals and Conference Proceedings, 5 books and 23 book chapters. He has helped develop academic programs in 3D/inkjet-printed RF electronics and modules, flexible electronics, highly Integrated/Multilayer Packaging for RF and Wireless Applications. He was the recipient/co-recipient of numerous awards including the 2013 and 2015 IET Microwaves, Antennas and Propagation Premium Award, the 2014 Georgia Tech ECE Distinguished Faculty Achievement Award, the 2000 NSF CAREER Award. He was the TPC Chair for IEEE IMS 2008 Symposium. He is the founder and past-chair of the RFID Technical Committee (MTT-24). He is a Fellow of IEEE, and a Fellow of the

Electromagnetic Academy. Prof. Tentzeris served as one of the IEEE MTT-S Distinguished Microwave Lecturers from 2010-2012 and he is one of the IEEE CRFID Distinguished Lecturers.