

Guest Editorial

Special Issue on 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, anticounterfeiting, 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 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), semiactive (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 the 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 biomonitoring sensing applications as well as a machine-to-machine communication node. RFID-enabled sensor systems could potentially be one of the most enabling factors to implement realistic large-scale topologies of the Internet of Things in the future.

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Dr. Georgiadis was the recipient of the 2014 IEEE RFID-TA Best Paper Award and the 2015 IET Microwaves, Antennas and Propagation Premium Award. He serves as an Associate Editor of the IEEE MICROWAVE WIRELESS COMPONENTS LETTERS, and the Editor-in-Chief of the *Cambridge Wireless Power Transfer* journal. He was the Chair of the MTT-24 Technical Committee on RFID and a member of the MTT-26 Technical Committee on Wireless Energy Transfer. He is an EU Marie Curie Fellow, and the Vice Chair of the URSI Commission D. He is a Distinguished Lecturer of the IEEE Council on RFID.



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