

Keynote Speech 1

Multifunction, Multiscale, Multimaterial and Multilayer Integration for Future Wireless Systems and Applications

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Abstract – Recent research and development of hardware architectures and technologies over MHz-through-THz frequency range have generated a significant momentum for future wireless applications. This leap forward is being propelled by the organic fusion of multiple functions and the scalable integration of multiple technologies through heterogeneous materials and innovative processes. This presentation begins with the overview of fundamental wireless functionalities. Emerging advances in multifunction, multimaterial, multilayer and multiband wireless technologies are reviewed. Technological roadmap is highlighted with reference to enabling and building technological elements, ranging from current and emerging compound materials to evolving and beyond CMOS, and from developing substrate integrations to future electromagnetic techniques. The talk also provides a brief tour of the state-of-the-art wireless devices, antennas, circuits and systems. Challenging issues and future directions of wireless technologies including 5G and beyond are discussed.



Ke Wu is Professor of Electrical Engineering at Ecole Polytechnique (University of Montreal). He is also the NSERC-Huawei Industrial Research Chair in Future Wireless Technologies (the first Huawei endowed Chair in the world). He has been the Director of Poly-Grames Research Center. He was the Canada Research Chair (2002-2016) in RF and millimeter-wave engineering and the Founding Director (2008-2014) of the Center for Radiofrequency Electronics Research of Quebec. He has authored/co-authored more than 1100 referred papers and a number of books/book chapters and more than 40 patents. Dr. Wu was the general chair of the 2012 IEEE MTT-S International Microwave Symposium. He was the 2016 President of the IEEE Microwave Theory and Techniques Society (MTT-S).

He serves as the inaugural North-American representative in the General Assembly of the European Microwave Association (EuMA). He was the recipient of many awards and prizes including the Queen Elizabeth II Diamond Jubilee Medal, the 2014 IEEE MTT-S Microwave Application Award, and the 2014 Marie-Victorin Prize (Prix du Québec – the highest distinction of Québec in the Natural Sciences and Engineering). He is a Fellow of the IEEE, a Fellow of the Canadian Academy of Engineering (CAE) and a Fellow of the Royal Society of Canada. He was an IEEE MTT-S Distinguished Microwave Lecturer.