



# The 14th OptoElectronics and Communications Conference

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## Tutorial

### Microwave Photonics

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#### Abstract

Microwave photonics is an interdisciplinary area that studies the interaction between microwave and optical signals for applications such as broadband wireless access networks, sensor networks, radar, satellite communications, instrumentation, and warfare systems. An overview of microwave photonics techniques will be presented, with an emphasis on the system architectures for photonic generation and processing of microwave and millimeter-wave signals, photonic true-time delay beamforming for phased array antennas, radio-over-fiber and UWB-over-fiber systems, photonic generation of microwave and millimeter-wave arbitrary waveforms, and photonic analog-to-digital conversion. Challenges in system implementation and new areas of research in microwave photonics are also discussed.



#### Jianping Yao

Jianping Yao received the PhD degree in Electrical Engineering from the Université de Toulon, France, in 1997. He joined the School of Information Technology and Engineering, University of Ottawa, Ontario, Canada, in 2001, where he is a Full Professor and University Research Chair, Director of the Microwave Photonics Research Laboratory, and Director of the Ottawa-Carleton Institute for Electrical and Computer Engineering. From 1999 to 2001, he held a faculty position in the School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore. He spent three months as an Invited Professor in the Institut National Polytechnique de Grenoble, France, in 2005. Dr Yao holds a Yongqian Endowed Chair Professorship of Zhejiang University, China. His research has focused on microwave photonics, which includes photonic processing of microwave signals, photonic generation of microwave, millimeter-wave and terahertz, radio over fiber, UWB over fiber, and optically controlled phased array antenna. His research also covers fiber optics, which includes fiber lasers, fiber and waveguide Bragg gratings, fiber-optic sensors and bio-photonics.