

DEPARTMENT OF ENGINEERING

IEEE MACQUARIE UNIVERSITY STUDENT BRANCH
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* Friday, 24th November, 2017
2 pm – 3 pm
75T 3. Continuum, Talavera Road,
Macquarie University, Sydney

New Frontiers in Terahertz Technology

Although unique potentials of terahertz waves for chemical identification, biological sensing, and medical imaging have been recognized for quite a while, the relatively poor performance, higher costs, and bulky nature of current terahertz systems continue to impede their deployment in field settings. In this talk, I will describe some of our recent results on developing fundamentally new terahertz electronic/optoelectronic components and imaging/spectrometry architectures to mitigate performance limitations of existing terahertz systems. In specific, I will introduce new designs of high-performance photoconductive terahertz sources that utilize plasmonic antennas to offer terahertz radiation at record-high power levels of several milliwatts – demonstrating more than three orders of magnitude increase compared to the state of the art. I will describe that the unique capabilities of these plasmonic antennas can be further extended to develop terahertz detectors and heterodyne spectrometers with single-photon detection sensitivities over a broad terahertz bandwidth at room temperatures, which has not been possible through existing technologies.

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Mona Jarrahi received her B.S. degree in Electrical Engineering from Sharif University of Technology in 2000 and her M.S. and Ph.D. degrees in Electrical Engineering from Stanford University in 2003 and 2007. After serving as an Assistant Professor at the University of Michigan Ann Arbor, she joined the University of California Los Angeles in 2013 where she is currently a Professor of Electrical Engineering and the Director of the Terahertz Electronics Laboratory.

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