

## Seminar on

# Development of plate-laminated double-layer waveguide slot arrays in the Q-band and E-band

by

Dr. Miao Zhang, Postdoctoral Research Fellow  
Tokyo Institute of University, Japan

### Abstract

High-gain and high-performance waveguide slot arrays in millimeter-wave band are being developed in our laboratory for commercial applications. In the first half of this talk, the realization of a plate-laminated double-layer waveguide slot array in Q-band will be presented. The antenna is designed for a broadband point-to-point fixed wireless access (FWA) system with the maximum throughput of 1 Gbps. The designed antennas are fabricated by diffusion bonding of laminated thin metal plates, which is a promising process of high-precision and high mass-productivity. In a practical manner, the installment of antenna on the wireless terminal as well as the isolation enhancement between two antennas for simultaneous transmission and reception are also investigated. In the second half of this talk, an E-band waveguide slot array with a larger bandwidth will be presented. A PMC termination associated with the symmetry of the feeding waveguide is newly proposed to realize dense and uniform slot arrangement free of high sidelobes. A 16x16-element array with uniform excitation is designed and fabricated by diffusion bonding of laminated thin copper plates. The antenna efficiency of 83.0% is measured at the center frequency. The 1dB-down gain bandwidth is no less than 9.0% and a wideband characteristic is achieved.

### Biography

**Miao Zhang** received the B.S., M.S. and D.E. degrees in electrical and electronic engineering all from Tokyo Institute of Technology (Tokyo Tech), Tokyo, Japan in 2003, 2005 and 2008, respectively. From 2005 to 2008, he was a Research Fellow of the Japan Society for the Promotion of Science (JSPS). From 2008, he is a postdoctoral research fellow at Tokyo Tech. His current research interests include waveguide slot arrays, millimeter-wave antennas and design technique for array antennas. He received a Young Engineer Award in 2010 from IEICE Technical Committee on Antennas and Propagation, and an IEEE AP-S Japan Chapter Young Engineer Award in 2011.

**Date** : 24 Feb. 2012 (Friday)  
**Time** : 3:30pm – 4:30pm  
**Venue** : P7822, Academic 1 Building  
City University of Hong Kong

\*\*\* ALL ARE WELCOME \*\*\*

Enquiries: Prof Quan Xue, Department of Electronic Engineering  
Tel. : 3442 4680 Fax : 2788 7791 e-mail: [eeqxue@cityu.edu.hk](mailto:eeqxue@cityu.edu.hk)