

Terahertz Science and Technology – What Have We Done

by Prof Chan Chi Hou

Abstract

Between microwave and infrared, the frequency spectrum of 0.3 to 10 terahertz (THz) is often referred as the “terahertz gap” as there are relatively few commercially available sources and detectors for this region. While still in its infancy, terahertz technologies have entered a phase of unprecedented interest and expansion, offering opportunities for new engineering paradigms to fill the void between the lower frequencies of electronics and the higher frequencies of photonics. This emerging field has been recognized as of extreme importance for many scientific and engineering applications in future high data-rate wireless communications, security screening, chemical and biological spectroscopy and sensing, and inspection and quality control in manufacturing, etc.. These applications call for novel research activities and technological developments which are the major efforts in the State Key Laboratory of Millimeter Waves, Partner Laboratory in City University of Hong Kong. In this presentation, we will discuss the infrastructure we have built for our pursuit of THz research. We will present some of our recent accomplishments on low-cost high-gain antennas, tunable filters and frequency scanning antennas. We will also briefly discuss our future endeavors on interdisciplinary research of THz interactions with molecules and cells and tissues.

Biography

Chi Hou Chan received his BSEE and MSc from the Ohio State University in 1981 and 1982, respectively, and PhD in Electrical Engineering from the University of Illinois, Urbana, in 1987.

He was a Visiting Assistant Professor in the Department of Electrical and Computer Engineering at the University of Illinois, Urbana from 1987 to 1989. He joined the Department of Electrical Engineering at the University of Washington, Seattle, in 1989 and was promoted to Associate Professor with tenure in 1993. In 1996, he joined the Department of Electronic Engineering, City University of Hong Kong as a Professor and was promoted to Chair Professor of Electronic Engineering in 1998. From 1998 to 2009, he was first Associate Dean and then Dean of College of Science and Engineering. He also served as Acting Provost of the university from July 2009 to September 2010. He is currently the Director of State Key Laboratory of Millimeter Waves, Partner Laboratory in the City University of Hong Kong.

Professor Chan received the US National Science Foundation Presidential Young Investigator Award in 1991 and the Joint Research Fund for Hong Kong and Macao Young Scholars, National Science Fund for Distinguished Young Scholars, China, in 2004. He received outstanding teacher awards from EE Department, CityU in 1998, 1999, 2000 and 2008. He was elected an IEEE Fellow in 2002 for his contributions in computational electromagnetics.