

Emerging Technologies Forum

Waveguide and Wireless Technologies

Date: 22 August 2014 (Fri)
Time: 2pm to 5pm

Registration Form

To : CityU Business and Industrial Club (CUBIC)

Name : (*Prof / Dr / Mr / Ms) _____

Position : _____

Organization : _____

Phone : (Office) _____ (Mobile) _____

Fax : _____ Email : _____

Address : _____

- Are you a CUBIC member? *Yes / No
- Are you a HKEIA member? *Yes / No
- Are you a HKETA member? *Yes / No
- Are you a HKIEEE member? *Yes / No
- Are you a HKIET member? *Yes / No

(* please delete as appropriate)

Notes:

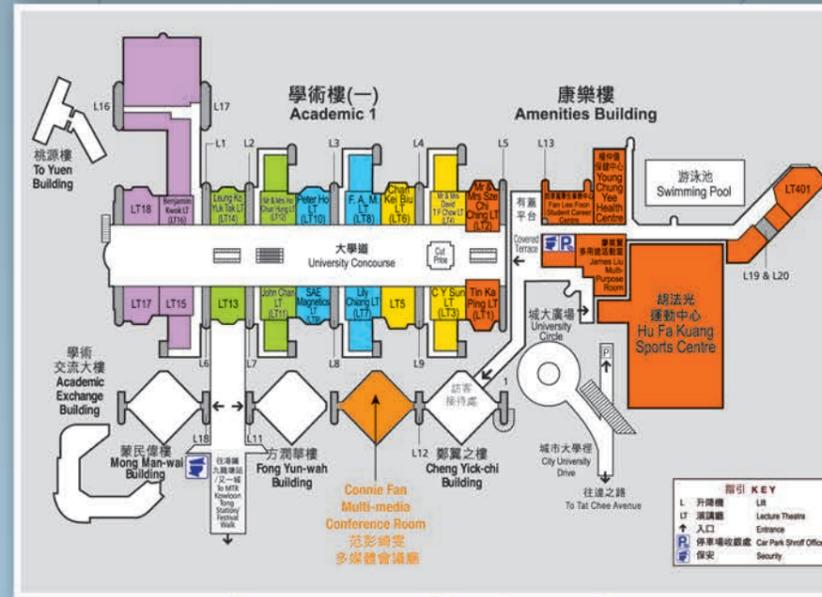
1. Seats will be reserved on a first-come-first-served basis. Please complete and return the registration form to us on or before **15 August 2014** by:
 Fax: 3442 0883 or Email: cubic@cityu.edu.hk
2. You are welcome to invite other guests to attend the Forum. Separate form should be used for each registration. Please make a copy of the form, if needed.
3. Notification on successful registration will be sent via email by 19 August 2014.

Enquiries:

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Website: <http://www.cityu.edu.hk/kto>

Location map of venue



香港城市大學
 City University of Hong Kong
 三十周年紀念 30th Anniversary

Organizer:



Emerging Technologies Forum

Waveguide and Wireless Technologies

22 August 2014



Venue:

Connie Fan Multi-media Conference Room
 4/F, Cheng Yick-chi Building
 City University of Hong Kong
 Tat Chee Avenue, Kowloon

Language:

Cantonese/English

Admission:

Free

Supporting Organizations:



Emerging Technologies Forum

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Programme

Time	Activities
2:00 – 2:15pm	Registration
2:15 – 2:25pm	Welcoming Remarks
2:25 – 2:55pm	Presentation 1: <i>5G, 802.11ad and THz Device Characterization</i> Mr Andrew Ko , Expert Application Consultant, Electronic Measurements Group, Agilent Technologies (HK) Ltd.
2:55 – 3:25pm	Presentation 2: <i>A Low-Cost Dielectric Waveguide Platform for Sub-mm/THz Applications</i> Dr Sai Tak Chu , Associate Professor, Department of Physics and Materials Science, City University of Hong Kong
3:25 – 3:55pm	Presentation 3: <i>Waveguide-embedded Printed Circuit Boards</i> Prof Kin Seng Chiang , Chair Professor, Department of Electronic Engineering, City University of Hong Kong
3:55 – 4:15pm	Q & A
4:15 – 5:00pm	Networking and refreshment

About the Speakers



Mr Andrew Ko has been working as the Expert Application Consultant in Agilent Technologies since 1999. He has been supporting the electronic industries and R&D education institutes in Hong Kong and Southern China with strong technical expertise in RF/MW/MMW (up to 1.1THz) and assisting key accounts to achieve signal integrity compliance requirements from business partners such as Apple, HP, CISCO and IBM. He has also held IEEE AP MTT workshops for advanced measurement techniques.

Andrew joined HP/Agilent in 1989 as the Regional Sales Support Engineer with championship in RF/MW design and component measurements and then served as Market Development Manager for promotion and channel programs in industries such as wireless manufacturing, electronic manufacturing, aerospace/defense, and general purpose instruments.

Andrew received his BEng (Elec) degree in 1987 and MEngSc (Elec) in 1989 from the University of Melbourne, Victoria, Australia, and his MBA Degree in 1999 from the Hong Kong University of Science and Technology (HKUST) with concentration in IT Management.



Dr Sai Tak Chu has been involved in the research, development and commercialization of waveguide based photonics devices for over twenty-five years. He has made seminal contributions to a number of areas of integrated optics. He was first to introduce the FDTD method in the analysis of optical waveguide structures and had made major contribution from design to fabrication of high-index contrast integrated optical structures and circuits such as micro-ring resonator filters.

Dr Chu spent the 1990s carrying out research in a number of research institutes, including CITRC Canada, KAST Japan and NIST USA. In 2000, he co-founded the Little Optics Inc. in USA, an optical component company specialized in densely integrated PLC for broadband communication. The company was subsequently acquired by Infinera (INFN:NASQ) in 2006. Dr Chu returned to his birthplace and joined City University of Hong Kong in September 2010.



Prof Kin Seng Chiang received the BE (first-class Honours) and PhD degrees in electrical engineering from the University of New South Wales, Australia, in 1982 and 1986 respectively. After spending six months in the Department of Mathematics, Australian Defence Force Academy, Canberra, he joined the Division of Applied Physics of CSIRO in 1986, and worked there as a Research Scientist/Senior Research Scientist till 1993, where he established a fiber-optics laboratory. In 1987, he received a Japanese Government Research Award for Foreign Specialist and visited the Electrotechnical Laboratory in Tsukuba City, Japan, for six months. From 1992 to 1993, he worked concurrently for the Optical Fiber Technology Centre of the University of Sydney.

Professor Chiang joined City University of Hong Kong in 1993 and has published over 440 papers in international journals and conference proceedings, as well as several book chapters. His research areas cover various aspects of the optical fiber and waveguide technology, including theory and modelling, measurement and characterization, device and sensor development, optical interconnect, and nonlinear optical effects. He is a Fellow of the Optical Society of America, a recipient of the Croucher Award for 2000–2001, and a Chang Jiang Chair Professor (2007–2010) at the University of Electronic Science and Technology of China. Professor Chiang is an Associate Editor of *IEEE/OSA Journal of Lightwave Technology and Light: Science & Applications*, and is serving on the advisory/editorial boards of the journals *Optics Communications*, *International Journal of Optics*, and *Photonic Sensors*. He has participated in the organizing of more than 30 international conferences in different capacities.

Synopsis

5G, 802.11ad and THz Device Characterization

by Mr Andrew Ko

When stepping into the new generation of the 5G wireless communication, MMW technologies is becoming part of the research direction. This talk will give a brief update for the present 5G development status. The new 802.11ad standard, challenges and measurement solution will be introduced. The application of performance vector network analyzer will also be discussed for microwave (MW) and millimeter wave (MMW) component characterization such as amplifiers, mixer, differential, pulse, antenna, material and on-wafer IC characterization and verification.

A Low-Cost Dielectric Waveguide Platform for Sub-mm/THz Applications

by Dr Sai Tak Chu

For guided-waves applications in the sub-mm/THz frequency band, the dimensions of the metallic waveguide circuits are needed to be scaled down to satisfy the associated modal-operation conditions. This creates a major challenge in the fabrication of small dimension metallic waveguides using the conventional milling method as the size reduction requirement becomes more severe. In view of this difficulty, there is an increased interest in using dielectric waveguides for terahertz applications. This talk will discuss some of the challenges these dielectric waveguide platforms need to overcome and present our works on a low-cost and low-loss platform for sub-mm/THz applications.

Waveguide-Embedded Printed Circuit Boards

by Prof Kin Seng Chiang

To solve the high-speed transmission bottle-neck problem in the printed circuit board (PCB) industry, there has been considerable interest of incorporating optical waveguides into PCBs. In such an optical PCB, electric power and low data rate control signals are carried by copper traces, while high data rate signals are carried by optical waveguides. In spite of the fact that much world-wide research effort has been devoted to the development of optical PCBs, mass production of optical PCBs for on-board chip-to-chip interconnections is yet to be seen. With the support of a recently completed Innovation Technology Fund (ITF) project, we have demonstrated a low-cost hot embossing process for the fabrication of waveguide-embedded PCBs, which has the potential to be developed into a practical approach for mass production of optical PCBs. Our process has been tailored for commercially available polymer materials that are specifically synthesized for the fabrication of waveguide-embedded PCBs. These polymer materials show a low optical loss in the near-infrared regime as well as a good thermal stability, and can withstand the harsh conditions in the PCB lamination process. This talk discusses the results we have obtained and the new challenges we are facing.