

SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING

Website: <https://cde.nus.edu.sg/ece>

Area: Microwave & Radio Frequency

Host: Professor Chen Xudong

**Technical Seminar Co-Organized by
Department of ECE/NUS and IEEE MTT/AP Joint Chapter**

TOPIC	:	Harnessing the “Fog” of Ambient RF Waves
SPEAKER	:	Professor Ross Murch Hong Kong University of Science and Technology (HKUST)
DATE	:	Thursday, 17 August 2023
TIME	:	9:30AM to 11:30AM
VENUE	:	Block E1, E1-06-04 College of Design and Engineering, NUS

ABSTRACT

The wireless revolution has changed the way we communicate and created a mobile information society. One foundation for this revolution has been the use of RF waves for the transmission of information. RF waves can now be found virtually anywhere in our environment and in this talk I refer to their widespread availability descriptively as the “fog” of ambient RF waves. In effect RF waves have now become a resource that can be harnessed to do much more than perform communication.

In this talk I explore new RF wave technologies that can be utilised for creating a better world. I broadly classify the new RF technologies into wave shaping and wave sensing and I focus on the development of reconfigurable intelligent surfaces (RIS), RF Imaging and RF energy harvesting. Both theory and experimental results are presented for each of these technologies. Furthermore, while each of these technologies is promising, significant further research is needed to exploit the enormous potential of new RF wave technology for 6G and this is also described.

BIOGRAPHY



Ross Murch is a Chair Professor in the Department of Electronic and Computer Engineering at the Hong Kong University of Science and Technology (HKUST). His research focus is creating new RF wave technology for making a better world and this includes RF imaging, energy harvesting, electromagnetic information theory, 6G, and reconfigurable intelligent surfaces. His unique expertise lies in his combination of knowledge from both wireless communication systems and electromagnetics. He is known for his work on multi-user multiple input multiple output (MU-MIMO) wireless communications, multi-user orthogonal frequency division multiplexing (MU-OFDM) and MIMO antenna design and is a Fellow of IEEE, IET and HKIE. He was Department Head at the Department of Electronic and Computer Engineering at HKUST between 2009 and 2015. Prof. Ross Murch has also been involved in IEEE activities including area editor for IEEE

Transactions on Wireless Communications and Chair of the IEEE technology committee on wireless communications. He also enjoys teaching and has won several teaching awards. He received his Bachelor's and Ph.D. degrees in Electrical and Electronic Engineering from the University of Canterbury, New Zealand.

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