

Distinguished Lecture Series

Department of Electrical and Computer Engineering

**Title: "INVISIBILITY AND ELECTROMAGNETIC-WAVE MANIPULATION
WITH METAMATERIAL STRUCTURES"**

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Monday, 14th April 2014, 17:00 – 18:30

**Room: XOD 02 – B109,
University of Cyprus**

Abstract:

In this seminar we will describe our recent efforts toward electromagnetic-wave manipulation using engineered structures (metamaterials) and related concepts. First, we will present some fundamental metamaterial concepts and structures related to imaging beyond the diffraction limit. This will be followed by our recent development of the "super-microscope": An optical real-time microscope that overcomes the diffraction limit in the far zone without the need of any fluorescent labeling or fine scanning. Subsequently we will introduce the concept of the filed-discontinuity (FD) metasurface. We will then describe a thin active cloak which remains effective and thin regardless of the size and material composition of the object to hide. Finally, we will show applications of this FD-metasurface concept for manipulating electromagnetic waves at will including beam refraction and focusing.

Biography:

George V. Eleftheriades earned his Ph.D. and M.S.E.E. degrees in Electrical Engineering from the University of Michigan, Ann Arbor, in 1993 and 1989 respectively. In 2007/08 he was a visiting Professor at the Department of Electrical and Computer Engineering at the University of Cyprus. Currently he is a Professor in the Department of Electrical and Computer Engineering at the University of Toronto where he holds the Canada Research/Velma M. Rogers Graham Chair in Engineering. Eleftheriades introduced the concept of utilizing transmission lines to realize negative-index metamaterials in 2002. Together with his graduate students he has produced the first experimental demonstration of focusing beyond the diffraction limit with a Veselago-Pendry lens and invented a number of novel and practical antenna/microwave devices. Eleftheriades is the recipient of the 2008 IEEE Kiyo Tomiyasu Technical Field Award. He is an IEEE Fellow and has been elected Fellow of the Royal Society of Canada in 2009. He has been the general chair of the 2010 IEEE Intl. Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting which was held in Toronto, Canada July 11-17, 2010. Together with his graduate students he co-authored several award-winning papers including the 2010 IEEE Microwave and Wireless Components Best Paper Award, and twice (2008 & 2012) the RWP King Best Paper Award from the IEEE Transactions on Antennas and Propagation. His papers have been cited more than 9,500 times and has an h-index of 45.