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University of Cyprus

School of Engineering
Department of Electrical and Computer Engineering

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Title: «***Metamaterial Arrays and Applications: FSS, EBG & AMC structures***»

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University of Cyprus

Abstract:

Interest in metamaterials and their applications has taken an explosive growth. The potential take-up of these structures in communication and sensing systems is primarily due to the control of the amplitudes, frequencies and wave-numbers of propagating and non-propagating electromagnetic modes to an extent that was not previously possible. The control of electromagnetic waves can be applied in various application fields such as, indoor and outdoor communication systems, communicating mobile objects, transport systems (cruise liners and high-speed trains), space/earth communication and microelectronics at μ-wave and mm-wave frequencies
Frequency Selective Surfaces (FSSs), Electromagnetic Bang Gap (EBG) and Artificial Magnetic Conductor (AMC) structures are all periodic arrays and forms of metamaterials. Metamaterials are, in essence, the materials of the future, since the main purpose for their study is to be able to go beyond where naturally occurring substances and current material structures research have taken us. By combining different microscopic elements into large-scale designs, one will be able not only to create materials with fundamentally new properties but also to fabricate others that have properties on demand, as required by new technologies. The above description of advantageous properties of metamaterials gives a small insight into the large potential industrial application of these concepts. An overview of the work spanning over two decades in FSSs, EBGs and AMCs of the Wireless Communications Research Group at Loughborough University, UK will be presented.

Biography:

Yiannis C. Vardaxoglou received the BSc degree in Mathematics (Mathematical Physics) and PhD degree in 1981 and 1985, respectively, from the University of Kent at Canterbury. He joined Loughborough University of Technology in 1988 as a Lecturer, was promoted to Senior Lecturer in January 1992 and was awarded a personal chair 1998. He was the **Head** and the first **Dean** of the Electronic, Electrical and Systems Engineering School at Loughborough University from 2006 to 2012. He established the Wireless Communications Research (WiCR) group at Loughborough University and

founded the Centre for Mobile Communications Research. He has pioneered research, design and development of frequency selective surfaces (FSS) for communication systems, Metamaterials and low SAR antennas for mobile telephony. He holds 5 patents and is the Technical Director/Founder of Antrum Ltd (a University spinout company). He has published over 250 refereed journals and conference proceeding papers and has written a book on FSS. He is past the Chairman of the Executive Committee of the IET's Antennas and Propagation Professional Network in the UK and he chaired for 5 years the IEEE's distinguish lecturer program of the Antennas and Propagation Society. He was the General Chair of EuCAP'2007 and in the Steering Committee of the IEE International Conferences on Antennas and Propagation and EuCAP'2006. He founded and is the Series Chair of the Loughborough Antennas and Propagation Conferences (LAPC), which has been running since 2005. He is a Chartered Engineer, Fellow of the Institution of Engineering and Technology (FIET), Fellow of the Royal Academy of Engineering (FREng) and fellow of the Institute of Electrical and Electronics Engineers (FIEEE).