IEEE
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Metamaterials for Total Electromagnetic Wave Absorption

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Thursday, 14 March 2013 @ 4:30PM

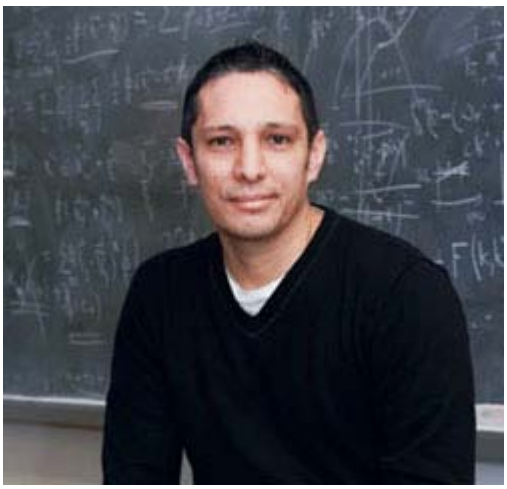
Blakers Lecture Theatre G.17
Ground floor of the School of Mathematics
The University of Western Australia, Crawley

This seminar is open to the public and admission is free to all IEEE members and non members.

Abstract:

In Engineered artificial materials – known as metamaterials - consist of subwavelength, periodic metallic inclusions, and can exhibit exotic electromagnetic properties not readily available in nature. Over the past decade, the interest of the scientific and engineering communities for developing such metamaterial structures has been continuous and increasing. Experimental realizations of negative index of refraction, invisibility cloaks, and perfect lenses all served to ignite the field. As metamaterial research continues to mature, demonstrations of practical devices will become increasingly important for continued growth. Recently near unity absorption has been achieved with metamaterials and results show that the fundamental light interactions of surfaces may be dynamically controlled. We show metamaterials which achieve total absorption of electromagnetic waves and present several methods capable of tuning absorption values with high dynamic range and highlight several novel applications at terahertz and infrared wavelengths.

Biography:



Willie Padilla received a PhD in physics from the University of California San Diego in 2004. From 2004 to 2006, he was a Directors Postdoctoral Fellow at Los Alamos National Laboratory. In 2006 he joined the Department of Physics at Boston College and is currently an Associate Professor. In 2007 he was awarded a Young Investigator Award from the Office of Naval Research and Presidential Early Career Award for Scientists and Engineers in 2011. In 2012 Professor Padilla was elected a Fellow of the Optical Society of America. His scientific interests include artificially structured systems including electric and magnetic metamaterials, active/dynamic metamaterials, photonics, nano-structured materials, transformation optics and negative index materials.