NEBRASKA CENTER FOR MATERIALS AND NANOSCIENCE
2016 SEMINAR SERIES PRESENTS

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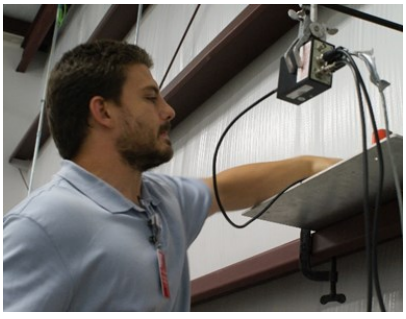
Department of Physics & Astronomy
University of Missouri – Kansas City

Counter High Power Microwave: Mechanism and Material Considerations

After nearly five decades of development, directed energy weapons (DEW), in the form of high energy lasers (HEL) and high power microwaves (HPM) have transitioned from art-of-the-possible to vehicle deployable, both domestically and abroad. In an effort to prepare for risks posed by those who have been vocal and capable abroad, the DoD is investigating methods to mitigate the effects of DEW, including electromagnetic wave transmissivity control, electromagnetic wave sense and evasion, and electronics error post-processing technologies. The work presented here focuses on the problem of developing methods that can be used to control the transmissivity of HPM to cavities enclosing electronics over the 500-MHz to 20-GHz range for power densities in excess of 10-kW/m^2. While many have attempted to address this problem using metamaterials, the polarization, angle-of-incidence, and bandwidth limitations have hindered progress toward a realizable solution. Instead, as will be presented in this talk/discussion, is a series of potential condensed matter approaches, which use the electric or magnetic field of the HPM itself, to cause a transition from a high-to-low transmissivity state, and classes of enabling materials thereof.



Anthony Caruso is Professor of Physics & Astronomy at the University of Missouri at Kansas City. Anthony graduated from Bethany College in 1999 with degrees in Mathematics, Physics and Philosophy, and received his PhD in Physics & Astronomy at the University of Nebraska-Lincoln in 2004. Over the last ten years, Caruso has run programs for DARPA, NSF, DTRA, Intel, and ONR, from developing microisotope batteries and neutron spectrometers, to the electronic structure of molecule-based magnets, fabrication and transport properties of low-k dielectrics and uranium oxide semiconductors, to photoconductive solid state switches.

Wednesday, September 7, 4:30 pm | 136 Jorgensen Hall
Refreshments at 4:15 in Jorgensen Atrium

Host:
Professor Peter Dowben

Department of Physics & Astronomy

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