

Invited Speaker Series



Dr. David Smith

Duke University - Department of Electrical and Computer Engineering

Disruptive Optics: A Brief History of Metamaterials

Friday, October 6 | 10 am - 12 pm

Florida International University | Engineering Center 3930

Abstract

In 2000, our group designed and demonstrated an artificially structured material whose electric permittivity and magnetic permeability were both negative over a band of microwave frequencies. That structure, referred to as a *negative index material*, became the first widely known metamaterial. The negative index structure proved the ability of a metamaterial to support electromagnetic properties difficult or even impossible to find in naturally occurring materials. Over the last 16 years, the metamaterials approach has generated new concepts in wave propagation across the electromagnetic spectrum and in other areas of physics. In this talk, I will describe our group's involvement with metamaterials and metasurfaces, describing some of the modern history and detailing some of the more striking examples of the new fundamental science as well as new applications that we have pursued, including a recent project that fuses metasurface apertures and computational imaging for security screening.

Bio

Dr. David R. Smith is currently the Chair and James B. Duke Distinguished Professor of the Electrical and Computer Engineering Department at Duke University, where he also serves as Director for the Center for Metamaterial and Integrated Plasmonics. Dr. Smith is also the Founding Director of the Metamaterials Commercialization Center at Intellectual Ventures in Bellevue, Washington. He received his Ph.D. in 1994 in Physics from UCSD. Dr. Smith's research interests include the theory, simulation and characterization of unique electromagnetic structures. In 2009, Dr. Smith was named a "Citation Laureate" by Thomson-Reuters ISI Web of Knowledge, for having among the most number of highly cited papers in the field of Physics. Dr. Smith is a co-recipient of the McGroddy Prize for New Materials for "the discovery of metamaterials" (2013). Dr. Smith is active in transitioning metamaterial concepts for commercialization, being a co-founder of Evolv Technology, Echodyne Corporation, Pivotal Commware, and advisor to Kymeta Corporation—all companies devoted to developing metamaterial products.