

PHOTONICS SEMINAR

Dr. Nader Engheta

Metaphotonics

Faculty Host: Dr. Luca Dal Negro

November 7, 2013

2:00-3:00 p.m.

Room 901

Photonics Center

8 Saint Mary's Street

*Refreshments will
be served!*



As the fields of metamaterial and plasmonic nanophotonics reach certain levels of development, new directions and novel vistas appear in the horizon. Modularization, parameterization and functionalization of metamaterials may be exploited to provide new functionalities and applications stemming from such interesting platforms of metaphotonics. Indeed, the metamaterial “forms” may lead to novel “functions.” These may include “meta-systems” formed by metamaterials and metasurfaces providing wave-based mathematical operations, metamaterial-inspired optical nanocircuitry (“optical metatronics”) formed by judiciously arranging nanoparticles capable of optical processing at the nanoscale, metamaterial “bits” and “bytes” as building blocks for digitizing metamaterials, nonreciprocal metamaterials for unusual flow of photons, and “meta-machines” as signal-processing metamaterials, to name a few. Dr. Nader Engheta will present an overview of his most recent results from a sample of these topics and will discuss future directions and potentials.

Recipient of the 2013 SINA Award in Engineering and the 2012 IEEE Electromagnetics Award, Dr. Nader Engheta is the H. Nedwill Ramsey Professor at the University of Pennsylvania with affiliations in the Departments of Electrical and Systems Engineering, Bioengineering, Physics and Astronomy, and Materials Science and Engineering. He received his B.S. from the University of Tehran, and his M.S and Ph.D. from Caltech. He was selected as one of the Scientific American Magazine 50 Leaders in Science and Technology in 2006 for developing the concept of optical lumped nanocircuits.