DREXEL UNIVERSITY
Materials Science and Engineering
College of Engineering

# Fall Seminar Series

# Extreme Materials


## Nader Engheta, PhD

H. Nedwill Ramsey Professor

Department of Electrical and Systems Engineering, University of Pennsylvania


Wednesday, October 10, 2:00 p.m.

PISB 104

Recent development in nanoscience, optical physics, and materials science and engineering has provided opportunities to construct structures with unprecedented attributes and characteristics in manipulating waves and fields. We have been exploring a series of phenomena related to the wave-matter interaction in platforms with extreme scenarios such as optical lumped nanocircuitry ("optical metatronics"), optical information processing and computing with waves in specialized materials, low-index photonics, one-atom-thick optical structures based on graphene photonics, geometry-independent resonant structures, nonreciprocal vortices at subwavelength scales, and more. I will present some of our ongoing work in these areas, will discuss some of the opportunities and challenges, and will forecast some future directions and possibilities.

Nader Engheta is the H. Nedwill Ramsey Professor at the University of Pennsylvania, with affiliations in the Departments of Electrical and Systems Engineering, Bioengineering, Materials Science and Engineering, and Physics and Astronomy. He received his B.S. degree from the University of Tehran and his M.S and Ph.D. degrees from Caltech. His current research activities span a broad range of areas including electromagnetics, photonics, metamaterials, nano-optics, graphene electromagnetics, imaging and sensing inspired by eyes of animal species, microwave and optical antennas, and physics and engineering of fields and waves.