



Shima Fardad

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Shima Fardad received her Bachelors of Science in Physics from Sharif University of Technology in Iran and a Master's degree in Applied Physics with a specialization in nanomaterials. After graduating with a PhD in Optics and Photonics from CREOL, the College of Optics & Photonics at the University of Central Florida, she joined the Information and Telecommunication Technology Center (ITTC) at the University of Kansas as a postdoctoral research associate, working in the nonlinear photonics laboratory. Her main research interests are in nanophotonics, with a particular emphasis on light-matter interactions in nano-structured systems such as soft-matter metamaterials and plasmonic devices.

“Soft-Matter Metamaterials”

Abstract

The prefix “meta” in the word “metamaterials” means “beyond”, and indeed during past two decades the research in this field has led to the realization of artificial media with electromagnetic properties that go beyond those of natural materials in a variety of ways, ranging from negative index of refraction to extreme anisotropy. Perfect lenses and ultra-compact photonic components are just two examples of the applications that metamaterials and nanophotonic engineering has produced. One common trait of essentially all current metamaterial systems is the use of solid-state materials as building blocks, and advanced nanofabrication techniques as a means to realize them. In this talk I will present a novel approach to this field which relies on the unique properties of what is called “soft condensed matter” or simply “soft-matter”. The characteristic that is unique and shared among such materials is their large non-equilibrium non-linear response to external stimuli. In the context of metamaterials I will show how soft-matter offers unprecedented possibilities to realize dynamically reconfigurable media with strongly enhanced and tunable nonlinear optical properties, assembled by light to control light.

Tuesday, April 2nd

1:00 – 1:50pm

Spahr Auditorium (2 Eaton)