NEBRASKA CENTER FOR MATERIALS AND NANOSCIENCE
2016 SEMINAR SERIES PRESENTS

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Intellectual Ventures, Seattle, WA

Controlling Light with Colloidal Plasmonic Metasurfaces

Absorption and emission of light is central to optoelectronic and nanophotonic devices including photodetectors, photovoltaics, lasers, and light emitting diodes. Naturally occurring materials in these devices are limited in their ability to absorb and emit light due to weak interaction between light and matter. In this talk I will show how ultra-small mode volume plasmonic nanocavities can dramatically enhance light matter interactions with unprecedented control. We demonstrate that quantum emitters coupled to the plasmonic nanocavities can experience record emission lifetime reduction of 1000-fold while maintaining high quantum efficiency. This result points towards ultra-fast light sources capable of operating at 100 GHz based on spontaneous emission (LEDs) rather stimulated emission. I will also show how these nanocavities can be arranged into metasurfaces that have highly customizable absorption properties not possible with unstructured materials. The fabrication method that we have developed for these metasurfaces is colloidal and assembly can be done in solution, making this approach highly scalable and commercializable.

Gleb M. Akselrod is currently the Senior Manager for Optical Technologies at Intellectual Ventures in Bellevue, WA, where he leads a program on the commercialization of optical metamaterial and nanophotonic technologies. Previously he was a postdoctoral fellow in the Center for Metamaterials and Integrated Plasmonics at Duke University, where his work focused on plasmonic nanoantennas and metasurfaces. He completed his PhD in 2013 at MIT, where he studied the transport and coherence of excitons in nanostructured materials.

Dr. Gleb Akselrod

Wednesday, September 28, 4:30 pm
136 Jorgensen Hall
Refreshments at 4:15 in Jorgensen Atrium

Host:
Professor Christos Argyropoulos

Department of Electrical & Computer Engineering

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