

Seminar Announcement

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Thursday, January 14, 2016
Green Hall, Room 0120
10:10 AM

Planar Free-Space Optical Components and Systems Based on Dielectric Metasurfaces

Abstract: Miniaturized optical systems with planar form factors and low power consumption have many applications in wearable and mobile electronics, health monitoring devices, and as integral parts of medical and industrial equipment. Flat optical devices based on dielectric metasurfaces introduce a new approach for realization of such systems at low cost using conventional nanofabrication techniques. In this talk, I will present our work on dielectric metasurfaces that enable precise control of both polarization and phase with large transmission and high spatial resolution. Optical metasurface components such as high numerical aperture lenses, efficient wave plates, and components with novel functionalities will be discussed. I will also introduce a novel vertical on - chip integration platform enabled by cascading multiple metasurfaces and active optoelectronic components. This vertical integration scheme introduces a new architecture for the on - chip integration of conventional optical systems, and enables the unprecedented realization of massively parallel optical systems for computation, data storage, and biomedical sensing applications.

Bio: Amir Arbabi is currently a Senior Research Scientist in the Department of Applied Physics at Caltech. He received the B.Sc. degree from the University of Tehran, the M.Sc. degree from the University of Waterloo, and the Ph.D. degree from the University of Illinois at Urbana - Champaign, all in electrical engineering. He graduated at the top of his class at the University of Tehran, and received several fellowships and awards while at Waterloo and Illinois. His current research interests include photonic integrated circuits and on - chip integration of free space optical elements and systems.

Host: Dr. Arye Nehorai