

All-dielectric resonant nanophotonics and metasurfaces

By

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Host: Prof N. Zheludev

Abstract

Rapid progress in plasmonics is driven by the ability to enhance near-field effects with subwave-length localization of light. Recently, we observe the emergence of a new branch of nanophotonics aiming at the manipulation of strong optically-induced electric and magnetic Mie-type resonances in dielectric and semiconductor nanostructures with high refractive index. Unique advantages of dielectric resonant optical nanostructures over their metallic counterparts are low dissipative losses, low heating, and the enhancement of both electric and magnetic fields. In this talk, I will review this new emerging field of nanophotonics and metamaterials and demonstrate that Mie-type resonances in dielectric nanoparticles and subwavelength dielectric structures can be exploited for new physics and novel functionalities of photonic structures especially in the nonlinear regime



Short Biography

Yuri S. Kivshar received PhD in 1984 in the Ukraine. After working at several research centers in the US and Europe he moved to Australia in 1993 where he established Nonlinear Physics Center. Kivshar's research interests include nonlinear photonics, optical solitons, metamaterials, and nanophotonics. He is Fellow of the Australian Academy of Science, OSA, APS, and IOP. He received many awards including the Pnevmatikos Prize in Nonlinear Science (Greece), Lyle Medal (Australia), State Prize in Science and Technology (Ukraine), and Harrie Massey Medal (UK).