HKIAS Visiting Fellows Lecture Series

Metaphotonics and metasurfaces empowered by resonances

Speaker: Professor Yuri Kivshar
The Australian National University

Date: 29 August 2023 (Tue)
Time: 3:00 pm - 4:00 pm
Venue: HKIAS Lecture Theatre (AE-040), LG/F, Academic Exchange Building, City University of Hong Kong

Abstract  Recent progress is subwavelength optics is driven by the physics of optical resonances. This provides a novel platform for localization of light in subwavelength photonic structures and opens new horizons for metamaterial-enabled photonics, or metaphotonics. Recently emerged field of Mie-resonant metaphotonics (also called "Mie-tronics") employs resonances in high-index dielectric nanoparticles and dielectric metasurfaces and aiming for novel applications of the subwavelength optics and photonics. High-index subwavelength resonant dielectric structures emerged recently as a new platform for nanophotonics. They benefit from low material losses and provide a simple way to realize magnetic response which enables efficient flat-optics devices reaching and even outperforming the capabilities of bulk component. In this talk, I will review the recent advances in Mie-tronics and its applications in metaphotonics and metasurfaces, including enhancement of light-matter interaction for nonlinear and topological metadevices, and the development of active nanophotonic devices and nanolasers.

Biography  Yuri Kivshar received PhD degree in 1984 in Kharkov (Ukraine). From 1989 to 1993 he worked at several research centers in USA and Europe, and in 1993 he moved to Australia where he established Nonlinear Physics Center at the Australian National University. His research interests include nonlinear physics, metamaterials, and nanophotonics. He is Fellow of the Australian Academy of Science since 2002, and also Fellow of Optica (former OSA), APS, SPIE, and IOP. He received many awards for his research including Lyle Medal (Australia), Lebedev Medal (Russia), The State Prize in Science and Technology (Ukraine), Harrie Massey Medal (UK), Humboldt Research Award (Germany), SPIE Mozi Award (USA), and more recently 2022 Max Born Award (Optica).

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