

Nonlinear optics with hyperbolic plasmonic metamaterials



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The development of dielectric and plasmonic metamaterials and metasurfaces has led to numerous opportunities in designing unusual optical properties and applications. Hyperbolic metamaterials is a class of anisotropic metamaterials which can be constructed in all frequency ranges from UV to RF. Due to their specific isofrequency surfaces, they support high wavevector modes and are crucial for achieving high-resolution imaging, subwavelength waveguiding, enhanced nonlinearities and broadband Purcell factors of spontaneous emission. The optical properties of such metamaterials can be adjusted over a wide spectral range by geometrical tuning of the constituents forming a metamaterial. Using metamaterial approach to designing nonlinear optical properties opens many new opportunities and applications in nonlinear

Biography

Anatoly is the head of the Photonics & Nanotechnology Group at King's College London. He was awarded his PhD from the Moscow Institute of Physics and Technology and before joining King's College London in 2010 he was the Chair in Physics at Queen's University Belfast.

He is a holder of the Royal Society Wolfson Research Merit Award, a Fellow of the Institute of Physics, the Optical Society of America, SPIE and the Royal Society of Chemistry.