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Vladimír Kuzmiak
Peter Markos
Tomasz Szoplik
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Introduction

This 10th conference (the fifth one held in Prague) in a series of SPIE conferences on metamaterials has brought together the scientific communities of metamaterials, plasmonics, and nanophotonics. The conference provided a forum for both researchers and industry professionals and stimulated interaction between both communities.

In invited lectures the latest achievements in the field of hyperbolic, all-dielectric metamaterials, transformation optics, energy conversion, magnetoplasmonics and metasurfaces have been reviewed. New ways to design nonlinearities in hyperbolic plasmonic materials and novel structures with parity-time (PT) symmetry related functionalities in metamaterials and in plasmonics have been reviewed. The progress in the investigation of the properties of meta-atoms, resonant nanostructures in graphene in terahertz range and in computational methods have been presented by top experts in the field. A novel approach in dealing with a thin conductive sheet within the numerical DGTD method has been demonstrated in a system consisting of graphene sheets and alternating graphene and dielectric layers. In the area of energy conversion, an update in investigation of heat transfer at the nanoscale was reported. Namely, it has been demonstrated how the evanescent near-field can be harnessed in a thermal memory device and the role of the thermal self-oscillations in the radiative heat exchange has been analyzed. In the field of photovoltaics several promising designs based on surface plasmon-enhanced light harvesting and functional graphene nanostructures for organic solar cells have been reported. It has been demonstrated how the dielectric negative index metamaterials can be used in design of plasmonic devices. In several presentations recent progress in using of unique properties of negative index low loss microwave metamaterials in the antenna applications has been reported. Also, in the field of magneto-plasmonics, nanostructures in which an active control of light has been employed was demonstrated as well as the possibility to control light polarization on the femtosecond scale.

As chairs of this meeting, we would like to express our thanks to all those participants who contributed through their presentations, to the session chairs and to the programme committee members.

Vladimír Kuzmiak
Peter Markos
Tomasz Szoplik