Non reciprocal chip scale photonic and plasmonic devices integrated with hot vapors

Uriel Levy

The department of Applied physics, faculty of science, the center for nanoscience and nanotechnology, The Hebrew University of Jerusalem, Jerusalem, Israel, 91904
ulevy@mail.huji.ac.il, http://www.cs.huji.ac.il/~ulevy

In this talk I will describe our recent progress related to the demonstration of nonreciprocal devices consisting of nanophotonic structures integrated with hot vapors. Peculiar circularly polarized light can be generated by the excitation of TM waves in highly confined systems. Such circularly polarized light, upon interaction with Rubidium atoms in the presence of weak magnetic field can give rise to Faraday or Voigt effects, depending on the orientation of the magnetic field with respect to the polarization plane of the excitation electromagnetic field. We will discuss several photonic and plasmonic systems that may benefit from light-vapor interactions in the presence of magnetic field and demonstrate non reciprocity, tenability, and magnetic sensing functionalities.