

3D chiral, nonreciprocal and nonlinear plasmonics – towards complex plasmonic applications

By

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Venue: MAS Executive Classroom 1 (SPMS-MAS-03-06)

Host: Prof. Shen Zexiang

Session 1

Date: 13 August 2013 (Tuesday)

Time: 2.00pm – 3.30pm

Session 2

Date: 15 August 2013 (Thursday)

Time: 2.00pm – 3.30pm

Abstract

We present a novel approach to create large-area (cm^2) 3-dimensional chiral plasmonic structures. Large transmission differences between right- and left-hand circularly polarized light in the percent range have been measured in the near-infrared spectral region. Additionally, by introducing magneto-optical hybrid plasmonic structures and applying a static magnetic field, nonreciprocal Faraday rotation in the near-infrared was measured. The interaction of intense laser pulses with complex plasmonic nanostructures can tailor the generation of second- and third harmonic light. We are also going to present a number of novel sensing applications, ranging from 3D rulers to novel plasmonic gas and liquid sensors.

Short Biography



Harald Giessen (*1966) graduated from Kaiserslautern University with a diploma in Physics and obtained his M.S. and Ph.D. in Optical Sciences from the University of Arizona in 1995. After a postdoc at the Max-Planck-Institute for Solid State Research in Stuttgart he moved to Marburg as Assistant Professor. From 2001-2004, he was associate professor at the University of Bonn. Since 2005, he holds the Chair for Ultrafast Nanooptics in the Department of Physics at the University of Stuttgart.

He was guest researcher at the University of Cambridge, and guest professor at the University of Innsbruck and the University of Sydney, at A*Star, Singapore, as well as at Beijing University of Technology. He is associated researcher at the Center for Disruptive Photonic Technologies at Nanyang Technical University, Singapore. He received an ERC Advanced Grant in 2012 for his work on complex nanoplasmonics. He is on the advisory board of the journals "Advanced Optical Materials" and "Nanophotonics: The Journal". He is a Fellow of the Optical Society of America.