

In this issue

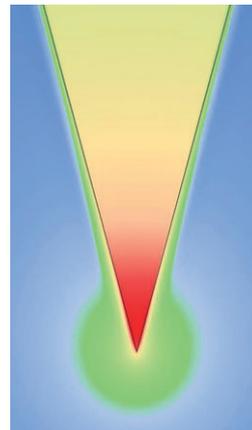
Giuseppe Toscano, Søren Raza, Wei Yan, Claus Jeppesen, Sanshui Xiao, Martijn Wubs, Antti-Pekka Jauho, Sergey I. Bozhevolnyi and N. Asger Mortensen

Nonlocal response in plasmonic waveguiding with extreme light confinement

DOI 10.1515/nanoph-2013-0014
Nanophotonics 2013; 2(3): 161–166

Regular article: A nonlocal hydrodynamic model is used to study waveguides with subnanometer cross-sections exhibiting extreme light confinement. Groove and wedge waveguides have a fundamental lower limit in their mode confinement, only captured by the nonlocal theory. The limitation translates into an upper limit for the corresponding Purcell factors, and thus has important implications for quantum plasmonics.

Keywords: Nanoplasmonics; nonlocal response; light confinement; waveguides; light-matter interactions.



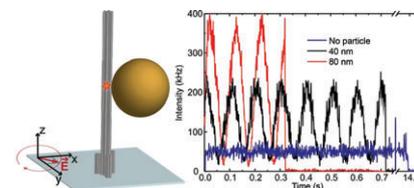
Friederike M. Möller, Phil Holzmeister, Tapasi Sen, Guillermo P. Acuna and Philip Tinnefeld

Angular modulation of single-molecule fluorescence by gold nanoparticles on DNA origami templates

DOI 10.1515/nanoph-2013-0011
Nanophotonics 2013; 2(3): 167–172

Regular article: Strong angular fluorescence intensity modulation of a single dye on a DNA origami is observed upon rotation of linearly polarized excitation light, when a metal nanosphere is bound nearby. This directly reveals the presence of a nanosphere and its orientation with respect to the dye.

Keywords: DNA self-assembly; fluorescence modulation; nanoparticles; nanophotonics; single-molecule studies.



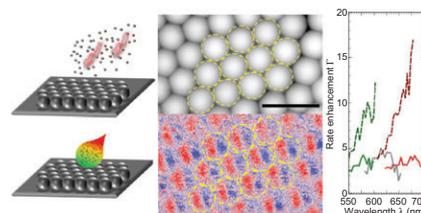
Simona Ungureanu, Branko Kolaric, Jianing Chen, Rainer Hillenbrand and Renaud A. L. Vallée

Far-field disentanglement of modes in hybrid plasmonic-photonic crystals by fluorescence nano-reporters

DOI 10.1515/nanoph-2013-0004
Nanophotonics 2013; 2(3): 173–185

Regular article: QDs deposited on top of a hybrid plasmonic-photonic crystal, a short-range SPP mode of the structure as scanned by s-SNOM and the wavelength-dependent Purcell factor variations exhibited by the QDs, bearing the signature of the underlying resonance modes.

Keywords: plasmonic crystal; fluorescence lifetime; surface plasmon resonance; Bloch modes; Purcell effect.

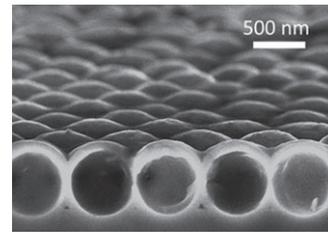


Vijay Kris Narasimhan and Yi Cui
**Nanostructures for photon
 management in solar cells**

DOI 10.1515/nanoph-2013-0001
 Nanophotonics 2013; 2(3): 187–210

Review: Nanostructures offer unique advantages for improving light collection in solar cells, particularly in those with a thin absorber layer. This review explores research on fundamentals and applications of nanoscale photon management in all types of solar cells – including silicon, gallium arsenide, dye-sensitized, and organic photovoltaics. We highlight both real efficiency improvements and the challenges ahead.

Keywords: photon management; nanostructures; graded index; grating; guided mode; photonic crystal; solar cell.



Stefan Mühlig, Alastair Cunningham,
 José Dintinger, Toralf Scharf, Thomas
 Bürgi, Falk Lederer and Carsten
 Rockstuhl
**Self-assembled plasmonic
 metamaterials**

DOI 10.1515/nanoph-2012-0036
 Nanophotonics 2013; 2(3): 211–240

Review: The enormous potential of self-assembly techniques based on colloidal nanochemistry to fabricate nanophotonic structures with a tailored optical response, so-called bottom-up metamaterials, promise to essentially widen the possibilities on how to control light propagation. This review documents the state-of-the-art of self-assembled bottom-up metamaterials. It additionally assesses the open challenges that have to be mitigated in this burgeoning field of research to further advance it.

Keywords: metamaterials; plasmonics; self-assembly; nanochemistry; bottom-up; amorphous structures; plasmonic nanoparticles.

