

step, they directly mapped the probability density distribution onto the ion's internal state. Opposed to classical mechanics, the rules of quantum mechanics allow possible paths to interfere. This causes the final probability distribution to be very different to that of its classical counterpart. Quantum particles tend to move away from its original position much faster than a classical particle.

[4] Phys. Rev. Lett. **104**, 100503 (2010);
doi: 10.1103/PhysRevLett.104.100503.

Two-tier light enhancer

Manchester (UK) – Individual noble metal nanoparticles can strongly enhance electromagnetic fields, a technique used, for example, for optical manipulation of nano-objects. Sasha Grigorenko and a team from the universities of Manchester and Exeter (UK) now developed a plasmonic nanostructure that achieves the cascaded enhancement of electromagnetic fields at optical frequencies. The new structures comprise a small metallic nanodisc suspended above a larger disk. To probe their optical properties, they were coated with a layer of a visible-light fluorophore. Using a scanning confocal microscope, a 43-fold increase in the far-field fluorescence signal was observed for the two-tier composite nanostructures, when compared to the signal obtained from individual nanodiscs.

[5] Nano Lett. **10**(3), 879 (2010); doi: 10.1021/nl903498h.

Conference Report

TaCoNa-Photonics 2009

Berlin (Germany) – Last autumn, on October 28–30, 2009, the second international workshop on Theoretical and Computational Nano-Photonics (TaCoNa-Photonics 2009) took place in the “Physikzentrum Bad Honnef”, Bad Honnef, Germany. It was the second time that the event took

place in the historical building of the Physikzentrum (physics center).

The workshop was chaired by Dmitry N. Chigrin from the University of Wuppertal, Germany and organized by eleven international experts in theoretical and computational nano-photonics. In total, 82 participants from 20 countries contributed to the meeting. There have been three plenary talks, namely “Light-Matter Interactions in Photonic Crystal Fibres” by Philip Russell (MPI for the Science of Light, Germany, see Figure 2), “Transformation Optics with Metamaterials: A New Paradigm for the Science of Light” by Vladimir Shalaev (Purdue University, USA), and “Optical Cloaking and Plasmonic Lasers” by Xiang Zhang (UC Berkeley, USA). In addition, there have been 12 invited, 21 contributed oral and 26 poster presentations (see Figure 3). A Best Poster award has been awarded to Dmitry Fedyanin from the Moscow Institute of Physics and Technology, Russia, who presented “Stored Light in a Plasmonic Nanocavity Based on Extremely-Small-Energy-Velocity Mode”, and to Thomas Weiss from the University of Stuttgart, Germany, for “Calculation of complex shapes in the Fourier modal method through the concept of coordinate transformations”. The prize was co-sponsored by Wiley-VCH (Germany).



Figure 2: Philip Russell giving a plenary presentation. (Photo: Viktoriia Babicheva)

The workshop proceedings can be found in volume 1176 of the AIP Conference Proceedings. Presentations and

discussions covered a full spectrum of topics and trends in nano-photonics including fundamental questions, technical aspects of mathematical and numerical models and routes towards promising applications. Almost every single presentation and discussion highlighted the importance of the synergy among different research directions from many branches of knowledge. The TaCoNa workshop has established itself as a first class meeting to discuss current trends and problems in the field of theoretical and computational nano-photonics. Beside the science it was the stimulating environment of the physics center that brought researchers together across their disciplines. After the presentations and poster sessions discussions went on until late in the evening in the comfortable clubroom or the rustic cellar.



Figure 3: During the poster session. Left to right: Sergei Zhukovskiy, Sergei Tretyakov and Dmitry Chigrin. (Photo: Yulia Mazhirina)

The next TaCoNa-Photonics 2010 meeting will again take place at the Physikzentrum Bad Honnef, Germany from November 3–5, 2010. Plenary speakers will be Kishan Dholakia (University of St Andrews, UK) covering current advances in biophotonics, Hyatt Gibbs (University of Arizona, USA) talking about new developments in nonlinear optics, and Stefan Maier (Imperial College London, UK) speaking about nano-plasmonics. Thirteen internationally recognized experts in theoretical and computational nano-photonics have confirmed their attendance as invited speakers.

For more information, please visit: <http://www.tacona-photonics.org/> (Guido W. Fuchs/Dmitry Chigrin)