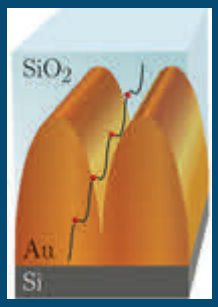
Center for Nanostructured Graphene

CNG NEWSLETTER

July, 2014

NEWS OF THE MONTH

Study of extremely confined gap surface-plasmon modes reported in



Beam of swift electrons traversing a metal nanogroove

Ultra narrow and deep grooves in metal surfaces are known to support gap surface-plasmon (GSP) modes, as observed in experiments with optical excitation. Such modes are typically featuring very strong absorption which can render otherwise shiny gold surface completely black.
Søren Raza, Nicolas Stenger and CNG coworkers have now in collaboration with SDU and AAU explored such gap surface-plasmon modes with electron-beam excitation. The team used high-spatial and energy resolution electron energy-loss spectroscopy (EELS) - available at DTU Cen - to probe extremely confined GSP modes excited by swift electrons in nanometre-wide gaps. Using this unique approach they were able to reveal the resonance behavior associated with the excitation of the anti-symmetric GSP mode for extremely small gap widths, down to 5 nm.
While the explored antisymmetric GSP mode is far too lossy for any waveguide application, its existence plays a crucial role in experimental realizations of non-resonant light absorption by ultra-sharp convex grooves with fabrication-induced asymmetry being inevitably present. The occurrence of the antisymmetric GSP mode along with the fundamental GSP mode exploited in plasmonic waveguides with extreme light confinement is a very important factor that should be taken into account in the design of nanoplasmonic circuits and devices.

Read more here

OTHER

Professor N. Asger Mortensen from DTU Photonic was one of this year's recipients of Elektrofonden's Elektropris award. N. Asger Mortensen receives his award for his work with plasmonic structures which combines properties of electrons and photons.

Read more here

EVENTS

1-day seminar and barbeque

The annual CNG 1-day seminar this year took place 27th of May. Thank you to everybody who joined and made it a great success!

Prof. M. Di Ventra visiting CNG

In September DTU Nanotech will have the pleasure of a visit from Prof. M. Di Ventra, Dept. of Physics, UCSD. He will give a series of four two-hour lectures on advanced topics in modern nanoscience during his stay.

Carbonhagen 2014 / Summer School

This year Carbonhagen celebrates its 5th anniversary. The symposium on graphene, nanotubes and other two-dimensional nanomaterials will take place 21st-22nd of August.
For the first time a 3-day Summer School will lead up to the conference. The Summer School will be focusing on the challenges in the field, lead by some of the best researchers in the field of 2D materials.

Physics/CAMD Summer School

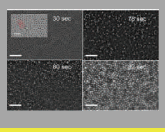
The 2014 CAMD Summer School on Electronic Structure Theory and Materials Design is taking place 17-22 August. The Summer School will be a combination of lectures given by experts in the field and a tutorial with exercises on the methodology covered in the lectures and exercises giving hands-on-experience with the Atomic Simulation Environment (ASE) and the GPAW electronic structure code.

UPCOMING LECTURES - By CNG faculty

Ass. Prof. Mads Brandbyge, DTU Nanotech, gives an invited talk at International Symposium on Materials for Enabling Nanodevices, Taiwan, 3-5 Sep. '14.

Prof. N. Asger Mortensen, DTU Photonics, gives an invited talk at The Eighth International Congress on Adv, Electromagnetic Materials in Microwaves and Optics - Metamaterials 2014, CPH, 25-28 Aug. '14.

NEW PUBLICATION



Large-Area Nanopatterned Graphene For Ultrasensitive Gas Sensing
Alberto Cagliani, David Mackenzie, Lisa Katharina Tschammer, Filippo Pizzocchero, Kristoffer Almdal and Peter Bøggild
Nano Research (14)

Read more at WWW.CNG.DTU.DK

Do you have a good story for the next **CNG NEWSLETTER**? Write lkmy@nanotech.dtu.dk