News

A New Way to Fabricate High-Performance Optical Metasurfaces for Use in Photonic Circuits

Posted: February 17, 2019
LAUSANNE, Switzerland, Feb. 13, 2019 – A way to produce glass metasurfaces that can be either rigid or flexible, developed by engineers from the EPFL Laboratory of Photonic Materials and Fiber Devices, could be used to fabricate all-dielectric optical metasurfaces quickly, at low temperatures, and with no need for a cleanroom. These metasurfaces could beRead More…

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Our new paper in journal of magnetism and magnetic materials

Posted: February 5, 2019
Congratulations to our new paper ” Experimental study and micro-magnetic modeling of magnetization dynamics in L1□0-FePt thin film” by M. Shafei, M. M. Tehranchi, H. Falizkaran Yazdi, S. M. Hamidi, R. Yusupov, S. Nikitin Among different magnetic thin films, L10 FePt due to high magnetocrystalline anisotropy is attracting much attention for applications in new generationRead More…

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Surface Plasmon Resonance in a

metallic nanoparticle embedded in a semiconductor matrix: exciton-plasmon coupling

Posted: February 3, 2019
They consider the effect of electromagnetic coupling between localized surface plasmons in a metallic nanoparticle (NP) and excitons or weakly interacting electron-hole pairs in a semiconductor matrix where the NP is embedded. An expression is derived for the NP polarizability renormalized by this coupling and two possible situations are analyzed, both compatible with the conditionsRead More…

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Our new paper in journal of superconductivity and novel magnetism

Posted: February 1, 2019
Congratulations to our new paper ” Switching time Probing in electric field assisted magnetization of PbZrTiO3/Cobalt structure ” by M. Shafei, M. M. Tehranchi, S. M. Hamidi Electric field assisted full magnetization switching in a multiferroic heterostructure composed of a PbZrTiO3 (PZT) substrate and 100nm Cobalt (Co) layer was investigated. For this, by measuring magneticRead More…

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Our new paper in nanotechnology journal

Posted: January 24, 2019
Congratulations to our new paper ” Tunable Piezophotonic

effect in core shell nanoparticles prepared by laser ablation in liquids under external voltag", by A.K. Kodeary, S. M. Hamidi. We report an experimental study on the piezophotonic effect of gold and Lead Zirconate Titanate (PbZrTiO3) nanoparticles (NPs) and also core shell of them which prepared byRead More…

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Making a transparent flexible material of silk and nanotubes

Posted: January 21, 2019

The silk fibers produced by Bombyx mori, the domestic silkworm, has been prized for millennia as a strong yet lightweight and luxurious material. Although synthetic polymers like nylon and polyester are less costly, they do not compare to silk's natural qualities and mechanical properties. And according to research from the University of Pittsburgh's Swanson SchoolRead More…

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Our new paper in Applied physics A

Posted: January 15, 2019

Congratulations to our new paper "Detecting the thermoplasmonic effect using ellipsometry parameters for self-assembled gold nanoparticles within a polydimethylsiloxane matrix" by Maher Abdulfadhil Gatea, Hussein A. Jawad,· S. M. Hamidi. Light-to-heat conversion using active plasmonic materials is essential in wide-ranging applications, such as sensing, photonics, drug delivery, biomedical imaging, photothermal tumor therapy, and optoelectronics. InRead More…

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Pure Graphene Generates Photocurrent Over Great Distances for Ultra-Efficient Energy Flow

Posted: January 13, 2019
RIVERSIDE, Calif., Jan. 8, 2019 – An international research team has discovered a new mechanism for ultra-efficient charge and energy flow in pristine graphene. The team was co-led by professor Nathaniel Gabor from the University of California, Riverside. The researchers fabricated graphene with no impurities (pristine graphene) into different geometric shapes, connecting narrow ribbons andRead More…

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Using Light to Stop Itch Could Provide Relief From Skin Diseases

Posted: January 6, 2019
ROME, Jan. 3, 2019 – Scientists at the European Molecular Biology Laboratory (EMBL) in Rome have used light to stop itch – at best an annoyance and at worst an uncomfortable chronic symptom – in mice. They used NIR light to activate a phototoxic agent that selectively targets itch-sensing cells, which are located in theRead More…

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Resonant terahertz detection using graphene plasmons

Posted: December 30, 2018
Plasmons, collective oscillations of electron systems, can efficiently couple light and electric current, and thus can be used to create sub-wavelength photodetectors, radiation

mixers, and on-chip spectrometers. Despite considerable effort, it has proven challenging to implement plasmonic devices operating at terahertz frequencies. The material capable to meet this challenge is graphene as it supports long-livedRead More…

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