SEMICONDUCTORS

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Semiconductor nanostructures towards electronic and opto-electronic device applications – VI

This symposium is the sixth installment of a highly successful biennial series that began in 2007. It presents the latest research in semiconductor nanostructures and their applications to electronic, optoelectronic and photonic devices. It covers all aspects from fundamental nanostructure fabrication and material development, to device integration and performance evaluation. We also strive for a balance between experimental work and theoretical research.

Scope:

Semiconductor nanostructures are part of a high-profile class of materials that provide unprecedented levels of functionality by tuning their composition and size. This has already led to ground-breaking applications in electronics and opto-electronics, and enables a route for the development of new technologies in key areas, such as telecommunication, information processing, sensing, renewable energy, and biomedicine. In addition, nanoscale devices are also well suited to study new physics in low dimensional systems.

This symposium will provide a platform to discuss new nanodevice structures and novel nano-materials at different stages on their way towards applications. The topics will include the latest developments of novel organic, hybrid and inorganic nanostructures used in lasers, photodetectors, optical amplifiers, optical switches, waveguides and optoelectronic devices as well as new device applications based on such nanostructures, for instance relevant for quantum information technology (single photon and entangled photon pair sources). It will bring insight into the relevant materials and interface parameters that play a key role in device functionality, as well as the overall device design and resulting physics.

The symposium will bring together researchers working in academia and industry (see also Scientific Committee composition) to stimulate interactions among scientists, engineers, students working on various aspects of semiconductor nanostructures and their applications. Targeting this outcome, each session will be organized to combine experimental, computational modeling and theoretical presentations, providing complementary views and creating long-lasting opportunities of scientific interaction between attendees. Overall this symposium will favor informal interactions and will help to strengthen this community to unravel new directions of research which is the key for the ultimate success of semiconductor nanostructures towards electronic and optoelectronic device applications.

Hot topics to be covered by the symposium:

- Fabrication and characterization of novel nanostructures and hetero-nanostructures using chemical or solid-state techniques;
- Carrier dynamics and photophysics in semiconductor nanostructures and -devices;
- Applications in nano-electronics, -photonics, -plasmonics, and -opto-electronics;
- Novel devices based on semiconductor nanostructures: stretchable or liquid devices, lasers, detectors, amplifiers, LEDs, light-converters and quantum emitters;
- Quantum-dot, -rod, -wire, and -well based devices;
- Quantum-cascade devices;
- Organic and hybrid devices;
- Novel devices based on metamaterials.

List of invited speakers:

- Jean-Luc Duvail (University of Nantes, France)
- Sasan Fathpour (University of Central Florida, USA)
- Jeong Weon Wu (Ewha Womans University, South Korea)
- Jang-Joo Kim (Seoul National University, South Korea)
- Bernard Kippelen (Georgia Institute of Technology, USA)
- Louis Biadala (CNRS, University of Lille 1, France)
- Toshinori Matsushima (Kyushu University, Japan)
- Philippe Dollfus (CNRS, University of Paris Sud 11, France)
- Vladimir Lesnyak (University of Dresden, Germany)
- Peter Smowton (Cardiff University, UK)
- Elvira Fortunato (Universidade Nova de Lisboa, Portugal)
- Kwang-Sup Lee (Hannam University, South Korea)

START AT	SUBJECT	NUM.	ADD
16:30	High sensitivity flame sensor based on PbS Colloidal Quantum Dots	**N.15.41**	☆
16:30	Nonlinear properties associated to 1s-1p interband transition in AlAs/GaAs core/shell spherical quantum dot	**N.15.42**	☆
16:30	Thickness Controlled Few-Layer Black Phosphorus via Hydrogen Plasma Treatment Authors : Wan Li1, Zhinan Guo2, Xue-Feng Yu2*, and Paul K. Chu1* Affiliations : 1 Department of Physics & Materials Science, City University of Hong Kong, Tat Chee Avenue, Kowloon, Hong Kong, China; 2 Institute of Biomedicine and Biotechnology, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen 518055, China. Resume : Black phosphous (BP), consisting of a weak van der Waals interlayer interaction and strong in-plane bonds, has high carrier mobility and tunable band gap (0.3-2.0 eV), offering properties for electric and optoelectronic devices. Here we report a controllable thinning method by using hydrogen plasma etching to thin down mechanically exfoliated BP flakes. Atomic force microscope, optical microscopy and Raman techniques was used to identify process conditions. Not only the thickness of the BP flakes can be controlled, but also the defects of the exposed BP surface are removed after plasma treatment. It is expected to improve the electrical performance of BP based field-effect transistor (FET). This method provides a new way to fabricate BP-based electronic and optoelectronic devices in the future.	**N.15.43**	☆
16:30	PROPERTIES OF As2Se3 CHALCOGENIDE GLASSES DOPED WITH MANGANESE	**N.15.44**	☆
16:30	Investigation of optical anisotropy in amorphous TiO2 films produced by pulsed-laser deposition	**N.15.45**	☆
16:30	Optical and photoelectrical properties of nanolamellar structures obtained by thermal annealing of InSe plates in Zn vapors	**N.15.46**	☆
16:30	Investigation of optical gain in 1.55 μm p-i-n GaNAsBi-based DQWs	**N.15.47**	☆
16:30	Studying thermal properties of normal and twinned Ge nanowires through Raman spectroscopy	**N.15.48**	☆