

## XXII International Material Research Congress (IMRC 2013)

### Symposium 7E: Low-Dimensional Semiconductor Structures

The “**Low-Dimensional Semiconductor Structures**” symposium is the part of the **XXII International Material Research Congress (IMRC 2013)**. The Materials Research Society (MRS) of USA and the Sociedad Mexicana de Materiales (SMM) are working together on this global effort by growing the International Materials Research Congress held **August 11-15, 2013 at scenic Marriott hotels in Cancun, Mexico** <http://www.mrs.org/imrc2013/> or <http://www.mrs-mexico.org.mx/imrc2013/>. IMRC 2013 will feature plenary, parallel symposium and poster sessions, and an industrial exhibition.

**Symposium: “Low-Dimensional Semiconductor Structures”** includes presentations on the fundamental and applied aspects of physics in low-dimensional systems, such as semiconductor quantum wells, quantum wires, rods and dots (QDs), artificial electromagnetic structures for microwave and optical ranges, electromagnetic and photonic band gap structures and nanophotonics, plasmonic structures, as well as other novel systems and phenomena. Both theoretical and experimental contributions related to mentioned areas will be considered.

The aim of this symposium is not only the presentation of advanced fundamental and application scientific results but also to reinforce the collaboration between research laboratories and industrial partners in order to strengthen the development of new generations of low dimensional semiconductor structures and devices. The technical program of Symposium will include invited talks, oral and poster presentations as well as special student session. Please click here <http://www.mrs-mexico.org.mx/imrc2013/index.php> to learn more about the call for papers.

#### Hot topics to be covered by the symposium (but are not limited):

- Theory, modeling and simulation of low-dimension systems
- Quantum wells, wires, rods and quantum dots (QDs)
- Nanooptoelectronics
- Photonic crystals and Nanophotonics
- Active QD structures and plasmonics
- Double QD couples and spintronics
- Nanomagnetism
- Information storage with QDs
- Nanocrystals, QDs in Chemical and Gas sensing
- Nanobiotechnology with semiconductor QDs
- Nanomedicine
- Defects in semiconductor nanostructures
- Advanced QD structure characterization
- Multi-scale materials

#### Publications:

1. Invited papers presented in this symposium will be published in the Elsevier journal - **Physica E, Low Dimensional Systems and Nanostructures**.
2. The majority of papers will be published in the MRS Proceeding that is hosted on Cambridge's cutting-edge electronic platform, **Cambridge Journals Online (CJO)** (<http://journals.cambridge.org/opl>).

### Invited speakers (confirmed):

1. **Dr. Anthony J. Kenyon**, University College London (UK), "**Resistive switching and memristance in silicon oxide containing silicon nano-inclusions**".
2. **Prof. Dr. Johannes Heitmann**, Technical University of Freiberg, (Germany), "**Embedded Nanocrystals for Thin Film Semiconductor Technology**".
3. **Prof. Gavin Conibeer**, School of Photovoltaic and Renewable Energy Engineering, University of New South Wales (Australia), "**Exploitation of low dimensional systems for advanced photovoltaics**".
4. **Prof. Arne Nylandsted Larsen**, Department of Physics and Astronomy, Aarhus University (Denmark), "**Plasmonic enhanced infrared upconversion in thin-film silicon solar cells**".
5. **Prof. Tom Gregorkiewicz**, University of Amsterdam (The Netherlands), "**Carrier multiplication with Si nanocrystals**".
6. **Prof. Igor I. Smolyaninov**, University of Maryland (USA), "**Hyperbolic metamaterials: novel physics and applications**".
7. **Prof. Ana Cremades**, Department for Physics of Materials, University Complutense of Madrid (Spain) "**Growth and properties of doped TiO<sub>2</sub> and In<sub>2</sub>O<sub>3</sub> low dimensional structures**".
8. **Dr. Aleksandra B. Djuricic**, Department of Physics, the University of Hong Kong (China), "**Defects in ZnO nanostructures – physics and applications**".
9. **Dr. Daniela Cavalcoli**, Physics and Astronomy Dept., University of Bologna (Italy), "**Electrical properties of quantum wells in III-nitride alloys and the role of defects**".
10. **Prof. Elvira Fortunato**, The Materials Research Center (CENIMAT) – FCT/UNL (Portugal), (title will be given later).
11. **Prof. Irina A. Buyanova**, Department of Physics, Chemistry and Biology, Linköping University (Sweden), "**Understanding key properties of ZnO nanostructures relevant to advanced optoelectronic applications**".
12. **Dr. Peter Petrik**, MFA Institute for Technical Physics and Materials Science, Hungarian Academy of Sciences (Hungary), "**Parameterization of the dielectric function of semiconductor nanocrystals around the critical points**".

### Symposium Organizers:

#### **Tatyana V. Torchynska**

ESFM-Instituto Politécnico Nacional  
Physics Department  
av. IPN, s/n, U.P.A.L.M.  
Ed.9, México D.F. 07738, MEXICO  
Phone: 5255-57296000 ext. 55031  
E-mail: [ttorch@esfm.ipn.mx](mailto:ttorch@esfm.ipn.mx)

#### **Larysa Khomenkova**

V.Lashkaryov Institute of Semiconductor Physics  
National Academy of Sciences of Ukraine  
45 Pr. Nauky, 03028, Kyiv, Ukraine  
Phone: +38-044-5256340  
E-mail: [khomen@ukr.net](mailto:khomen@ukr.net)

#### **Georgiy Polupan**

ESIME-Instituto Politécnico Nacional  
LABINTAB  
av. IPN, s/n, U.P.A.L.M.  
Ed.5, México D.F. 07738, MEXICO  
Phone: 5255-57296000 ext. 54880  
E-mail: [gpolupan85@yahoo.com.mx](mailto:gpolupan85@yahoo.com.mx)

#### **Gennadiy Burlak**

CIICAp - Universidad Autónoma del Estado  
de Morelos, Cuernavaca,  
Morelos, México  
Phone: 52-777-3297084  
E-mail: [gburlak@uaem.mx](mailto:gburlak@uaem.mx)