ICQNM 2011

Foreword

The Fifth International Conference on Quantum, Nano and Micro Technologies (ICQNM 2011), held between August 21-27, 2011 in Nice/Saint Laurent du Var, France, continued a series of events covering particularly promising theories and technologies. The conference covered fundamentals on designing, implementing, testing, validating and maintaining various kinds of materials, systems, techniques and mechanisms related to quantum-, nano- and microtechnologies.

Quantum technologies and nano technologies have a great potential to transform communications telecommunications infrastructure and communication protocols, and computers and networking devices. Nanotechnologies and micro-technologies already made their mark on smart materials, nano-medicine, nano-devices, molecular manufacturing, biotechnology, metrology, airspace.

The advancements in material science and computer science have allowed the building, launching and deploying of space exploration systems that continually do more and more as they become smaller and lighter. As an example, carbon nano-tubes have been created that are 250 times stronger than steel, 10 times lighter, and transparent. Similar advances are occurring in glass, plastics and concrete. Spacecraft are being launched, with hulls that are composed of carbon fibers, a light weight high strength material. Swarms is another concept of nano-robotics; swarms act in unison like bees. They theoretically will act as a flexible cloth like material, as strong as diamond. Interplanetary exploration can be foreseen as being carried on by nano-robots as well.

Electronic devices, medicine, environment, metrology, aerospace programs, clothes and materials, telecommunications, cryptography, semiconductors, manufacturing, and other domains are impacted by the progress on the areas mentioned above. Particularly, micro imaging, nano-medicine: (drug delivery; nano-particles i.e. viruses; proteins.), bio-nanostructures: (nano-tubes, nano-particles), microsystems, micro fluidics: (including nano-fluidics, modeling; fabrication and application), micro instrumentation / implantable microdevices (miniaturized bio-electronic systems etc.) and micro sensors benefits from the progress on quantum, nano and micro technologies.

We take here the opportunity to warmly thank all the members of the ICQNM 2011 technical program committee as well as the numerous reviewers. The creation of such a broad and high quality conference program would not have been possible without their involvement. We also kindly thank all the authors that dedicated much of their time and efforts to contribute to the ICQNM 2011. We truly believe that thanks to all these efforts, the final conference program consists of top quality contributions.

This event could also not have been a reality without the support of many individuals, organizations and sponsors. We also gratefully thank the members of the ICQNM 2011 organizing committee for their help in handling the logistics and for their work that is making this professional meeting a success.

We hope the ICQNM 2011 was a successful international forum for the exchange of ideas and results between academia and industry and to promote further progress in the area of quantum-, nano- and micro-technologies.

We hope Côte d'Azur provided a pleasant environment during the conference and everyone saved some time for exploring the Mediterranean Coast.

ICQNM 2011 Chairs

Advisory Chairs
Vladimir Privman, Clarkson University - Potsdam, USA
Christian Kollmitzer, AIT Austrian Institute of Technology GmbH, Austria
Wen-Ran Zhang, Georgia Southern University, USA
Victor Ovchinnikov, Aalto University, Finland

Research/Industry Chairs
Marco Genovese, Italian Metrological Institute (INRIM) -Torino, Italy
Keiji Matsumoto, National Institute of Informatics, Japan

Special Area Chairs

QSEC
Masahito Hayashi, Tohoku University, Japan

Fluidics
Alireza Azarbadegan, University College London (UCL), UK

Quantum algorithms and quantum complexity
Francois Le Gall, The University of Tokyo, Japan

Quatum control
Daoyi Dong, University of New South Wales, Australia