



NEWSLETTER – February 2011

Workshop on Security and Privacy in Implantable Medical Devices

In the context of an ED (Education & Dissemination) activity, Nano-Tera is supporting the organization of this one-day workshop which will be held on April 1st, 2011 at EPFL in Lausanne.

Implantable Medical Devices are increasingly being used to solve a wide variety of medical and research challenges. However, they introduce potential vulnerabilities to adversaries that can result in life-threatening situations as well as compromises of privacy. So, the issues of Security and Privacy have become key topics to be addressed now to further develop the promise of Implantable Medical Devices.

To address these challenges, this **workshop on Security and Privacy in Implantable Medical Devices** brings together researchers and advocates from a range of perspectives to present recent research and experiences in this domain. The format of the workshop is a set of invited talks followed by a panel discussion.

The workshop is organized by **Dr. Sandro Carrara** (EPFL and University of Genoa) and **Prof. Wayne Burleson** (EPFL and University of Massachusetts Amherst). Note that there is no registration fee for the workshop thanks to sponsorship from EPFL and Nano-Tera.ch. The workshop immediately follows the **ISMICT** in nearby Montreux, which is another previously announced Education & Dissemination activity sponsored by Nano-Tera.ch.

Details and registration: <http://si.epfl.ch/SPIMD> ✂

Other new ED activities

In addition to the SPIMD workshop described above, other education activities have just been selected, as part of the on-going call for Education & Dissemination activities – with deadlines at the end of every even month.

➤ **MMB2011, 6th international conference on Microtechnologies in Medicine and Biology, May 4-6, 2011** ➤ PI: Dr. Olivier Guénat, CSEM

Microtechnologies in Medicine and Biology Conferences are highly focused and interactive meetings that gather people who want to do Biology using

Microtechnologies. Unlike many other conferences, MMB place the biological and/or the medical questions at the centre of the problem to be solved, rather than specific technologies.

The 6th International Conference on Microtechnologies in Medicine and Biology, MMB2011, will be held in Lucerne in May 4-6th. Such exchanges are aimed to enhance and strengthen the potentials of microtechnologies in revolutionizing the fields of medicine and biological sciences through the development of new research tools and technologies. The past successes of MMB conferences partly due to the high scientific level of the presenters. MMB2011 persists in this direction, with top-class researchers confirmed their venue, among whom the 2008 Nobel Chemistry Prize Winner, Prof. Roger Tsien, and Dr. Marie Csete, an outstanding research scientist who was formerly the Chief Scientific Officer of the California Institute for Regenerative Medicine.

In order to favor the attendance of students Registration Fees will be strongly reduced for students.

More details: <http://www.mmb2011.org>

➤ **Nano-Tera Summer School on Microscale Cooling of 3D Integrated Systems, June 6-10, 2011**

➤ PI: Prof. John Thome, EPFL

The key objective of this Summer School is to allow the complete spectrum of the Microscale Heat Transfer domain important to interlayer cooling of 3D-ICs to be covered in one high level training exercise. This will be achieved by bringing together PhDs, researchers and industry's scientists from different disciplines. Leveraging the development of 3D integrated systems will have a profound impact in multiple aspects of our life and society. Besides of course the much higher computing performance of these systems, it is expected that a very significant decrease in energy consumption will be achieved, making high performance computing (HPC) into a green technology for the future. Furthermore, the HPC capacity will allow *other* energy intensive technologies and processes (chemical processing plants, as an example) to be designed and operated with significant gains in energy conservation.

Finally, an important issue here is how to accelerate the development of green HPC and education of young engineers and scientists is the first link in the link in the chain of development, and thus this Summer School has a special role in Switzerland and beyond.

➤ **Swiss E-Print, Dec. 1-2, 2011**

▶▶ PI: Dr. G. Nisato, CSEM

The goal of this activity is to organize the 1st Swiss E-Printing workshop, “E” meaning electronic, emerging, enabling, eco-friendly, among others. E-Printing is a key enabling technology that goes well beyond the established paper printing. In recent years, novel areas have matured, where printing techniques find increasingly a pathway from R&D to industrial manufacturing. These areas not only include organic and printed opto-electronics, but also micro-optical, biomedical, MEMS fabrication and packaging, 3D rapid prototyping, flexible substrate and roll-to-roll technologies.

Switzerland already has many activities in the E-print field, but they are not coordinated to allow further advances and improvements; organizing the Swiss E-Print workshop will allow active professionals to identify potential complementary partnership in this upcoming manufacturing discipline that spans across several disciplines from tools, ink materials, surfaces, chemistry & physics, electronics and optics, among others.

The 1.5-day Swiss E-print workshop will take place on December 1-2nd 2011 in Pratteln (BL) with invited lectures of international key people in this field and with contributed papers from Swiss participants.

More details soon at <http://www.swiss-eprint.ch>.

➤ **QCrypt 2011, First Annual Conference on Quantum Cryptography, September 12-16, 2011**

▶▶ PI: Prof. Matthias Christandl, ETHZ

Quantum cryptography aims to achieve security from fundamental physical principles, such as the quantum mechanical phenomena of entanglement and Heisenberg's uncertainty principle. In the past few years significant progress has been made in the theoretical understanding of quantum cryptography and its technological feasibility has been demonstrated experimentally. It is therefore regarded as one of the most promising candidates for a future quantum technology.

Although both theoretical and experimental progress is fast, recent research has shown that there are large gaps between theory and experiment. In order to help bridge this gap, an annual conference series will be initiated on quantum cryptography, bringing together researchers working on all aspects of the subject (both theoretical and experimental).

The mission and goal of the conference QCrypt tie in very closely with the Nano-Tera RTD project QCrypt, led by Prof. Gisin of the University of Geneva. On the one hand, the conference should

provide a platform for quantum cryptographers to meet and to advance the technological level of quantum cryptography. On the other hand, researchers involved in the Nano-Tera project should benefit greatly from the conference.

The first conference of this series, QCrypt 2011 will be held at ETHZ on September 12-16, 2011.

More details: <http://www.qcrypt2011.ethz.ch>



New courses of interest for Nano-Tera researchers

As part of their own ED activity, the Swiss Foundation for Research in Microtechnology (FSRM) proposes a new series of courses on various domains of interest to Nano-Tera researchers.

The Nano-Tera researchers will benefit from an almost free participation, with a registration fee of only CHF 100 for 1-day courses (instead of CHF 640). These drastically reduced rates will cover meals and course documentation.

The registration deadline is 2 weeks before each course. To benefit from the Nano-Tera discount, please mention “Discount Nano-Tera researcher” in the comments section of the registration form and indicate which Nano-Tera project you are involved in. Note that the number of places for discounted participations is limited to 10 Nano-Tera researchers, on a first come, first served basis.

For more details on the contents of the two courses listed below and for registration, simply follow the links provided at the end of each description. For more information, do not hesitate to contact directly Annette Locher of the FSRM at locher@fsrm.ch.

New Trends in Nano-Electronics

May 5, 2011 – EPFL

- Tutors: Adrian Ionescu, EPFL
Thomas Skotnicki, STMicroelectronics

The course aims to give the attendants a general knowledge about state-of-the-art emerging nanoelectronics including technology, logic and memory device architectures and benchmarking for circuit and system applications. Particularly the new trends in Beyond CMOS and More-Than-Moore domains are detailed with concrete examples and discussions.

- Target audience

The course intends to address a wide range of R&D staff, PhD candidates and/or engineers from institutes or universities, marketing and business development managers of companies active or interested in emerging nanoelectronics.

- More information: [contents details and registration](#)

Nano-Engineering

May 9, 2011 – EPFL

- Tutors: Jürgen Brugger, EPFL
Harry Heinzelmann, CSEM

The course presents key instrumentation, technologies, manufacturing, and applications. It includes the technical background necessary to understand the new developments in nanotechnologies, in particular new phenomena when scaling down from micro to nanometer dimension. This course provides an overview of methods and tools for accessing the nanometer lengthscale. It covers the principles of scanning probe techniques ranging from surface physics to biology, from highly specialized experiments to routine materials testing, demonstrating the usefulness of these methods also for industrial work. The course furthermore describes state-of-the-art micro- and nanoengineering methods to create nanostructures that are needed for future applications in various applications (nanolithography, nanoelectronics, nano-optics, data storage and bio-analytical nanosystems). The content is adapted to the rapid changes in science, technology and society.

➤ Target audience

Technical managers, R&D engineers and scientists active in advanced nanometer scale surface technologies, or interested in “Micro and Nanotechnologies” in general.

- More information: [contents details and registration](#)

Mark your calendars for the next FSRM/Nano-Tera workshop!

The next Nano-Tera workshop is already coming up soon. The next installment in the series of workshops organized by the Swiss Foundation for Research in Microtechnology (FSRM) in the context of their ED project, is schedule to take place on **June 21-22, 2011**.

The theme of this workshop will be “**Innovative Sensors in the Nano-Tera.ch program**”. ✨

Nano-Tera Annual Meeting: registrations open

The Annual meeting of Nano-Tera.ch, to be held in Bern on May 12-13, will feature oral presentations by all Principal Investigators of RTD projects as well as posters by participants involved in the program.

A preliminary program is now available at the link provided below. Attendance to the meeting is free: please register for the event by *March 31st*.

On the registration form, participants involved in Nano-Tera projects have the opportunity to announce their intention to present a poster at the meeting.

Details: <http://www.nano-tera.ch/events/meeting.html>

Agenda summary...

15/03	iCAN contest, Swiss selection (as previously announced: www.ican-contest.ch)
01/04	SPIMD workshop
04-06/05	MMB2011 conference
05/05	New trends in Nano-Electronics course
09/05	Nano-Engineering course
12-13/05	Nano-Tera.ch Annual meeting
05-10/06	Microscale Cooling of 3D integrated systems
21-22/06	Innovative Sensors in the Nano-Tera program (FSRM/Nano-Tera workshop)
12-16/09	QCrypt conference
01-02/12	Swiss E-print workshop

For more information, visit <http://www.nano-tera.ch> or contact:

Patrick Mayor
Scientific coordinator and reporter
+41 21 693 81 66
patrick.mayor@nano-tera.ch