

OBJECTIVES of NANO-TEC

- To identify the next generation of (emerging) device concepts and technologies for ICT.
- To build a joint technology-design community to coordinate research efforts in nanoelectronics.

WORKSHOPS

W1:
Identify
Technologies & Designs
for new
devices to
work &
SWOT of
research
tools

W2:
Benchmark
of new
Beyond-
CMOS
device and
design
concepts

W3:
SWOT
analysis of
benchmark
d devices
and designs

W4:
Report on
Technology-
design
community &
recommendati
ons on
combined
TEC-DES eco-
system

January 2010
Granada

12-14 October 2011
Athens

Spring 2012

Autumn 2012

1st NANO-TEC WORKSHOP
20-21 January 2011,
Parque de las Ciencias, Granada, Spain



Workshop 2:

Benefiting from
of research and
CMOS device/



Emerging device concepts:

- Molecular electronics
- MEMS
- Solid-State Quantum Computing
- Spintronics
- Nanowires
- Memristors
- Graphene

Format: **35'** for presentation
 5' for discussants "provocation"
 20' for discussion

Benchmarking Beyond CMOS Devices

Technology	[Wires, graphene, MEMS etc... please insert name]
Gain Signal/Noise ratio Non-linearity	
Speed Power consumption	
Architecture/Integrability (Inputs/outputs, digital, multilevel, analog, size etc.)	
Other specific properties	
Manufacturability (Fabrication processes needed, tolerances etc.)	
Timeline (When exploitable or when foreseen in production)	

Working Groups

A few general questions to be tackled will be provided

- On understanding of the physics, modelling etc.
- On benchmarking, relevance etc.

09.05-10.05

Session 1 – Molecular Electronics

Speaker: Dominique Vuillaume - CNRS, Lille, France (35 minutes)

Discussant: Clivia M Sotomayor Torres - Catalan Institute of Nanotechnology, Barcelona, Spain (5 minutes)

Rapporteur: Jouni Ahopelto - VTT Technical Research Centre of Finland

Group discussion (20 minutes)

10.05-11.05

Session 2 – Mems

Speaker: Lina Sarro - Technical University of Delft, The Netherlands (35 minutes)

Discussant: Piotr Grabiec - Institute of Electron Technology, Warsaw, Poland (5 minutes)

Rapporteur: tba

Group discussion (20 minutes)

11.05-11.30

Coffee Break



WORKSHOP 2 PROGRAM- DAYS 1&2

Wednesday 12 October 2011 20.30 pm - Welcome reception

Thursday 13 October 2011

08.30-09.00 **Registration**

09.00-09.05 **Introduction to day 1** - *Jouni Ahopelto, VTT Microsystems and Nanoelectronics, Espoo, Finland*

09.05-10.05 **Molecular Electronics** - *Dominique Vuillaume, CNRS, Lille, France*

10.05-11.05 **Mems** - *Lina Sarro, Technical University of Delft, The Netherlands*

11.05-11.30 **Snapshot poster introduction**

11.30-12.00 Coffee Break & Posters

12.00-13.00 **Solid-State Quantum Computing** - *Jaw-Shen Tsai, NEC & The Riken Institute for Physical and Chemical Research, Ibaraki, Japan*

13.00-14.00 **Spintronics** - *Johan Åkerman, University of Gothenburg & NanoSC, Sweden*

14.00-15.20 Lunch and networking

15.20-16.20 **Nanowires** - *Heike Riel, IBM, Zurich, Switzerland*

16.20-17.20 **Memristors** - *Julie Grollier, CNRS/Thales, Palaiseau, France*

17.20-17.50 Coffee Break & Posters

17.50-18.00 **Guardian Angels:** a short introduction to the Flagship pilot coordination action - *Adrian Ionescu, École Polytechnique Fédérale de Lausanne, Switzerland*

18.00-18.10 **Graphene-CA:** a short introduction to the Flagship pilot coordination action - *Jari Kinaret, Chalmers University of Technology, Gothenburg, Sweden*

18.10-19.10 **Graphene** - *Jari Kinaret, Chalmers University of Technology, Gothenburg, Sweden*

WORKSHOP 2 PROGRAM- DAY 3

Friday 14 October 2011

09.00-10.30 **Panel Discussion on Design:** *Dan Herr, Semiconductor research Corporation, Palo Alto, CA, U.S.A; Diederik Verkest, Interuniversity Microelectronics Center, Leuven, Belgium; Paolo Lugli, Technical University of Munich, Germany; Sandip Tiwari, University of Cornell, NY, U.S.A; Wolfgang Rosenstiel, University of Tuebingen & Edacentrum GmbH, Hannover, Germany*

10.30-11.30 Parallel **working groups** on **Molecular Electronics, Mems, and Solid State Quantum Computing**

11.50-12.50 Parallel **working groups** on **Spintronics and Nanowires**

12.50-13.50 Parallel **working groups** on **Memristors and Graphene**

13.50-14.20 **Conclusions of working groups**

14.20-14.30 **Closing remarks and announcement of workshop 3**

14.30-15.30 Lunch

15.30 Excursion to Cape Sounion