

NANO2006 Workshop on

“Perspectives in Nanoscience and Nanotechnology”

**Miramar Palace, San Sebastian, Basque Country (Spain)
September 4-6, 2006**

Chairman: J. M. Pitarke (Bilbao, Spain)

Vice-chairmen: J. Aizpurua (San Sebastian, Spain)
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P. M. Echenique (San Sebastian, Spain)
R. M. Martin (Urbana, IL)
M. Martin-Lomas (San Sebastian, Spain)
J. B. Pendry (London, UK)

PROGRAM

Monday, September 4

8.00: Welcome coffee and registration

8.45: Opening remarks and announcements

Session 1 (Nanophotonics). Chair: C. Sotomayor

9.00: **M. Wegener** (Karlsruhe, Germany)
Photonic metamaterials: Optics starts walking on two feet (I1)

9.30: Discussion

9.45: **G. Badenes** (Barcelona, Spain)
Nanophotonic devices and techniques for sensing applications (I2)

10.15: Discussion

10.30: **N. Halas** (Houston, TX)
Plasmonic nanostructures from artificial molecules to active nanodevices (I3)

11.00: Discussion

11.15: Coffee

11.30: **X. Zhang** (Berkeley, CA)
Photonic metamaterials: Nano-scale plasmonics and super lens (I4)

12:00 Discussion

12.15: **P. Nordlander** (Houston, TX)
Plasmonic substrates for surface enhanced spectroscopies (I5)

12.45: Discussion

13.00: **B. Wood** (London, UK)
Directed sub-wavelength imaging in a layered metal-dielectric system (O1)

13.15: Discussion

13.20: Lunch

14.30: **Poster Session and coffee**

Session 2 (Nanostructures). Chair: P. Nordlander

16:00 **U. Landman** (Atlanta, GA)

Small is different: from nano-lubrication and jets to correlated electrons in quantum dots
(16)

16.30: Discussion

16.45: **J. Pethica** (Dublin, Ireland)

Mechanics at single atoms & nanoimprint for lithography (17)

17.15: Discussion

17.30: Coffee

17.45: **F. Briones** (Madrid, Spain)

Device integration of semiconductor and magnetic nanostructures (18)

18.15: Discussion

18.30: **N. Pascual** (Berlin, Germany)

Microscopy, spectroscopy and manipulation of single molecules and nanostructures (19)

19.00: Discussion

Tuesday, September 5

Session 3 (Management and Coordination). Chair: P. M. Echenique

- 9:00: **G. Prentice**(Arlington,VA)
Nanoscale Science and Engineering at the NSF (I10)
- 9:30: Discussion
- 9:45: **C. Sotomayor** (Cork, Ireland)
The research agenda of the EU NoE PHOREMOST: Nanophotonics to reach molecular-scale technologies (I11)
- 10:15: Discussion
- 10:30: **J. Ahopelto** (Espoo, Finland)
Emerging Nanopatterning methods: The research work of the EU Integrated Project NaPa (I12)
- 11:00: Discussion
- 11:15: Coffee

Session 4 (Nanostructures). Chair: W. Jaskolski

- 11:30: **P. Hawrylak** (Ottawa, Canada)
Nanoscale semiconductor structures (I13)
- 12:00: Discussion
- 12:15: **J. Nelson** (London, UK)
Nanostructured and molecular materials for photovoltaic energy conversion (I14)
- 12:45: Discussion
- 13:00: **E. Muñoz** (Zaragoza, Spain)
Multifunctional carbon nanotube composite fibers (O2)
- 13:15: Discussion
- 13:20: **S. Galvao** (Campinas-SP, Brazil)
Nanowires and suspended atomic chains from Au-Ag alloys (O3)
- 13:35: Discussion
- 13:40: Lunch

Session 5 (Nanobiotechnology). Chair: M. Martin-Lomas

- 14.30: **D. Wechsler** (Dusseldorf, Germany)
Perspectives of controllable nanoparticles in diagnosis and therapy (I15)
- 15.00: Discussion
- 15.15: **S. Penades** (Sevilla, Spain)
Biofunctional nanoparticles (I16)
- 15.45: Discussion
- 16.00: Coffee
- 16.15: **M. Velez** (Madrid, Spain)
Biofunctionalized surfaces to study membrane bionanomachines (I17)
- 16.45: Discussion
- 17.00: **M. García-Parajo** (Barcelona, Spain)
Near-field scanning fluorescence microscopy: a nano-tool to investigate the nanoscale organisation of the cell membrane (I18)
- 17.30: Discussion
- 17.45: **G. Chirico** (Milano, Italy)
Voltage regulation of single molecule fluorescence (O4)
- 18.00: Discussion
- 18:30. **Video Projection** "When Things Get Small" introduced by I. Schuller;
(duration: 27 minutes)
- 21.00: Conference dinner at the Kukuarri

Wednesday, September 6

Session 6 (Electronic structure). Chairman: A. Arnau

- 9.00: **E. Artacho** (Cambridge, UK)
Ab initio calculations of nanostructured materials (I19)
- 9.30: Discussion
- 9.45: **F. J. García de Abajo** (Madrid, Spain)
Advances towards surface-state nanoelectronics (I20)
- 10.15: Discussion
- 10.30: **J. Alonso** (Valladolid, Spain)
Structure and electronic properties of hydrogen clusters, free and deposited on graphitic surfaces (O5)
- 10.45: Discussion
- 10.50: Coffee
- 11.15: **R. Miranda** (Madrid, Spain)
Self-organized nanomagnets and organic molecules at surfaces (I21)
- 11.45: Discussion
- 12.00: **J. E. Ortega** (San Sebastian, Spain)
One-dimensional quantum wells in noble metal surfaces and nanostructures (O6)
- 12.15: Discussion
- 12.20: **W. Jaskolski** (Torun, Poland)
Electronic and optical properties of self-assembled quantum dots in nanomechanical oscillators (O7)
- 12.35: Discussion
- 13.00: Lunch

Session 7 (Nanoelectronics). Chair: **G. Badenes**

14.00: **K. Henson** (New York, NY)
CMOS trends for the Nanotechnology era (I22)

14:30 Discussion

14.45: **F. Gamiz** (Granada, Spain)
Electron transport in silicon based nano-transistors (O8)

15.00: Discussion

15.05: **R. Ruruli** (Barcelona, Spain)
Electronic and scattering properties of dopants in silicon nanowires (O9)

15.20: Discussion

15.25: **I. Schuller** (San Diego, CA)
Nanoscience: Geometry in the laboratory (I23)

15.55: Discussion

16.10: Coffee

Session 8 (Nanomagnetism). Chair: **F. Plazaola**

16.30: **A. Hernando** (Madrid, Spain)
Orbital magnetism in Au and ZnO nanoparticles (I24)

17.00: Discussion

17.15: **D. Petit** (London, UK)
Magnetic logic devices for ultra high density data storage (I25)

17.45: Discussion

18.00: **F. Castaño** (Cambridge, MA)
Multilayered magnetic ring devices for memory and logic applications (I26)

18.30: Discussion

18.45: Closing