

**School on Nanostructured Materials  
Characterization by Synchrotron Light based Techniques**



18th - 23rd November 2007. La Plata, Buenos Aires. Argentina

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**November, Sunday 18th**

17 - 19: Registration

19 - 20: Welcome and aperture.

**November, Monday 19th**

*Synchrotron radiation fundamentals.  
Experimental facilities in many regions of the world.  
Nanoscience and Nanotechnology applications.*

8:15 - 9:00: Registration.

9:00 - 10:00: Synchrotron radiation – part 1 (A. Craievich).

10:00 - 10:30: Coffee Break.

10:30 - 11:30: Synchrotron radiation – part 2 (A. Craievich).

11:30 - 11:45: Break

11:45 - 12:30: The Brazilian Synchrotron Light Laboratory (LNLS, Campinas, Brazil). Facilities and opportunities for Nanoscience and Nanotechnology research (D. Zanchet).

12:30 - 14:30: Lunch.

14:30 - 15:30: The SOLEIL (Paris, France). Facilities and opportunities for Nanoscience and Nanotechnology research (M. Asensio).

15:30 - 15:45: Break

15:45 - 16:45: The National Synchrotron Light Source at Brookhaven National Laboratory (NY, USA). Facilities and opportunities for Nanoscience and Nanotechnology research (J. Rodríguez).

16:45 - 17:15: Coffee Break

17:15 - 17:45: The Swiss Light Source (SLS). Facilities and opportunities for Nanoscience and Nanotechnology research (C. Piamonteze).

17:45 - 18:30: Molecular Foundry, Lawrence Berkeley National Laboratory, CA, USA. Facilities and opportunities for Nanoscience and Nanotechnology research (M. Salmeron).

## November, Tuesday 20th

*X-ray Absorption techniques. Fundamentals and applications on nanomaterials characterization. EXAFS, XANES and Dispersive EXAFS. Magnetic Dichroism (XMCD). Theoretical models for X-ray absorption spectroscopy.*

9:00 - 10:00: X-ray absorption techniques – Part 1 (G. Azevedo).

10:00 - 10:30: Coffee Break.

10:30 - 11:15: X-ray absorption techniques – Part 2 (G. Azevedo).

11:15 - 11:30: Break.

11:30 - 12:30: Magnetic dichroism (C. Piamonteze).

12:30 - 14:30: Lunch.

14:30 - 15:30: Multiplete theory (C. Piamonteze).

15:30 - 16:00: Coffee Break.

### **16:00 - 17:30: XANES, EXAFS, DXAS, XMCD and multiplet calculations. Application examples.**

16:00 - 16:30: “XAFS study of semiconductor oxides doped with magnetic impurities” (C. Rodríguez Torres).

16:30 - 17:00: “XANES study of the Zr and Si electronic structure in ordered SiO<sub>2</sub>-ZrO<sub>2</sub> mesoporous thin films” (L. Andrini).

17:00 - 17:30: “DXAS dynamic study of the Fe and Zr exchange in ZrFe<sub>2</sub>O<sub>4</sub>” (S.J.A. Figueroa).

### **Nanoscience and Nanotechnology Initiative in Argentina:**

17:40 - 18:20: “Excellence Area Program (PAE): Nanoscience and Nanotechnology Interdisciplinary Center” (E. Calvo).

## November, Wednesday 21st

*X-ray Photoelectron Spectroscopy (XPS): Fundamentals and applications on nanomaterials and surface characterization. In situ studies (HP-XPS).*

9:00 - 10:00: XPS fundamentals (P. Nascente).

10:00 - 10:30: Coffee Break.

10:30 - 11:15: Application examples (P. Nascente).

11:15 - 11:30: Break

11:30 - 12:45: XPS at atmospheric pressure range. Fundamentals and examples (M. Salmerón).

12:45: Lunch and free afternoon.

### **November, Thursday 22nd**

*Small Angle X-ray Scattering (SAXS). Grazing incidence SAXS (GISAXS) and Anomalous SAXS (ASAXS). Fundamentals and applications on nanomaterials characterization.*

9:00 - 10:30: Small Angle X-ray Scattering (SAXS) (A. Craievich).

10:30 - 11:00: Coffee Break.

11:00 - 12:30: Anomalous SAXS (ASAXS) and Grazing incidence SAXS: GISAXS (G. Kellermann).

12:30 - 14:30: Lunch.

### **14:30 - 16:00: SAXS, ASAXS y GISAXS. Application examples.**

14:30 - 15:00: "SAXS characterization of Mesoporous thin films with bidimensional detection" (P. Angelomé).

15:00 - 15:30: "Characterization by synchrotron light techniques of nanoparticles encapsulated in biomolecules" (M. Ceolín).

15:30 - 16:00: "Cristaline Structure vs. Local atomic order in nanocrystals solid solutions based in  $ZrO_2$ " (D. Lamas).

16:00 - 16:30: "SAXS/XAFS study of the interactions between nanoparticles and porous supports" (L. Giovanetti).

16:30 - 17:00: Coffee Break.

17:00 - 18:00: XAS applications for Heterogeneous Catalysis Research (T. Oyama).

### **Nanoscience and Nanotechnology Initiative in Argentina:**

18:00 - 18:45: Networks PAE of N&N in Argentina, Nanotechnology Argentine Foundation and Argentine-Brazil Binational Center of N&N (R. Salvarezza).

**November, Friday 23rd**

*X-ray Diffraction (XRD) studies with synchrotron light, in situ studies. Fundamentals and applications on nanomaterials characterization.*

*X-ray Photoemission (ARPES). Fundamentals and applications on nanomaterials characterization.*

9:00 - 10:00: XRD with Synchrotron Light: Fundamentals and instrumentation (J. Rodríguez).

10:00 - 10:30: Coffee Break.

10:30 - 11:15: In situ XRD: Fundamentals and instrumentation (J. Rodríguez).

11:15 - 11:30: Break

11:30 - 12:30: Photoemission: ARPES-PES – Part 1 (M. Asensio / J. Avila).

12:30 - 14:30: Lunch.

14:30 - 15:30: Photoemission: ARPES-PES – Part 2 (M. Asensio / J. Avila).

15:30 - 15:45: Break.

15:45 - 16:30: Photoelectron diffraction - Part 1 (M. Asensio / J. Avila).

16:30 - 17:00: Coffee Break.

17:00 - 18:00: Photoelectron diffraction - Part 2 (M. Asensio / J. Avila).

18:00: Final Examination and closing.