Winter School:
Nanocharacterization techniques & tools.

March 3-5 2010
Nanocharacterization Platform (PFNC), Minatec, CEA-Grenoble, France.

Organizer: cyril.cayron@cea.fr

March 3, 2010: Metrology & Scanning Electron Microscopy		
9h00-10h00	Metrology	Introduction and examples.
		coffee break
10h15-12h30	SEM	Principles. Different signals (SE, BSE, EDS, EBIC, EBSD, Kossel, STEM). Resolutions. Facts & Artefacts. Examples.
		lunch
14h00-16h30	Practical	On: FIB Strata 400, SEM Zeiss LEO1530, Hitachi 5500.
18h30-22h30	Diner	Visit of Art Museum of Grenoble. Diner at the museum restaurant "Le 5".
March 4, 2010: Transmission Electron Microscopy		
9h00-10h00	TEM	Sample preparation, conventional TEM, diffraction, bright/dark field, orientations, defects (dislocations, stacking faults). Examples.
		coffee break
10h15-11h00	HRTEM	High Resolution TEM. Crystallography. Transfer function. Correctors. Simulations. Interfaces. Examples.
11h00-12h30	Complementary techniques.	HRSTEM, holography, tomography, CBED, EELS, EFTEM.
		lunch
14h00-16h30	Practical	On: Jeol 200kV, Jeol 400 kV, FEI Titan 80-300kV.
March 5, 2010: Surface Analysis XPS & EBSD		
9h00-10h00	XPS, ARXPS, UPS	Principles, strengths and limitations. Angle-resolved experiments, synchrotron beam lines. Applications..
		coffee break
10h15-11h00	Auger, XPEEM	Principles. From spectroscopy to microscopy. Applications. Comparison of the different techniques presented.
11h00-12h30	EBSD	Principles. Crystallinity, textures. Special grain boundaries. Toward strain/stress.
		lunch
14h00-16h30	Practical	On: XPS SSI, MXPS Omicron, EBSD HKL LEO1530.

Speakers:

P.H. Jouneau, M. Den Hertog, JL Rouvière, P. Bayle-Guillemaud, O. Renault, E. De Vito, C. Cayron

Abbreviations:

SEM scanning electron microscopy
TEM transmission electron microscopy
STEM scanning transmission electron microscopy
HRTEM high resolution transmission electron microscopy
HRSTEM high resolution scanning transmission electron microscopy
FIB focus ion beam
SE secondary electrons
BSE back scatter electrons
EDS energy dispersive spectroscopy
EBIC electron beam induced current
EBSD electron back scatter diffraction
EELS electron energy loss spectroscopy
EFTEM energy filter transmission electron microscopy
CBED convergent beam electron diffraction
XPS X-ray photoelectron spectroscopy
UPS Ultraviolet photoelectron spectroscopy
AES Auger electron spectroscopy
XPEEM X-ray photoemission electron microscopy

This first EUMinafab winter school at Minatec (Grenoble, France, http://www.minatec.com/en) aims at Ph.D students, post-docs and engineers involved in micro and nanotechnologies and desiring to acquire a global and general overview of some of the most widespread nanocharacterisation techniques, such as SEM, TEM and XPS. Some specialized complementary techniques will be also briefly treated. The courses will be followed by practicals on some of the best equipments situated on the nanocharacterization platform of Minatec.

For the interest of the practicals, the school must limit the number attendees to **15 persons maximum**.

Information and inscription by email at cyril.cayron@cea.fr before January, 29, 2010.