

External Services 2020

CIC nanoGUNE

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Even nanotechnology and nanoscience sometimes looks far away from our daily life, understanding the behavior of our products or fabricating them in nanoscale could improve drastically their properties. The nanotechnology is currently accepted as being one of the main driving forces behind economic growth in the 21st century.

In order to help in the challenges that this driving force might entails the industry, CIC nanoGUNE launches an External Services Department. Its aim is to support industrial users in the fabrication and characterization of nano and micro scale devices and materials.

The External Services Department is designed to be an open facility for researchers and technologists from different business fields, from SMEs (small and medium-sized enterprises) to large companies, in a wide range of industrial sectors.

Our expertise relies on an advanced microscopy platform, a clean room and various labs with nanomanufacturing and characterization equipment. We would like to reinforce our strength in advanced materials, as a key factor in nanofabrication processes.

We work with end users in order to develop and optimize techniques and equipment. Contact us in our website: <http://www.nanogune.eu/externalservices> and we will help you finding the optimal solution based on your needs.

I. Sample fabrication platform

Thin film growth services

Nano-structure fabrication services

Sample processing services

Others (oven, wet etching, plasma asher, critical point dryer...)

II. Characterization platform

Structural characterization services

Magnetic and electrical properties characterization services

Chemical characterization services

Others (profilometry, ellipsometry, optical microscopes...)

I. Sample fabrication platform

Thin film growth services

What we can offer:

High quality metallic, dielectric or insulating layers coatings

Possibility to coat a wide variety of substrates, glass, silicon, polymers...

Coating treatments to improve final coating properties (annealing, surface activation)

Possibility to:

Improve the mechanical properties of materials, e.g. hardness, corrosion, wear, friction, adhesion...

Antireflection coatings

Biocompatible coatings

Hydrophobic/hydrophilic surfaces

Prototypes fabrication for solar cell industry

Decorative coatings

Standards fabrication for coating calibration



Interesting for:

Sollar cell industry, off-shore industry, glass coatings, microelectronics and semiconductor industry, automotive industry, iron and steel industry, metallurgy, machine tool manufacturers...

Equipment:

E-beam and thermal evaporators, sputtering systems and Atomic Layer Deposition (ALD) system

I. Sample fabrication platform

Nano-structure fabrication services

What we can offer:

Nano and micro structure fabrication

Possibility to:

Customized reference marks fabrication in different substrates, glass, silicon

Fabrication of structured calibration sample for microscopes

Surface topography changes by nano- and micro- fabrication to improve optical and mechanical properties, such as, adhesion, friction, corrosion, hardness and wear.

Industry-specific standards fabrication for nano- and micro- metrology

Interesting for:

Material science industry, microscopy laboratories, microelectronics and semiconductor industry, automotive industry, laboratory test facility...

Equipment:

E-Beam Lithography (EBL) systems, Focused Ion Beam (FIB) system and equipment for photolithography

I. Sample fabrication platform

Sample processing services

What we can offer:

- Chemical and physical dry etching
- Wet etching
- Selective etching of material
- Mechanical polishing of species
- Annealing in specialized ovens



Possibility to:

- Cleaning of surfaces, i.e. remove organic layers, oxide layers
- Activation of plastic and ceramics, before printing, lacquering or gluing
- Surface topography modification by selective etching or increasing roughness
- Sterilization of species in dry environment
- Species properties improvement by annealing under vacuum or in Ar, N₂ or O₂ atmosphere
- High quality pure mechanically polished samples for electron microscopy labs

Interesting for:

Material science industry, automotive industry, electron microscopy laboratories, medical applications...

Equipment:

Ion miller, Reactive Ion Etcher (RIE), microscopy sample preparation equipment and specialized ovens

II.Characterization platform

Structural characterization services

What we can offer:

Structural characterization of broad kind of materials, e.g.: metallic, insulator, biological, wet...

Crystallinity phase identification of materials

Topography 2D analysis

Structural simulation

Possibility to:

Quality control to check wears, tears, stress and process reproducibility in different kind of materials

Structural analysis of precipitations present in alloys, metals, ceramics and other advanced materials (3D imaging, size characterization, crystallographic phase characterization)

Thin film coatings characterization, such as, roughness, thickness, profile and defects

Micro and nano-structural characterization without any pre-treatment, e.g. study of particle size in sauces, materials in liquid environment, nonconductive materials, biological materials...

Crystallographic phase identification and crystal grain size measurements on wide range of materials

Structural simulations: strain analysis and 3D image structural reconstruction

Electron beam induced current and voltage images of micro and nano-electronic circuits

Interesting for:

Material science industry, metallurgy, automotive, food industry, building and construction industry, renewable energy, microelectronic industry, semiconductor industry

Equipment:

Environmental Scanning Electron Microscopy (eSEM), Transmission Electron Microscopy (TEM), Transmission Electron Microscopy image simulation and analysis, X-ray reflectivity/diffractometry and Atomic Force Microscopy (FIB)

II.Characterization platform

Magnetic and electrical char. services

What we can offer:

Electrical properties measurements

Resistance versus temperature (2 K - 400 K)

$I(V)$ and $V(I)$ curves at different temperatures (2 K - 400 K) applied field up to 9 T

Magneto resistance measurements

Magnetic measurements

Magnetic moment versus temperature (2 K- 1000 K)

Hysteresis loop measurement at different temperature (2 K - 1000 K)

Possibility to:

Detailed magnetic properties characterization in newly synthesized materials

Detailed electrical properties characterization in newly synthesized materials

Nano- and micro electronics devices complete characterization

Interesting for:

Material science industry, metallurgy, microelectronics and semiconductor industry

Equipment:

Physical Property Measurement System (PPMS) and probe station

II. Characterization platform

Chemical characterization services

What we can offer:

Ability to acquire chemical information non-destructively with a nanoscale resolution

Raman, Energy-dispersive X-ray (EDX) and Electron energy loss (EELS) spectrum acquisition at selected areas in the sample.

Elemental maps of the surface and cross section

Possibility to:

Identification and determination of composition in materials in macroscopic, microscopic and nanoscopic scales

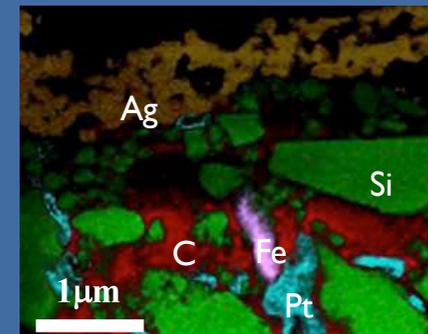
Chemical analysis of precipitations present in alloys, metals, ceramics and other advanced materials (3D imaging, size characterization, crystallographic phase characterization)

Interesting for:

Metallurgy, microelectronics, automotive, food industry, construction industry, renewable energy, environmental and bio-industry

Equipment:

Confocal RAMAN microscopy, electron energy loss spectroscopy (EELSS) and energy-dispersive X-ray spectroscopy (EDX)



II. Characterization platform

Chemical characterization services

What we can offer:

Ability to acquire chemical information non-destructively with nanoscale resolution

Raman, Energy-dispersive X-ray (EDX) Electron energy loss (EELS) and infrared (FTIR) spectra acquisition with nanoscale spatial resolution at selected areas in the sample.

Nanoscale infrared images of samples.

Elemental maps of the surface and cross section

Possibility to:

Identification and determination of composition in materials in macroscopic, microscopic and nanoscopic scales

Chemical analysis of precipitations present in alloys, metals, ceramics and other advanced materials (3D imaging, size characterization, crystallographic phase characterization)

Conformation analysis of single protein complexes, chemical characterization of polymer blends and rubbers, nanoscale analysis of structural disorder in organic semiconductors, study of single viruses, carrier concentration measurements on nanowires, imaging of compressive/tensile strain, etc.

Interesting for:

Metallurgy, microelectronics, automotive, food industry,

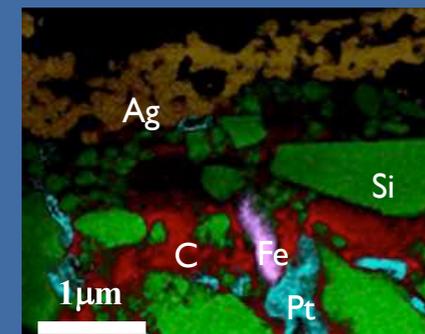
Construction industry, renewable energy, environmental and bio-industry.

Polymer industry, biology, electronics industry, biomedicine.

Equipment:

Confocal RAMAN microscopy, electron energy loss spectroscopy (EELSS) and energy-dispersive X-ray spectroscopy (EDX),

Near-field microscopy (s-SNOM) and nano-spectroscopy (nano-FTIR).





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