SGI

Servicios Generales
De Investigación

CENTRO DE INVESTIGACIÓN, TECNOLOGÍA E INNOVACIÓN UNIVERSIDAD DE SEVILLA

Prof. Julián Martínez Fernández
Director of the Secretariat of Centres, Institutes and Central Research Facilities
Vicerectorat of Research

- Resources in Advanced Analytical Instrumentation

- Sustained effort by Universidad de Sevilla (USE)
  - ✓ Public Funding, FEDER Funds
  - ✓ Research Groups

- Central Research Facilities
  - Availability for
    - Research Groups
    - Public Research Institutes
    - Industries

- Strategical Project: CITIUS

- Objective:
  - For Research Groups: Excelence
  - Science-Industry-Society Technology Transfer
  - For Industries: Quality

- By means of:
  - Proper Infrastructure
  - Centralized Managing
  - Synergy Effects
  - Quality and Traceability

Construction (2004)	5000 m^2
Funding	4.5 M€
Instrumentation	>15 M€

Instrumentation 2010 > 9 M€

Analytical Services

Microanalysis

Microscopy

NMR

HR Mass Spectrometry

Radio-isotopes

X rays

Biology

Analytical Services

Agricultural Research

XPS/ESCA (ICMSE)

Other Facilities

Liquid Nitrogen

Herbarium

Greenhouse

Photographic Laboratory

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Vicerrectorado de Investigación

Animal Research

- Production Center - Espartinas
- Research Laboratories
  Fac. Biology Fac. Pharmacy
  Fac.Psicology Fac. Medicine

INDUSTRIAL SECTORS

- Aeronautical
- Metal-machining
- Environmental
- Mining
- Agricultural and Food
- Materials production
- Medical
- Pharmaceutical
- Construction
- Art

COMPANIES WITH R+D DEPARTMENT IN CITIUS:

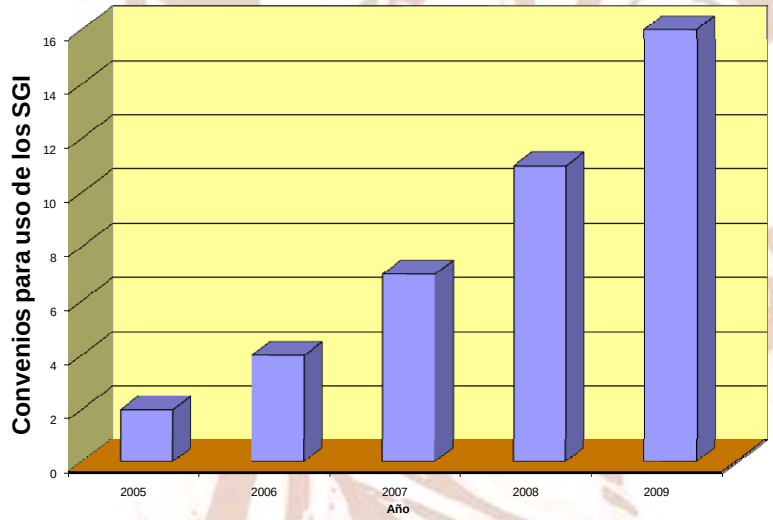
ENDESA

ABENGOA BIOENERGY

SPIN-OFF COMPANIES:

BIOMORPHIC

RESBIOAGRO



NUMBER OF JOINT AGREEMENTS WITH COMPANIES

SPECIALIZED THECNICAL PERSONEL

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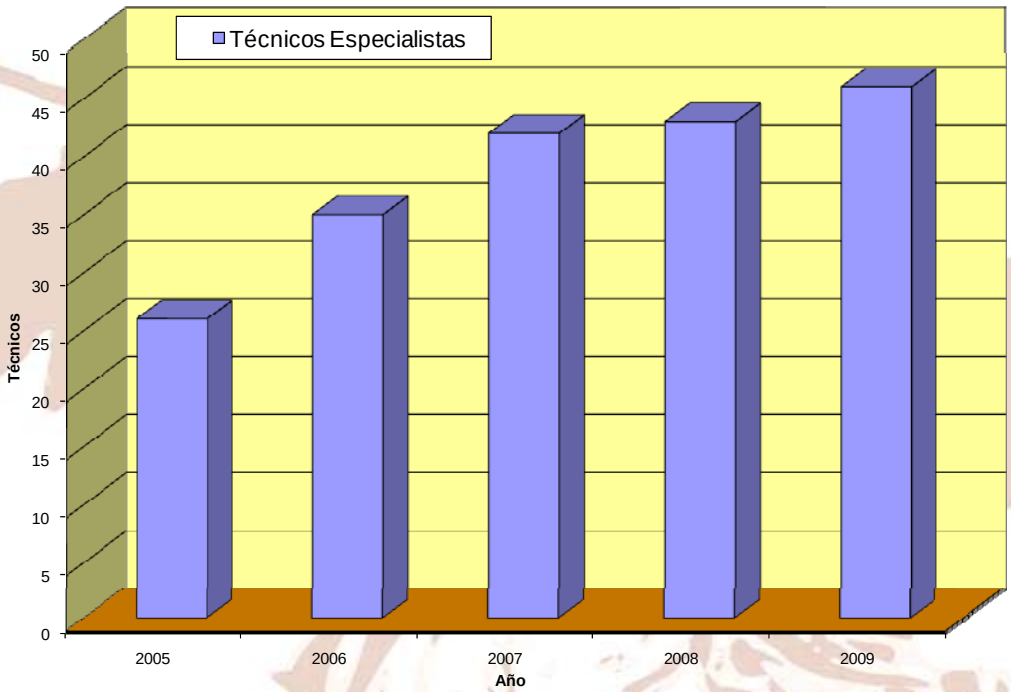

30 % BACHELOR

35 % Ph D.

INCOME

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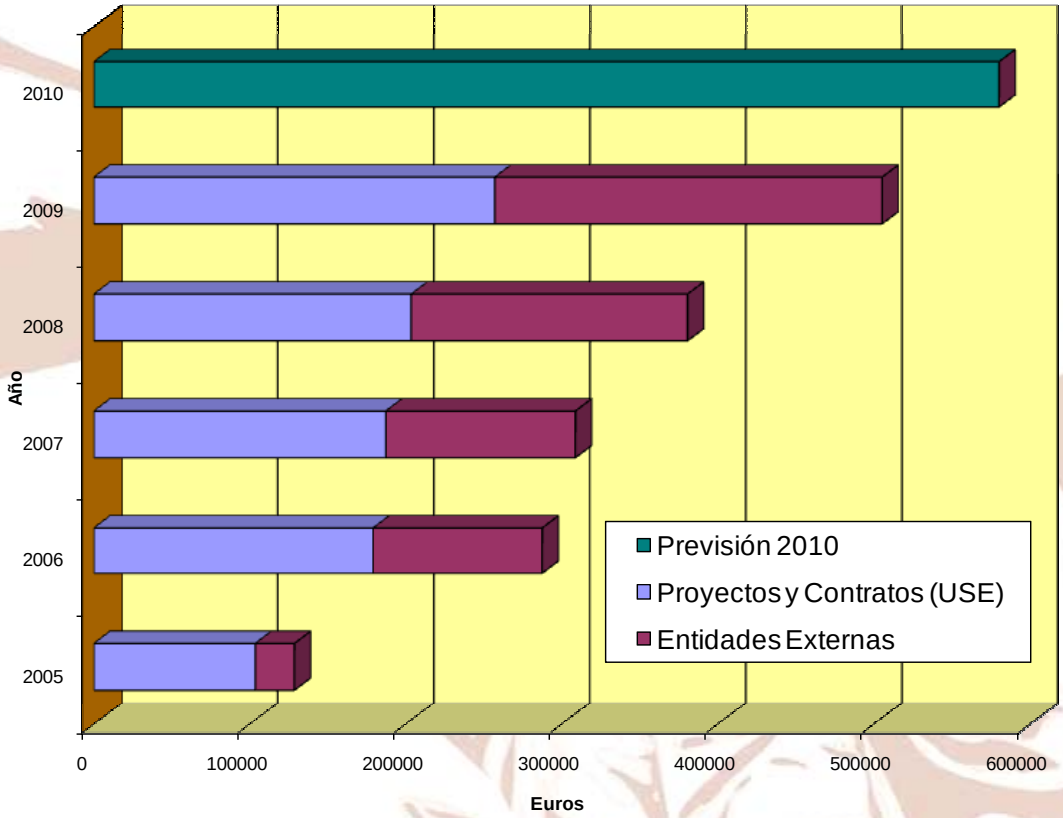

Self funding
2008 - 40%
2009 - 48%,
2010 - 51% (prev.)

2008 - 380.000 €
2009 - 500.000 € (32 %increase)
2010 - 580.000 € (16% increase)

USERS

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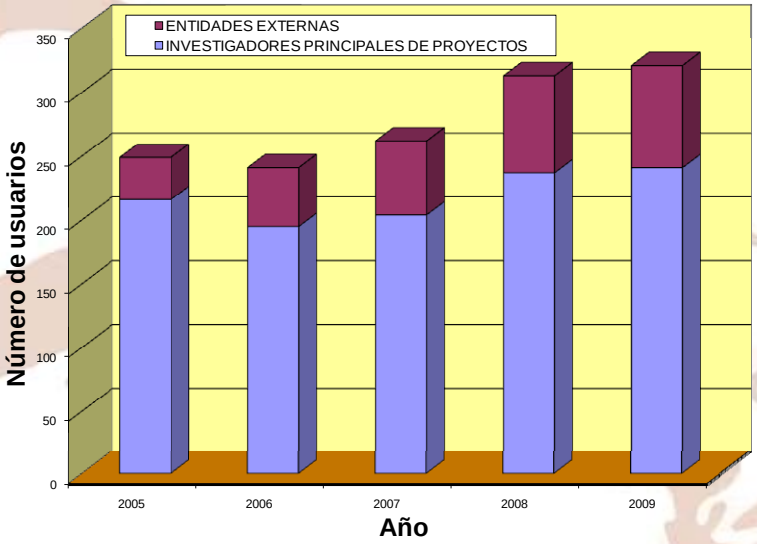
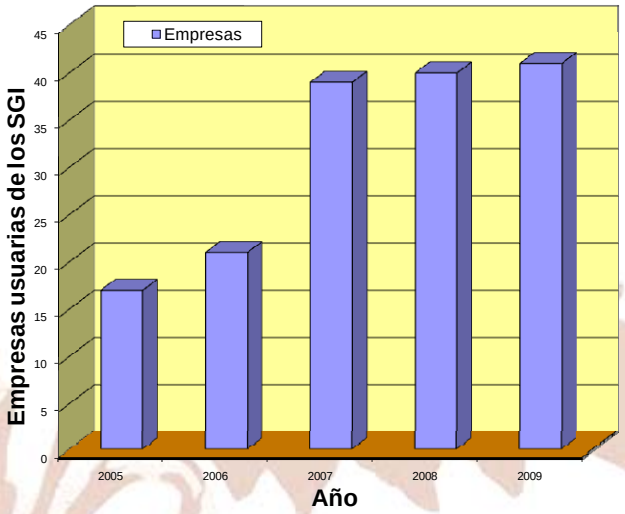
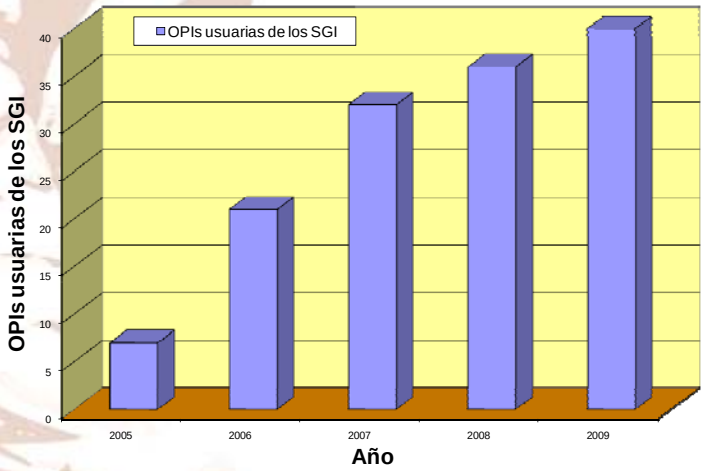


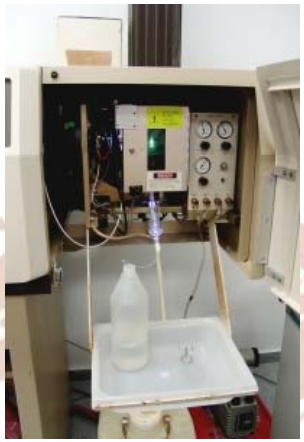




240 Research group

80 external companies/institutions

Microanalysis



OBJECTIVE

Determination and quantification of chemical elements
(1ppm, 1ppb)

TECHNIQUES

- Combustion (C,H,N,S)
- ICP-OES
(70 elements simultaneously)
- Capilar Electrophoresis

- Sample Preparation Laboratory

Microscopy







OBJECTIVE

Microstructural morphology and composition of organic and inorganic materials

TECHNIQUES

- Electron Microscopy
  - SEM and TEM
  - EDX Chemical Analysis
  - EBDS Phase Analysis
- Optical Microscopy
  - Laser Confocal
  - Epifluorescence
- Atomic Force Microcopy

- Sample Preparation Laboratories

Nuclear Magnetic Resonance

OBJECTIVE

- Non-destructive spectroscopy technique
- Energy absortion by magnetic activa nucleus
- Structural and stereochemical information

TECHNIQUES

- Spec. Bruker Avance-500,
- Spec. Bruker AMX-500,
- Spec. Bruker Avance-300,
- Spec. Bruker AMX-300 (CP-MAS)
- Reverse multinuclear probe
- Direct QNP probe

- Sample Preparation Laboratory

High-Resolution Mass Spectrometry

OBJECTIVE

- Analysis of molecular formulae
- Proteomics
- Ions in electromagnetic fields

TECHNIQUES

- AUTOSPEC-Q: High-Resolution Spec. Chromatographic Separation
- TOFSPEC: Time-of-Flight Spec.
- KRATOS MS80-RFA: Mass Spec.
- Q-TRAP: LC/MS/MS Hibrid system HPLC and NanoHPLC Separation

- Sample Preparation Laboratory

Radioisotopes

OBJECTIVE

- Radioisotopes and high-energy photons
- Basic research and environmental radiological control
- Isotopic Analysis

TECHNIQUES

- CANBERRA Gamma Spec. (also in-situ)
- CANBERRA Alpha Spec.
- QUANTULUS 1220 Liquid Scintilator
- BERTHOLD 770 Gas-flow detector
- Body radiation monitorization
- ICP-MS

- Sample Preparation Laboratory

X Ray Laboratory

OBJECTIVE

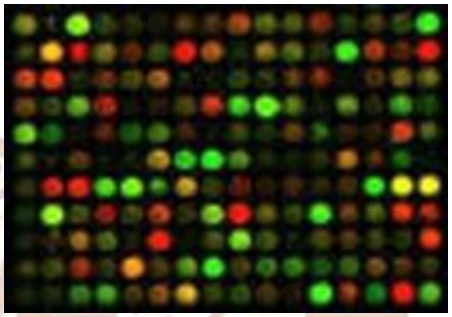
- Diffraction and fluorescence
- Crystalline phases characterization
- XRF Elemental analysis
- Non destructive analysis

TECHNIQUES

- Powder XRD
- Environmental XRD
- X Ray microfluorescence (spatial resolution)
- X Ray fluorescence

- Sample Preparation Laboratory

Biology Laboratory



OBJECTIVE

The Biology Laboratotory offers versatile analytical instrumentation for research in Life Sciences.

TECHNIQUES

- P2 biosafety laboratories
- Cell cultures laboratory
- Bioinformatics
- Flow Cytometry
- DNA chips
- Quantitative PCR
- Ultracooling system
- Betascopes

Agricultural Research Laboratory

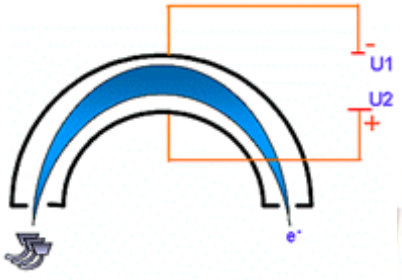
OBJECTIVE

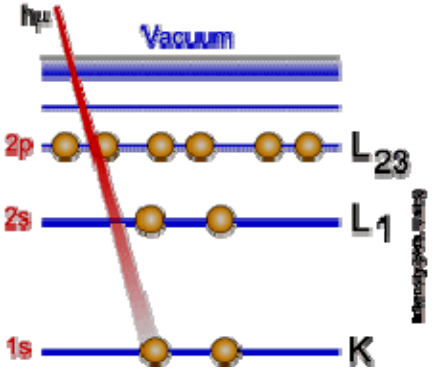
Research in agricultural and food sciences

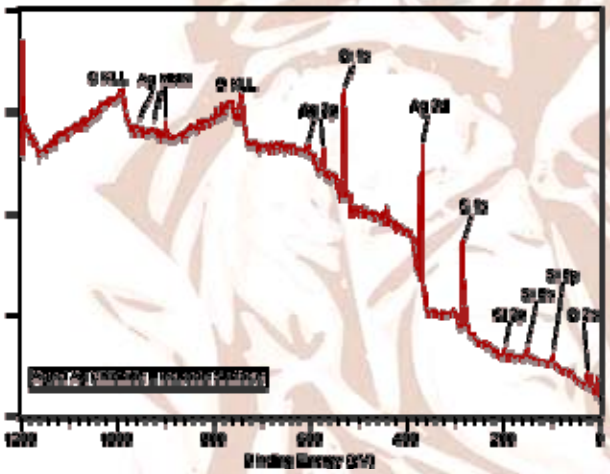
TECHNIQUES

- Multielemental and isotopic analysis by ICP-MS
- Near-Infrarred Reflectance Analysis NIR
- CNS Macrosamples
- Fitotron
- PCR

XPS/ESCA







OBJECTIVE

- Non destructive quantitative analysis of solid surfaces (20-30 Å).
- Chemical, Physical and Electrical properties.

TECHNIQUES

- XPS/ESCA "Leybold-Hereus" LHS-10/20
- Ultra-high vacuum.
- Detection limit 0.5% at.
- Sample Preparation Laboratory.

CONTACTING CITIUS

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