



## BIO-NMR

### Biomolecular NMR at the UGR

- Part of the research of the Department of Physical Chemistry at the University of Granada (UGR) aims to increase our understanding of the fundamentals of biological processes using the methods of high-resolution NMR spectroscopy in combination with biophysical techniques such as Differential Scanning Calorimetry (DSC), Isothermal Titration Calorimetry (ITC) and spectroscopic techniques such as Circular Dichroism (CD) and fluorescence. Our group is interested in the structural, thermodynamic and kinetic characterization of protein folding-unfolding, protein stability, protein misfolding and aggregation and protein-ligand interactions. We are especially interested in how structural changes are related to the thermodynamics of a specific process. The research furthermore covers the combination of rapid injection techniques combined with rapid acquisition NMR methods for the analysis of (fast) kinetic processes.

### NMR spectrometers at the UGR

- The NMR spectrometers that we use for our investigation are placed in the Centre for Scientific Instrumentation (CIC) of the University of Granada. We essentially use a Varian NMR Systems 600 MHz spectrometer equipped with:
  - -4 channels, triple (X,Y,Z) gradients
  - -PFG-XYZ indirect detection triple-resonance  $^1\text{H}\{^{13}\text{C},^{15}\text{N}\}$  probe
  - -PFG-XYZ indirect detection  $^1\text{H}\{^{13}\text{C},^{15}\text{N},^{31}\text{P}\}$  pentaprobe
  - -Automatic tuning and matching in  $^1\text{H}$
  - -Rapid mixing device

- -Software: Vnmrj, Biopack

There is also a Varian NMR Systems 500 MHz spectrometer equipped with:

- -3 channels, Z-gradient
- -PFG-Z direct detection triple resonance X{<sup>1</sup>H-<sup>19</sup>F,<sup>31</sup>P} probe
- -PFG-Z indirect detection <sup>1</sup>H{X} nanoprobe (HR-MAS)
- -Carousel 9 samples
- -Software: Vnmrj, Biopack, DOSY 2D/3D, NMR Analyst

## Where to find us?

- The Molecular Biophysics and Biotechnology group is part of the Department of Physical Chemistry of the University of Granada in historical Granada. We have our offices and laboratories (including all biochemical, molecular biology and biophysical techniques, excluding NMR) at the Faculty of Science Campus.
- The NMR spectrometers are located in the Centre for Scientific Instrumentation (Centro de Instrumentación Científica, CIC) near the Faculty of Science. This centre offers various research support services, aimed at experimental, technical and health subjects in particular: Experimental animal services, Radiometric and isotopic geology, Structure determination, Microscopy, Image processing, Fundamental biology, etc.

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