

# NMR SPECTROSCOPY

## JEOL JNM-ECA 600 II NMR

Nuclear magnetic resonance (NMR) spectroscopy is a non-destructive analytical technique which exploits the magnetic properties of atomic nuclei. Depending on the electronic structure of a molecule, the resonance frequency of individual atoms in the molecule changes, therefore detailed information about the physical and chemical properties of atoms, and thus about the structure, dynamics, reaction state, and overall chemical environment of atoms and molecules can be obtained.

## ACQUIRED INFORMATION

- > Chemical structure of a molecule
- > Qualitative and quantitative analysis
- > Chemical/phase purity of a sample
- > Studies of dynamic and kinetic properties
- > Reaction rates, reaction progress, isomerization
- > Studies of interactions with biomolecules
- > Presence of different functional groups

## SAMPLE TYPES

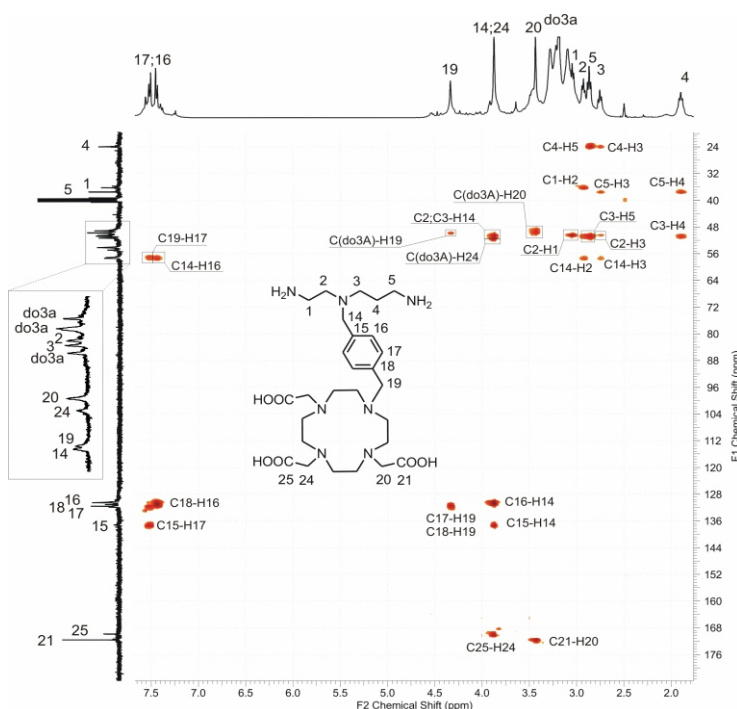
- > Liquid and solid samples
- > Organic and inorganic materials
- > Aggregates in crystalline and amorphous states
- > Composite materials, heterogeneous systems
- > Polymers, pharmaceuticals, biological material

## MODES, CONDITIONS AND PRECISION

- > 1D and 2D NMR experiments
- > Measurements in solution: probes Autotune™ 600 MHz 5 mm FG/RO and Autotune™ 600 MHz 5 mm FG/TH
- > Measurements in the solid state: 600 MHz 3.2 mm HXMAS probe, 3.2 mm zirconium cuvettes, MAS up to 22 kHz
- > Broad-band  $^1\text{H}$  a  $^{19}\text{F}$  experiments with one or two resonances including: direct measurements of  $^1\text{H}$ ,  $^{19}\text{F}$ ,  $^{23}\text{Na}$ ,  $^{13}\text{C}$ ,  $^{31}\text{P}$ ,  $^{15}\text{N}$ ,  $^{29}\text{Si}$ ,  $^{11}\text{B}$ ,  $^{119}\text{Sn}$  and other nuclei
- > Temperature range from laboratory temperature to 130 °C



JEOL JNM-ECA 600 II NMR spectrometer



Part of  $^1\text{H}$ - $^{13}\text{C}$  gs-HMBC NMR spectrum of the given macrocyclic compound

DETAILED INFORMATION ON REQUEST



REGIONAL CENTRE  
OF ADVANCED TECHNOLOGIES  
AND MATERIALS

WWW.RCPTM.COM RCPTM.SERVICES@UPOL.CZ



Palacký University  
Olomouc