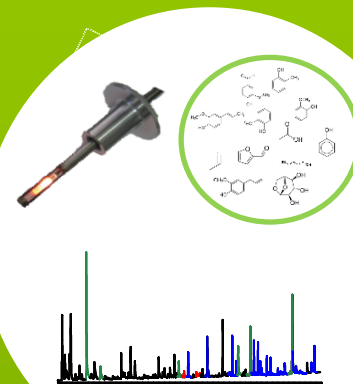




Wet-chemistry



NIR - chemometrics



Analytical pyrolysis

◆ Wet-chemistry

Provided access to wet-chemistry laboratory and extensive experience on analysis.

- Extractives
- Lignin
- Cellulose
- Hemicellulose
- Monosaccharide

Training:

- Development of protocols
- Sample preparation
- Analysis of results



◆ Infrared spectroscopy

Provided access IR (FT-NIR and FTIR) facility and extensive experience on analysis.

➤ Near Infrared
(NIR)

➤ Mid Infrared
(FTIR)



NIR-Vector 22/N



NIR-MPA



ATR-FTIR

Fast accurate and non-destructive assessment of wood properties based on the absorption of infrared light

◆ Near Infrared (NIR) – PLSR models

➤ Existing models

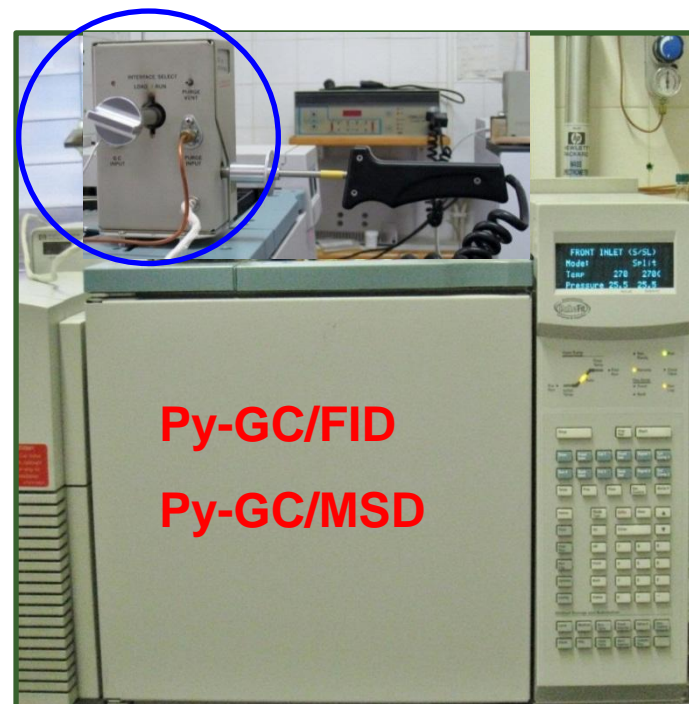
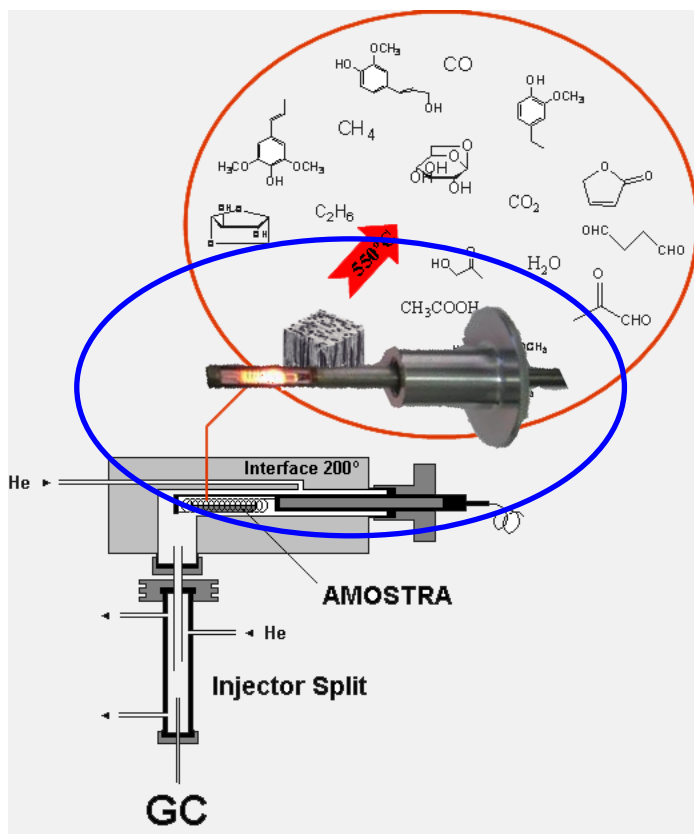
- Extractives
- Lignin
- Lignin composition
- Cellulose
- Hemicellulose
- Monosaccharide

➤ Training

- Spectra acquisition
- Use existing models
- Calibration
- Validation

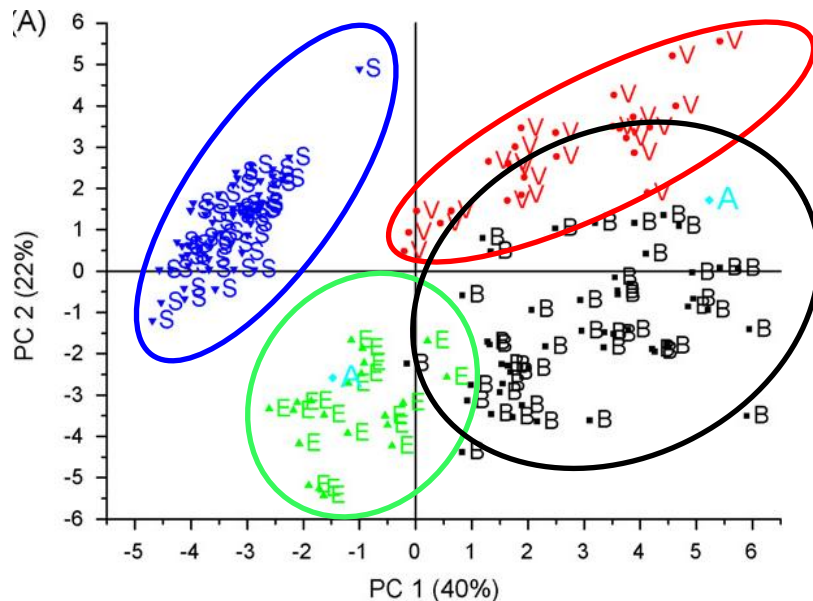
◆ Analytical pyrolysis

Provided access to analytical pyrolysis (PY-GC/MS and Py-GC/FID) and extensive experience on analysis.



◆ Analytical pyrolysis applications

➤ Discrimination of species and provenances



• *Spruce*

• *Pine*

• *Larch*

Blagon (B)

Vaquey (V)

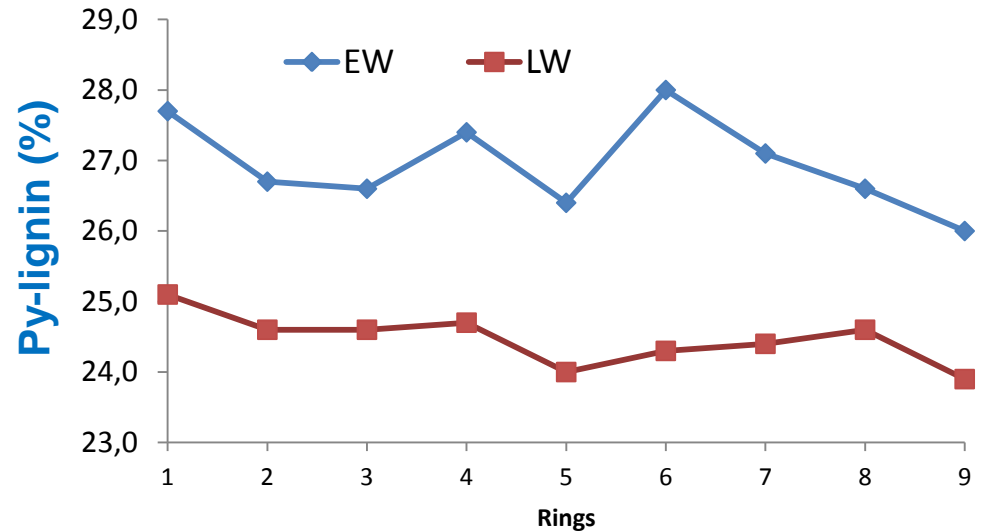
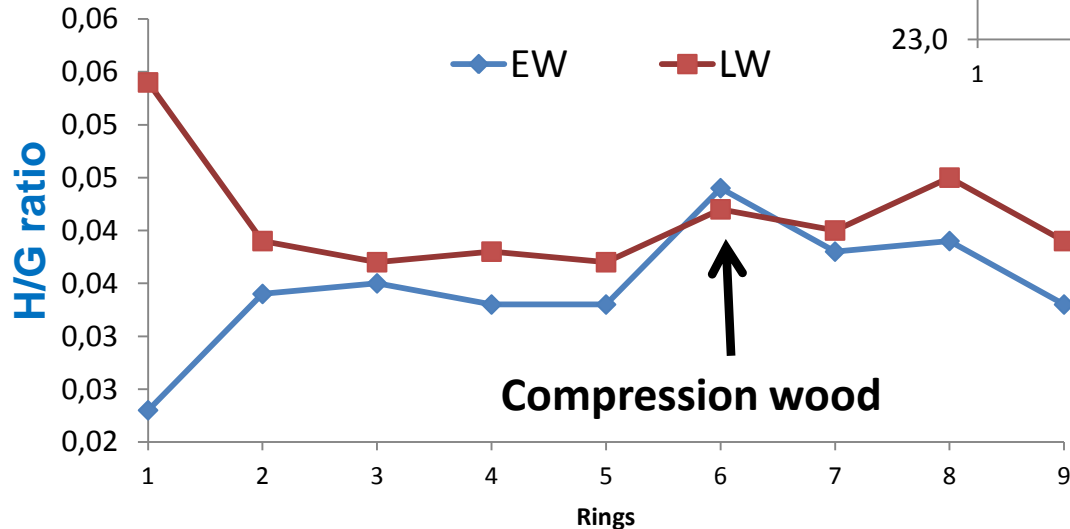
- A. Alves, M. Schwanninger, H. Pereira and J. Rodrigues, *J Anal Appl Pyrol* 76, 209-213 (2006)
 A. Alves, J. Rodrigues, R. Wimmer and M. Schwanninger, *J Anal Appl Pyrol* 81, 167-172 (2008)
 A. Alves, N. Gierlinger, M. Schwanninger and J. Rodrigues, *J Anal Appl Pyrol* 85 30-37 (2009)

◆ Micro-chemical analysis

➤ Pine radial variation

❖ Py lignin

❖ H/G ratio



✓ Earlywood EW

✓ Latewood LW