

AFM characterization of the mechanical properties of wood at the cell wall level: a prospective study (WG4)

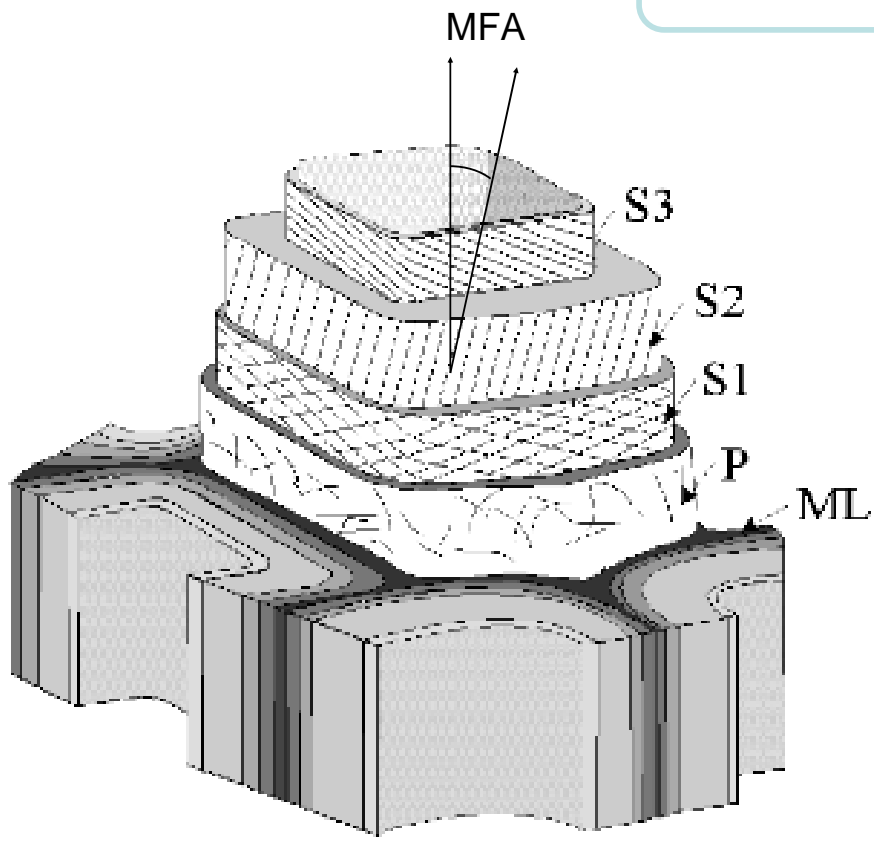
Karl Bytebier, O. Arnould, R. Arinero, J. Gril

LMGC – Université Montpellier 2 – France

LAIN – Université Montpellier 2 -France

AFM characterization of the mechanical properties of wood at the cell wall level: a prospective study

Wood cell mechanical properties

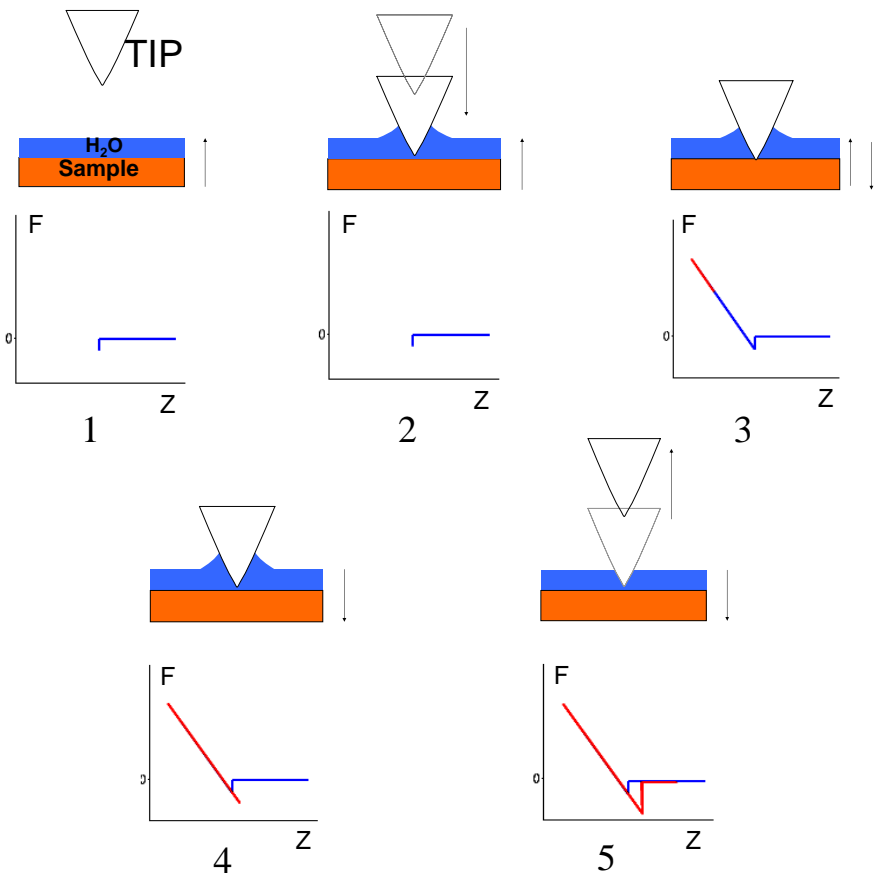


	ML	S1	S2	G
Holm oak wood fibre	5-7	8-9	9-10	10-12
Other holm oak wood fibre	15		9-10	
Boco wood fibre	10			12-18

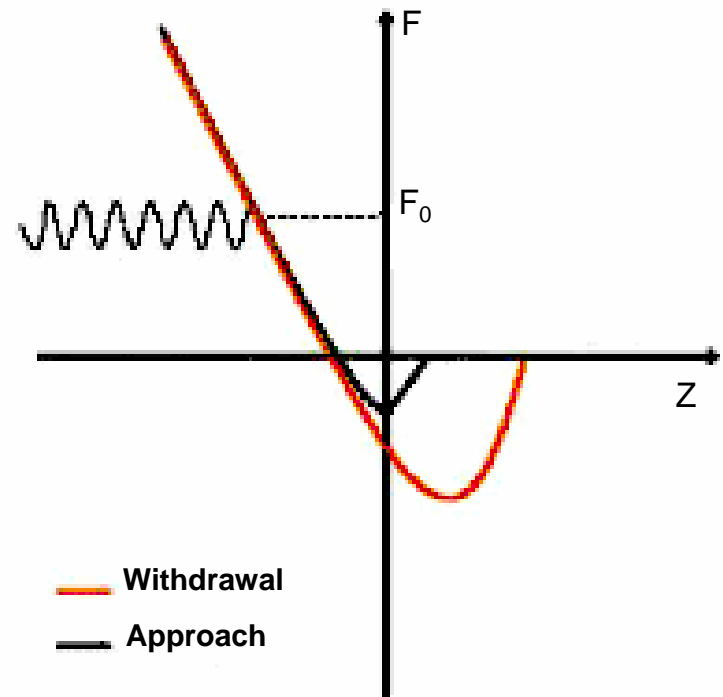
Examples of Young modulus values

AFM characterization of the mechanical properties of wood at the cell wall level: a prospective study

AFM techniques



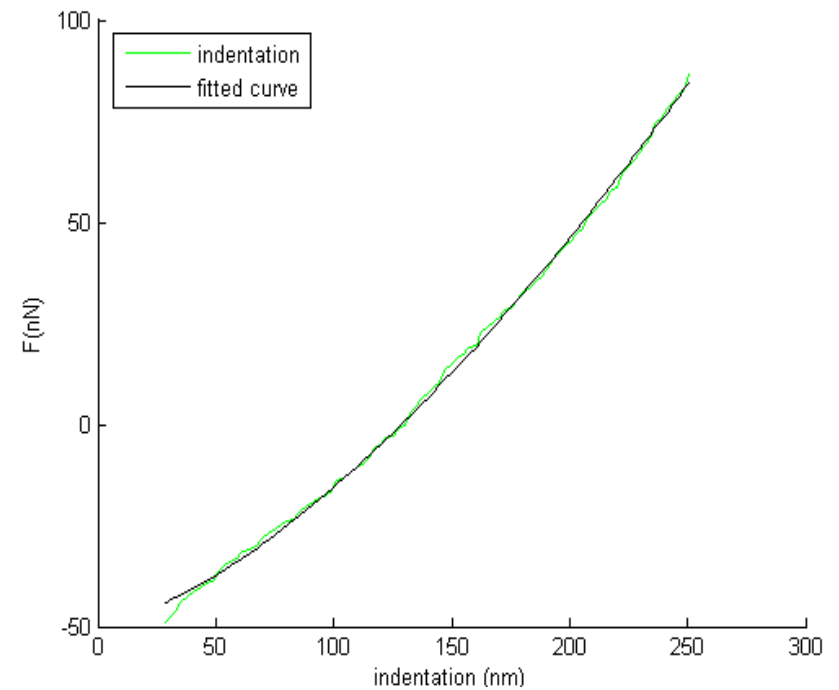
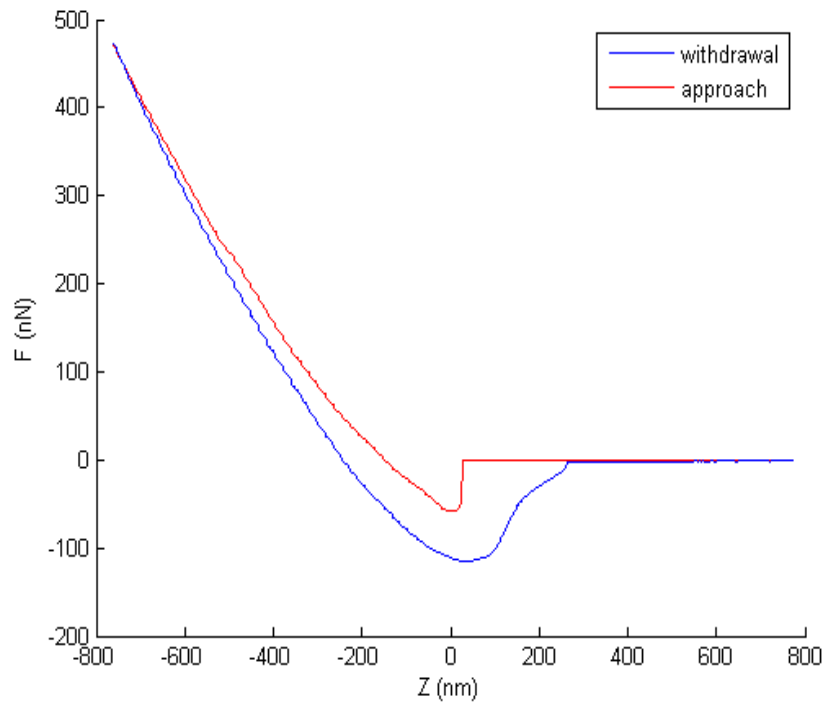
Nanoindentation



Force modulation microscopy

AFM characterization of the mechanical properties of wood at the cell wall level: a prospective study

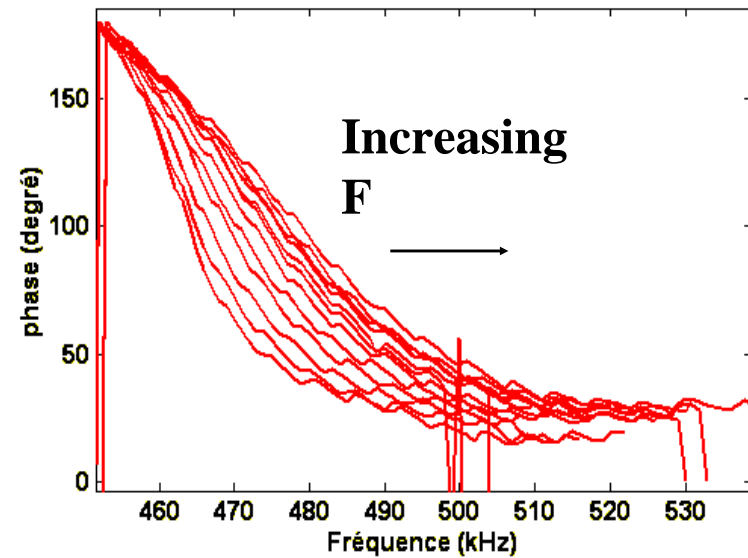
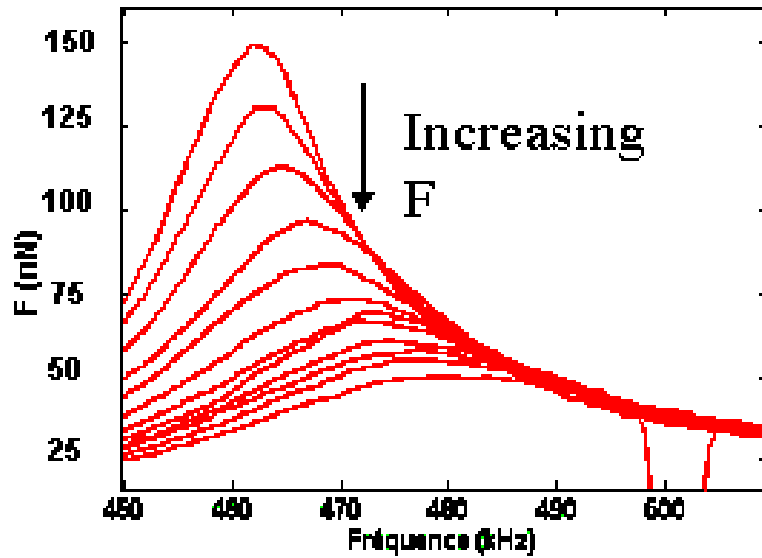
Results



Nanoindentation

AFM characterization of the mechanical properties of wood at the cell wall level: a prospective study

Results



Force modulation Microscopy

AFM characterization of the mechanical properties of wood at the cell wall level: a prospective study

Results

Topography

+ mechanical properties

280 kHz

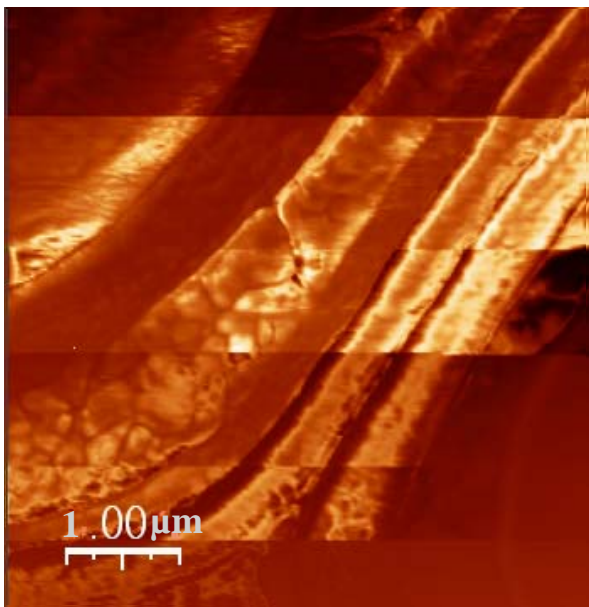
285 kHz

290 kHz

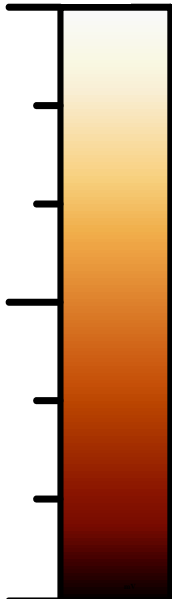
295 kHz

300 kHz

305 kHz

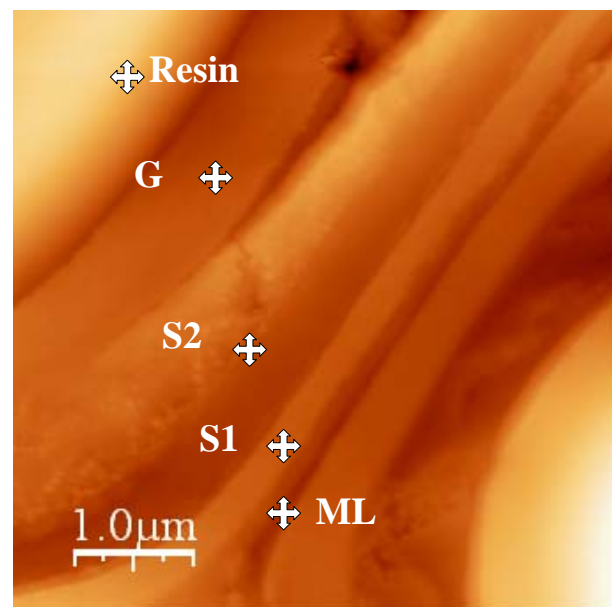


1,02 mV

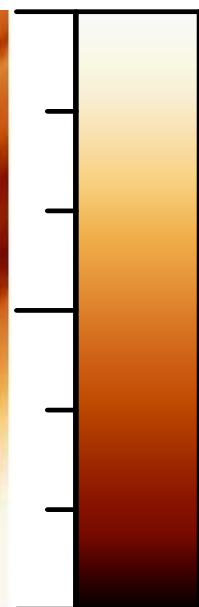


0 mV

Topography



140.00 nm



0.00 nm

Force modulation Microscopy