Structure evaluation of the modified wood through different spectral techniques

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FTIR and 2DCOS spectroscopy

- for identification of the wood specie

- evaluation of modifications in the wood cell wall structure after different thermal or chemical treatments

- evaluation of the degradation mechanisms and structural changes during different degradation processes
NIR and 2DCOS spectroscopy

- The changes in the structure are reflected in the NIR bands intensities, maxima and width according to the applied treatment.

- Spectral variation indicates reduction in the water amount (suggesting increase of the hydrophobicity), modification in the hemicelluloses structure, but also in lignin structure (especially a decrease in the content of the methoxyl groups).
CP/MAS $^{13}$C-NMR Spectroscopy

- reference and decayed lime wood, gave distinct signals at 55.8 ppm from aryl methoxyl carbons of lignin.
- the percentage contribution of methoxyl C to the total pool of carbons from the NMR spectra increased.
X-Ray Diffraction

- decreasing of the crystallinity index with increasing of the degradation time
Thank you for your attention!