Structure evaluation of the modified wood through different spectral techniques

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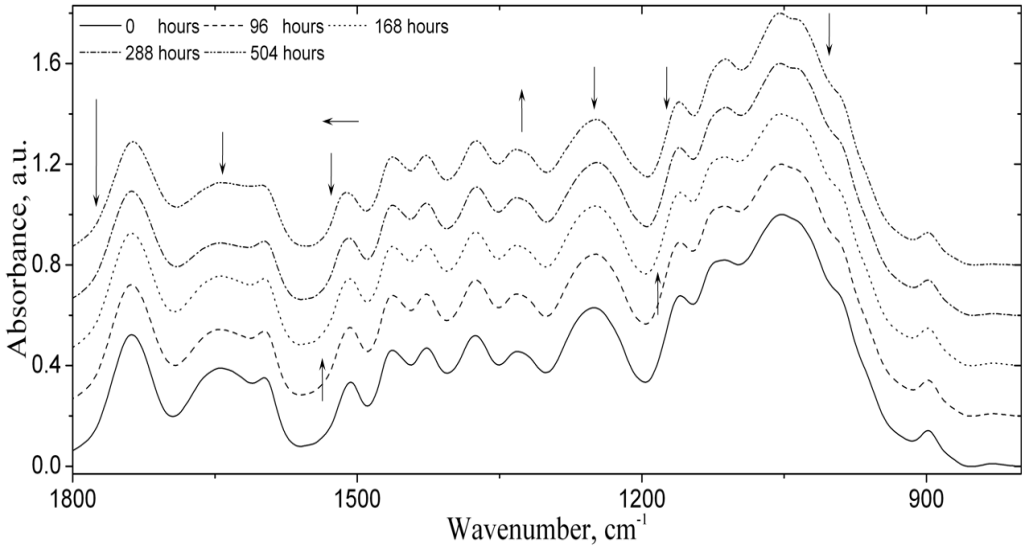
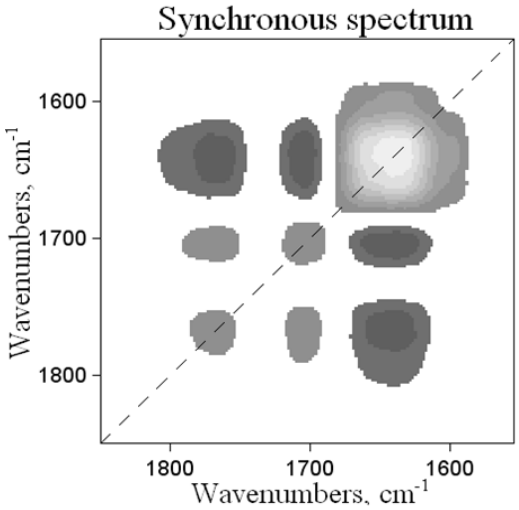
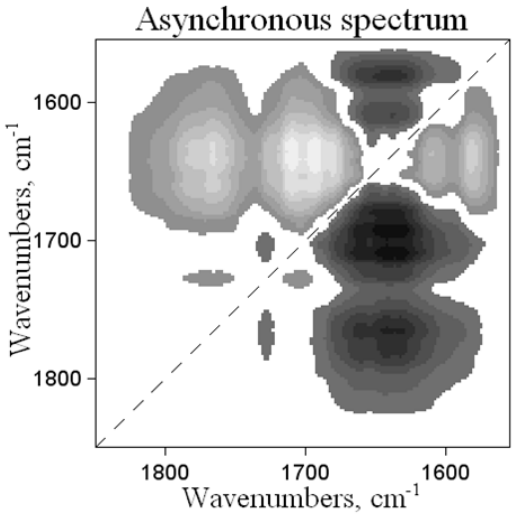
FTIR and 2DCOS spectroscopy





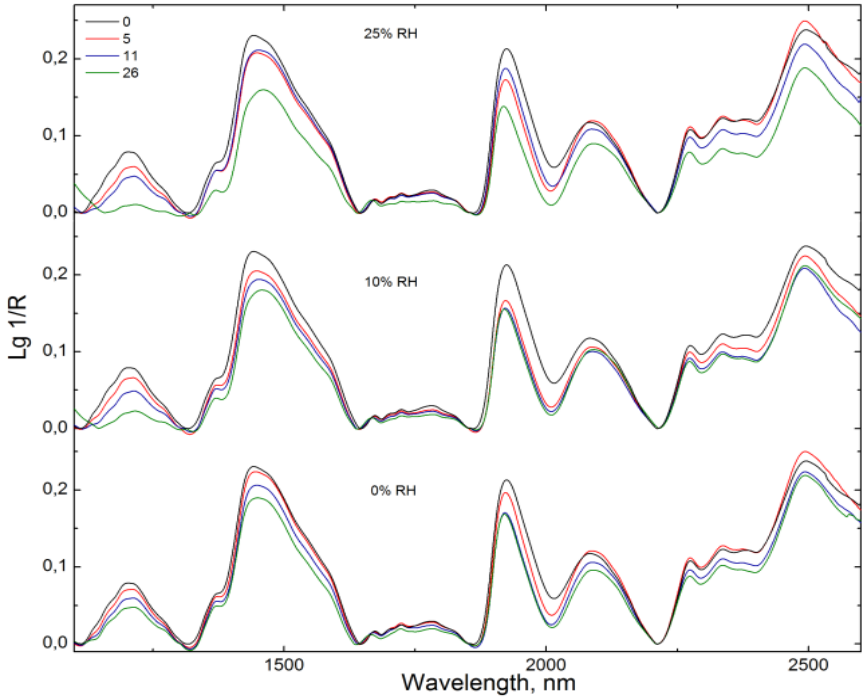


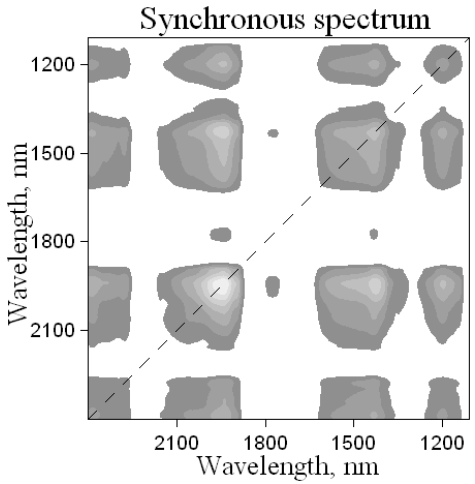
- for identification of the wood specie

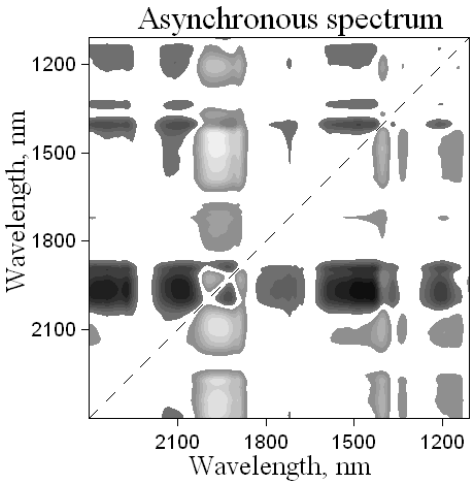
- evaluation of modifications in the wood cell wall structure after different thermal or chemical treatments

- evaluation of the degradation mechanisms and structural changes during different degradation processes

NIR and 2DCOS spectroscopy



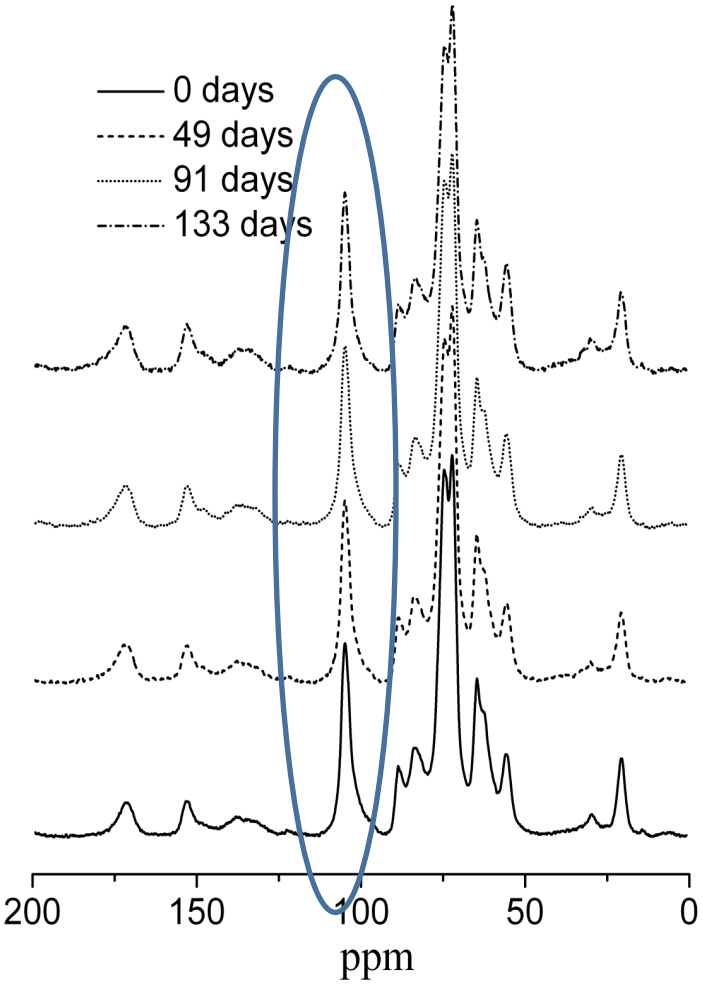


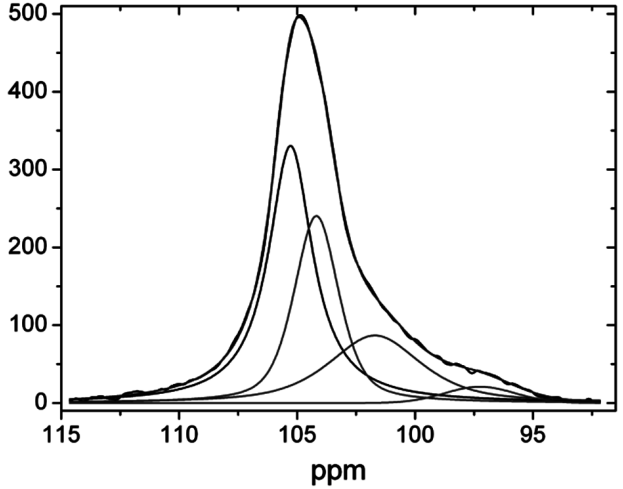


- the changes in the structure are reflected in the NIR bands intensities, maxima and width according to the applied treatment

- spectral variation indicate 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*)

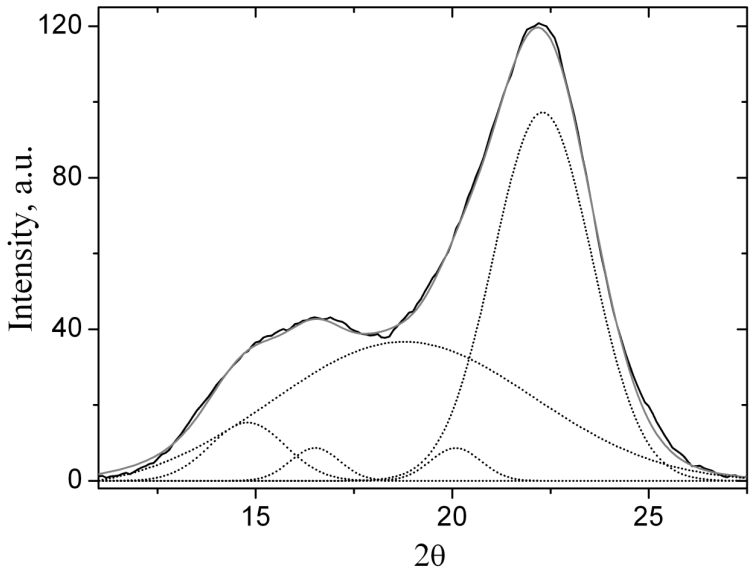
CP/MAS ^{13}C-NMR Spectroscopy

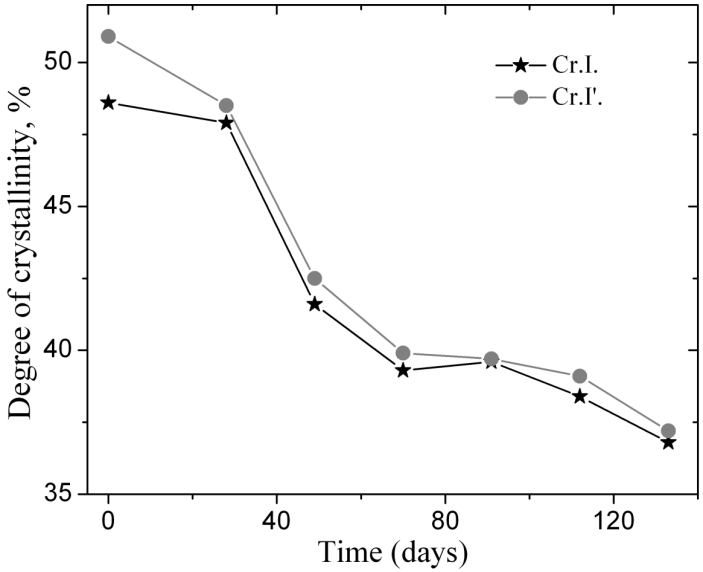




- reference and decayed lime wood, gave distinct signals at 55.8 ppm from aryl methoxyl carbons of lignin
- the percentage contribution of methoxyl C to the total pool of carbons from the NMR spectra increased

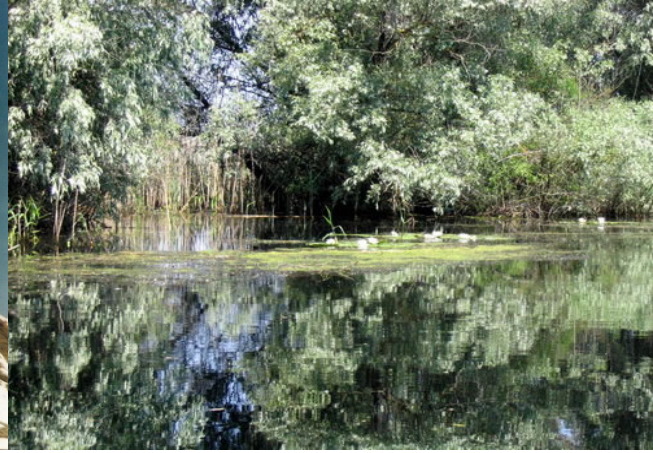
X-Ray Diffraction





- decreasing of the crystallinity index with increasing of the degradation time






Thank you for your attention!