

# Chemicals from biomass: upgraded production, spectroscopic detection and synthetic application of a product from cellulose pyrolysis

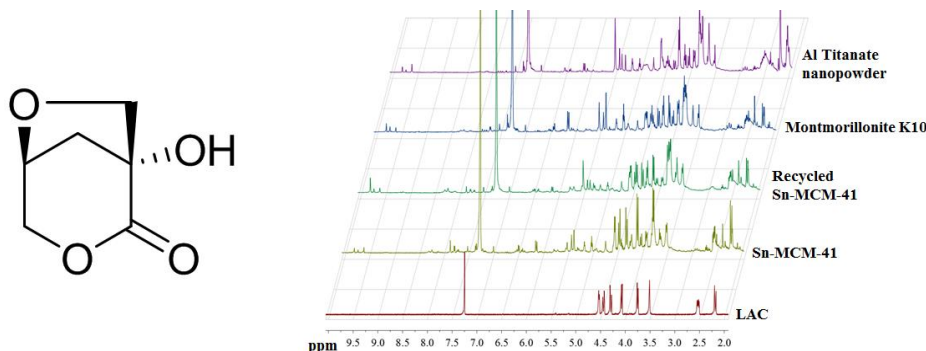
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Among the anhydrosugars produced by cellulose and biomass pyrolysis, (1*R*,5*S*)-1-hydroxy-3,6-dioxabicyclo[3.2.1]octan-2-one (LAC) has attracted the attention due to its potential use as a chiral building block in organic synthesis [1]. Recently LAC production by cellulose pyrolysis has been upgraded in catalytic conditions, quantifying it in bio-oils by FT-IR and <sup>1</sup>HNMR analysis (**Figure 1**). The best results are given at 500 °C by mesoporous Sn-MCM-41 catalyst (7.6 % from cellulose, 6.6 % after a regeneration cycle) and by the cheap and eco-friendly montmorillonite K10 (4.8 %) [2].

Pure LAC has been employed in the synthesis of chiral new compounds related to muscarine, tested in the interaction with specific receptors and of a series of nucleosides with potential anti HIV activity.



**Figure 1:** Molecular structure of LAC and its <sup>1</sup>HNMR spectra in enriched bio-oils obtained by cellulose pyrolysis in the presence of the indicate catalysts.

## References:

- [1] D. Fabbri, C. Torri and I. Mancini, *Green Chem.* 9 (2007) 1374-1379.
- [2] I. Mancini, F. Dosi, A. Defant, F. Crea and A. Miotello, *J. Anal. Appl. Pyrolysis*, in press.