**Reactive Organosolv Lignin Extraction from Wheat Straw: Influence of Lewis Acid Catalysts on Structural and Chemical Properties of Lignins.**

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**Supplementary material**

**Table S1.** Composition of lignin precipitates in % w/w: Klason insoluble lignin, sugars and residual metals.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Catalyst | Klason lignin (%) | Glucuronic acid(%) | Galacturonic acid (%) | Glucan (%) | Xylan (%) | Arabinan(%) | Metalsa (%) | Ashes (%) |
| H2SO4 | 62.4 | 0.0 | 0.0 | 4.4 | 1.5 | 0.6 | - | 6.8 |
| FeCl2 | 68.6 | 0.0 | 0.0 | 4.1 | 3.4 | 0.0 | 1.6 | 8.6 |
| CuCl2 | 77.1 | 0.0 | 0.0 | 2.5 | 4.7 | 0.3 | 1.8 | 8.2 |
| FeCl3 | 80.1 | 0.0 | 0.4 | 3.1 | 2.4 | 0.7 | 0.7 | 3.5 |
| Ga(OTf)3 | 63.6 | 0.0 | 0.0 | 7.1 | 0.0 | 0.0 | 1.4 | 15.2 |
| ZrOCl2 | 49.9 | 0.0 | 0.6 | 4.4 | 1.8 | 0.0 | 10.4 | 14.0 |
| Sc(OTf)3 | 59.3 | 0.0 | 0.3 | 14.4 | 1.6 | 0.0 | 2.0 | 7.4 |

a) Metal catalyst complexated by the precipitated lignin. It can be easily removed by acid treatment.

**Fig. S1.** Molar mass distribution of aromatic oligomers present in the solution after lignin isolation



**Fig. S2.** Molar mass distributions of lignins



**Fig. S3.** Molar mass distributions of acetylated lignins



**Fig. S4.** 31P NMR spectra of extract lignin phosphitylated with 2-chloro-4,4,5,5-tetramethyl-1,3,2-dioxaphospholane



**Fig. S5.** 31P NMR spectrum integration of the Ga(OTf)3 extracted lignin phosphitylated with 2-chloro-4,4,5,5-tetramethyl-1,3,2-dioxaphospholane

