Electronic Supplementary Material (ESI) for Sustainable Energy & Fuels.

Supplementary Information

Differences in chemical composition and physical properties imprinted by industrial storage on sugarcane bagasse result in its efficient enzymatic hydrolysis

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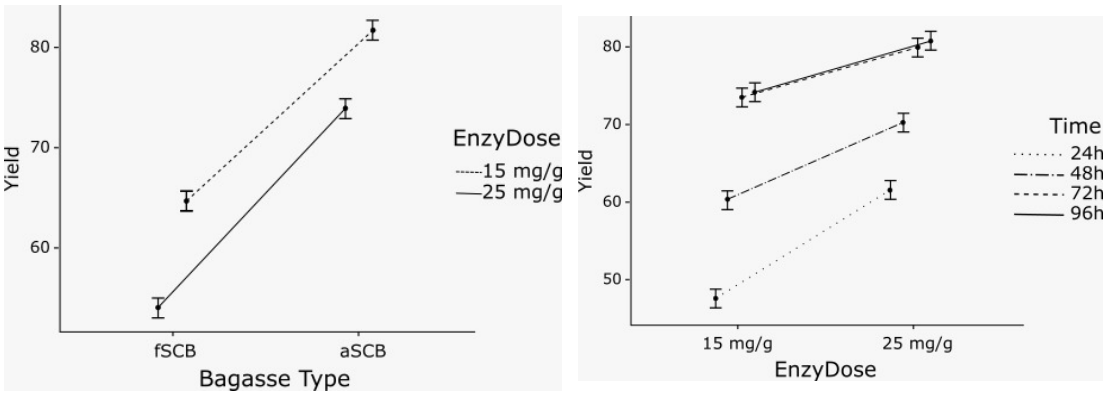

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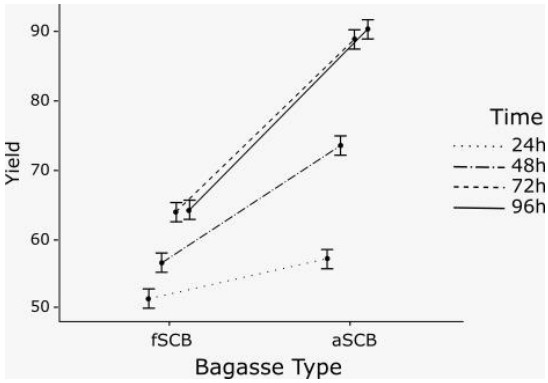

Figure S1. **Results of three-way ANOVA analysis conducted with Jamovi[1] with three independent variables (enzymatic dose, bagasse type and time) at a significance level (α) of 5%.** Statistically relevant differences were found in the following factor combinations: bagasse type x enzyme dose, bagasse type x time and enzyme dose x time. (A) Bagasse type x Enzyme dose: Tukey test revealed statistically significant differences between two types of bagasse and two enzymatic doses; (B) Enzyme Dose x Time: statistical significance in Tukey's test was found for all time points except for 15 mg/g 72h x 15mg/g 96h and 25mg/g 72h x 25mg/g 96h (Figure Z) (C) Bagasse Type x Time: Statistically significant differences were found for all time points, except for fSCB 72h x fSCB 96h and aSCB 72h x aSCB 96h.

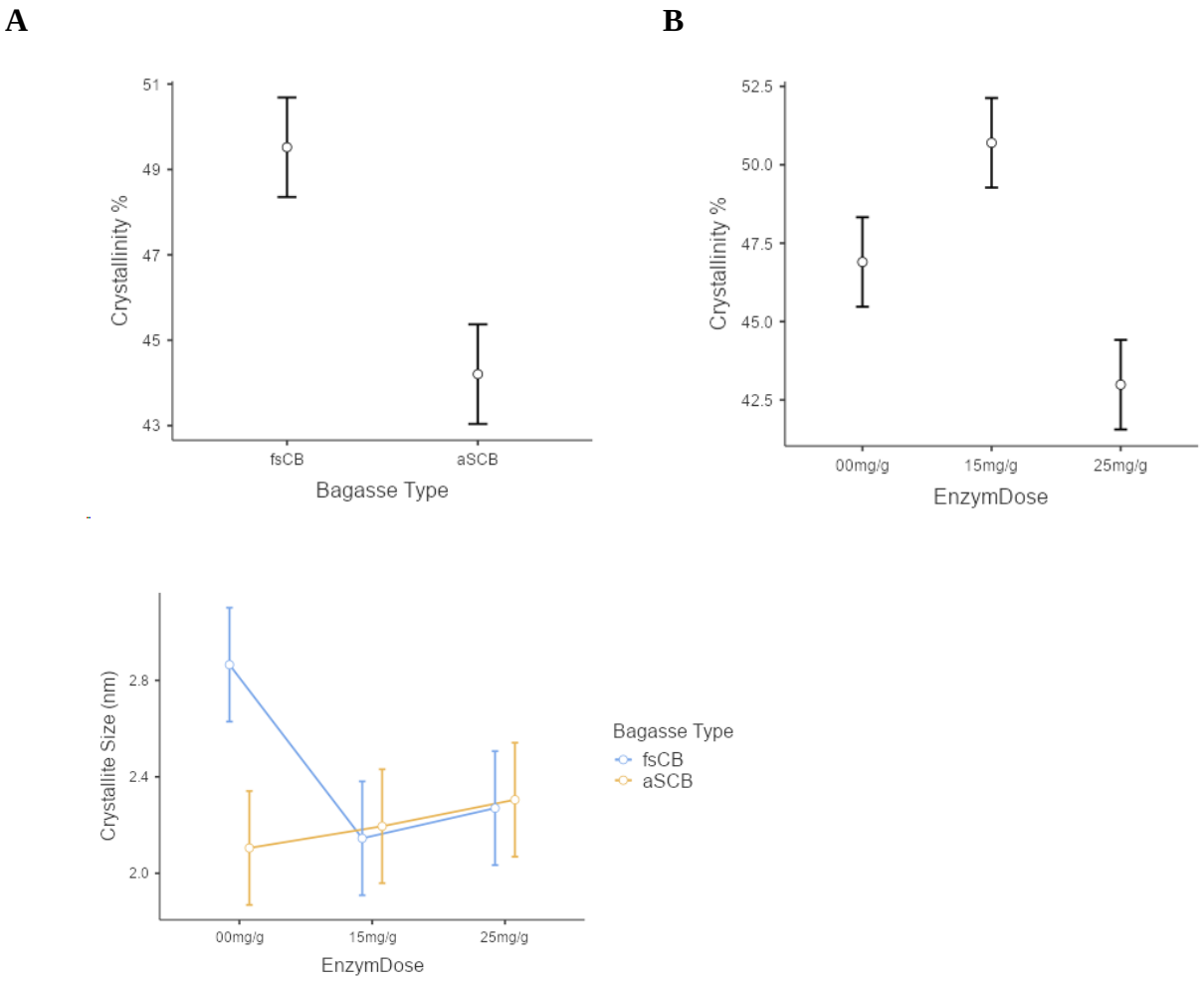

Figure S2. Results of two-way ANOVA analysis conducted with Jamovi[1] with two independent variables (enzymatic dose and bagasse type) at a significance level of 5%. (A) Crystallinity x Bagasse type: Tukey test showed statistically significant differences between fSCB and aSCB crystallinities (Fcal >Fcrit at α=0.05, $p < \alpha$); (B) Crystallinity x Enzyme dose: Tukey test revealed statistically significant differences in crystallinities between enzymatic dose 15mg/g and both untreated bagasse (aSCB and fSCB) and SCB after enzymatic hydrolysis at 25mg/g (fSCB_25mg and aSCB_25mg) (Fcal >Fcrit at α=0.05, $p < 0.01$); (C) Crystallite size x Enzyme dose: By Tukey test the only statistically significant difference in the average crystallite size was identified for fSCB. The average crystallite sizes of all other samples (fSCB_15mg, fSCB_25mg, aSCB, aSCB_15mg and aSCB_25mg) are statistically equal.

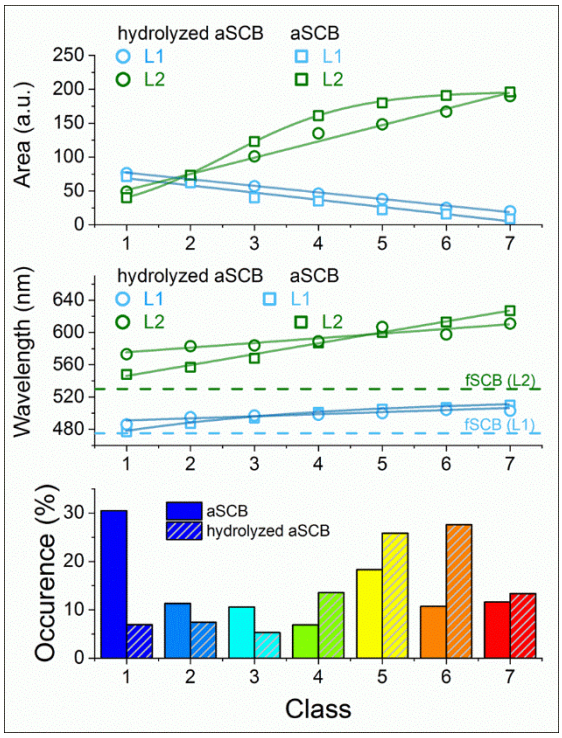

Figure S3. The occurrence for each of the seven most representative spectral classes (in %) for aSCB (empty squares) and hydrolyzed aSCB (empty circles). The spectral classes were organized in terms of the average spectral wavelength obtained from the intensity weighted average having the intensity as weight for each corresponding wavelength. The line shape analysis (continuous lines) was performed by fitting the experimental spectra with two Gaussian curves associated to emission bands of non-aggregated lignin (lines in light blue) and aggregated (lines in dark green).

References

(1) The jamovi project (2021). jamovi. (Version 1.6) [Computer Software]. Retrieved from https://www.jamovi.org.