Supplementary Material

Improving properties of starch-based adhesives with carboxylic acids and enzymatically polymerized lignosulfonates.

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Characterization of laccase polymerized lignosulfonates.

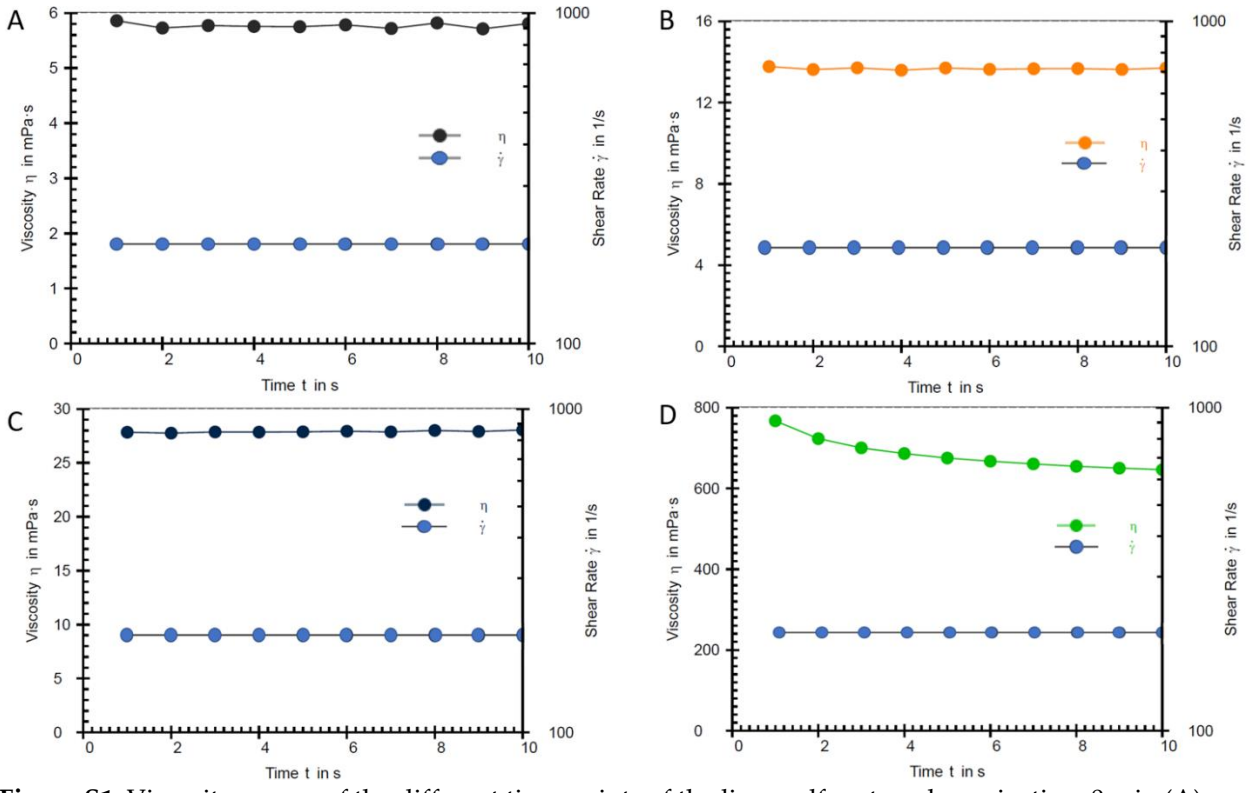

Figure S1. Viscosity curves of the different time-points of the lignosulfonate polymerization: 0 min (A), 20 min (B), 50 min (C) and 90 min (90). The viscosity is presented in mPa*s and the shear rate in 1/s. The shear rate was constant in all the measurements.

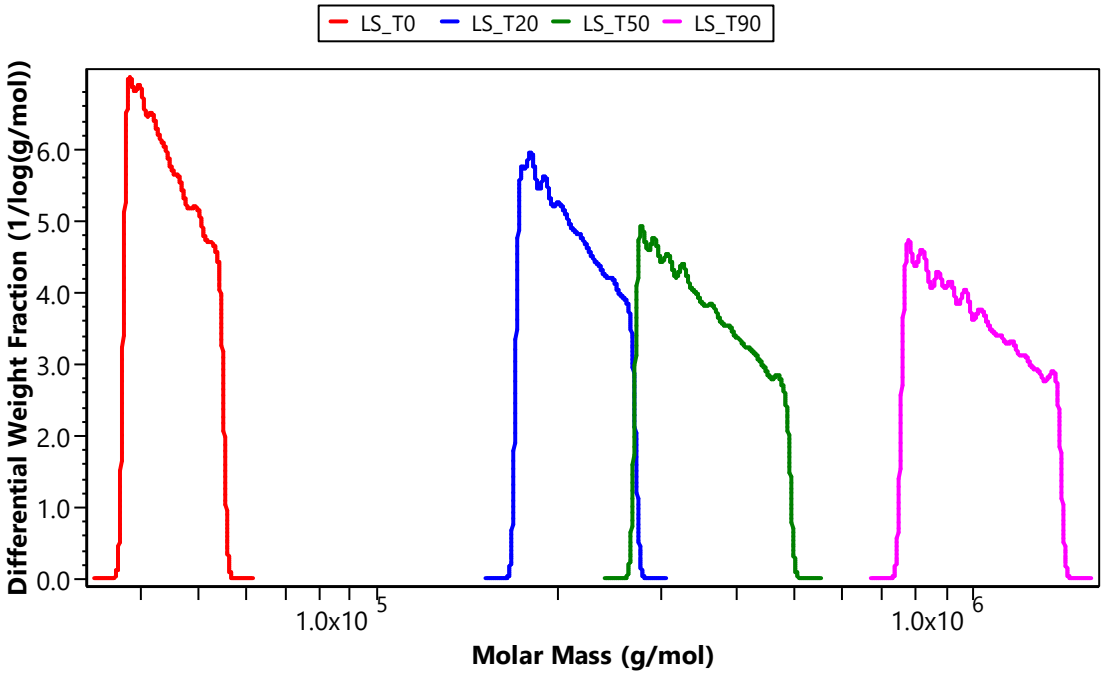

Figure S2. Molecular mass of the lignosulfonate polymerization obtained by size exclusion chromatography (SEC). In the figure, the molar masses of different time-points of the reactions are presented (from left to right: 0, 20, 50 and 90 minutes).