

Supporting information for

Depolymerization of lignin for biological conversion through sulfonation and a chelator-mediated Fenton reaction

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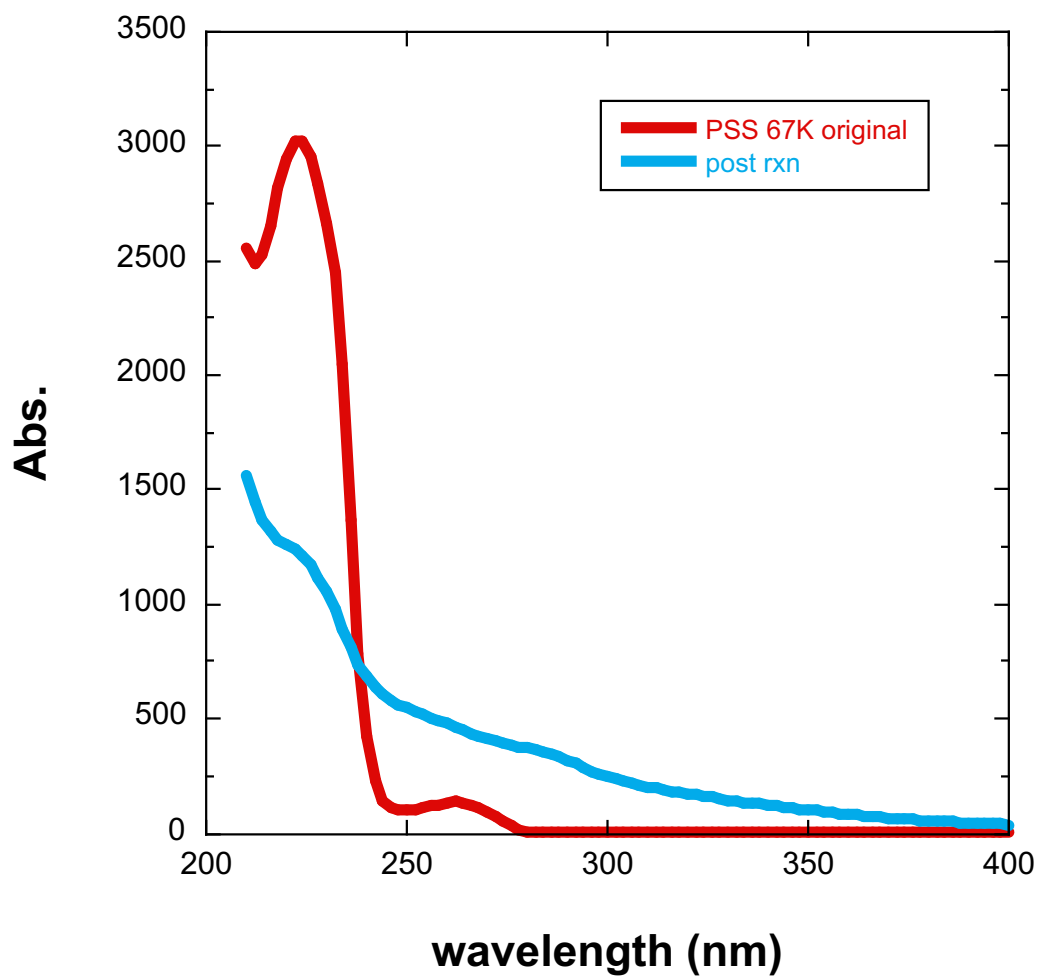


Figure S1. UV spectrum for PSS67K before and after CMF reaction with $[\text{FeCl}_3] = [\text{DHB}] = 0.5$ mM and $[\text{H}_2\text{O}_2] = 0.5\%$ at room T.

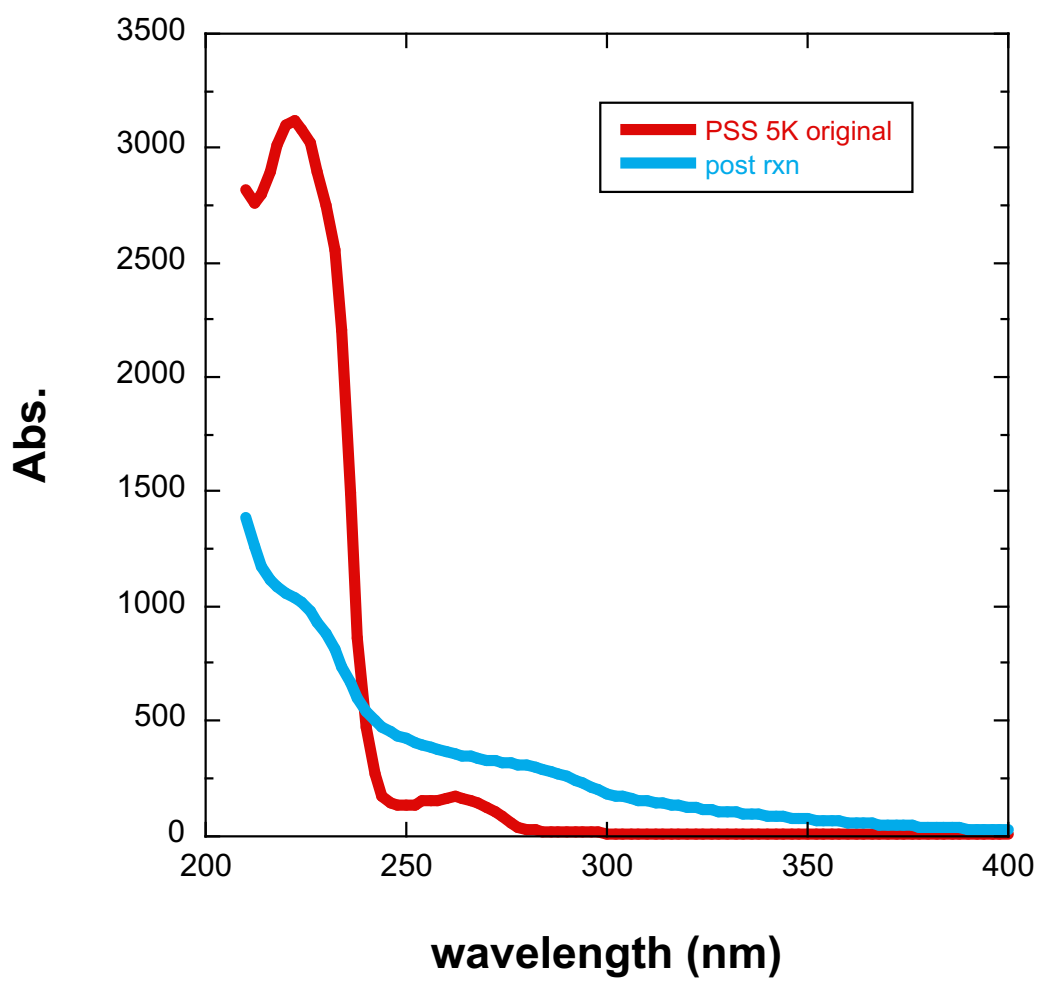


Figure S2. UV spectrum for PSS5.2K before and after CMF reaction with $[\text{FeCl}_3] = [\text{DHB}] = 0.5$ mM and $[\text{H}_2\text{O}_2] = 0.5\%$ at room T.

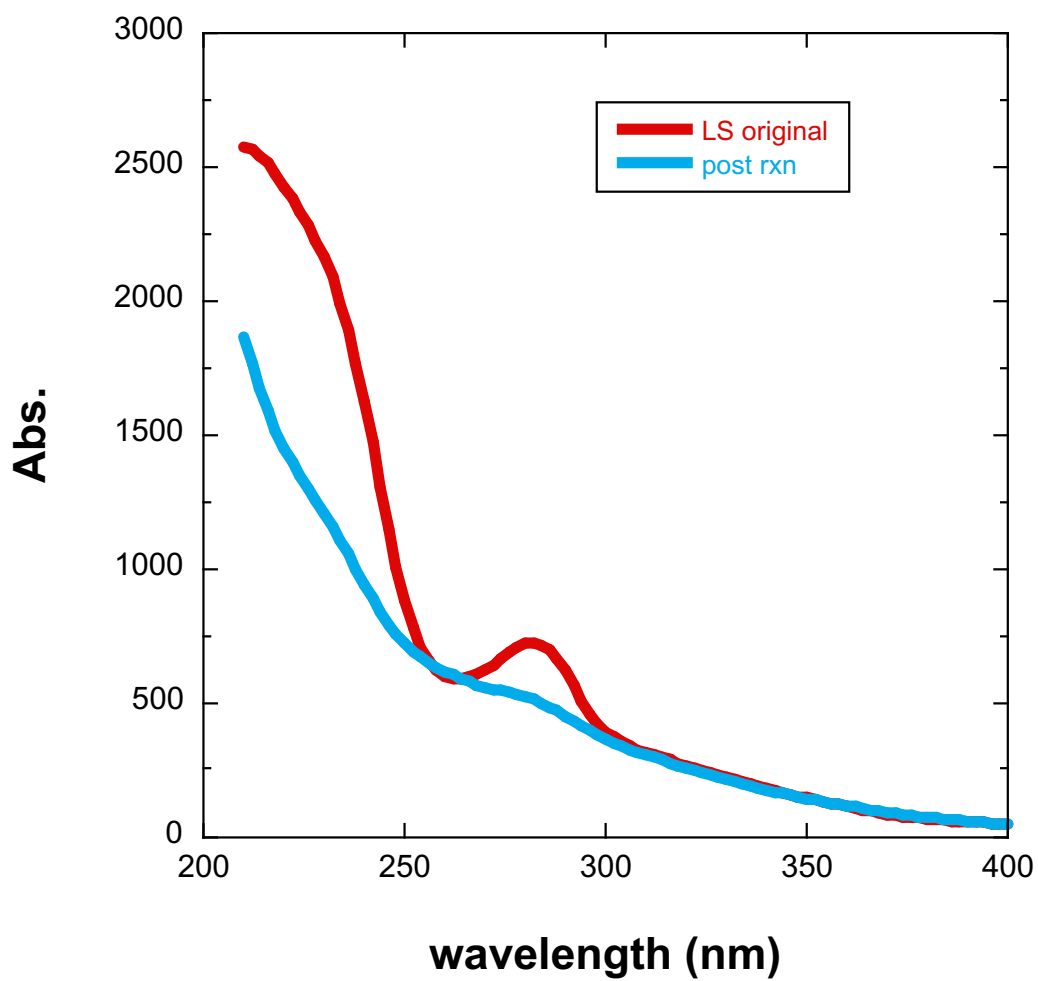


Figure S3. UV spectrum for LS before and after CMF reaction with $[\text{FeCl}_3] = [\text{DHB}] = 0.5 \text{ mM}$ and $[\text{H}_2\text{O}_2] = 0.5\%$ at room T.

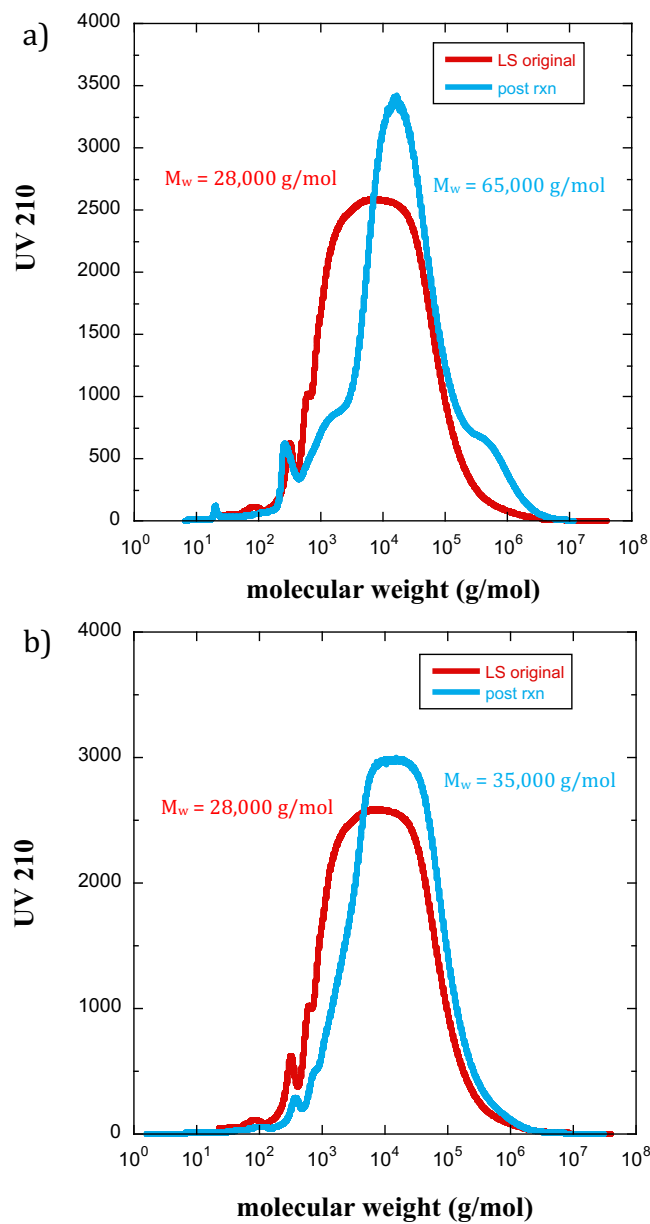


Figure S4. Molecular weight distributions before and after CMF reaction for a) [LS] = 5 mg/ml, [FeCl₃] = 40 mM, [DHB] = 4 mM, [H₂O₂] = 1% and b) [LS] = 100 mg/ml, [FeCl₃] = 10 mM, [DHB] = 4 mM, [H₂O₂] = 1%. Both reactions were performed at room temperature with initial pH of 6.0.

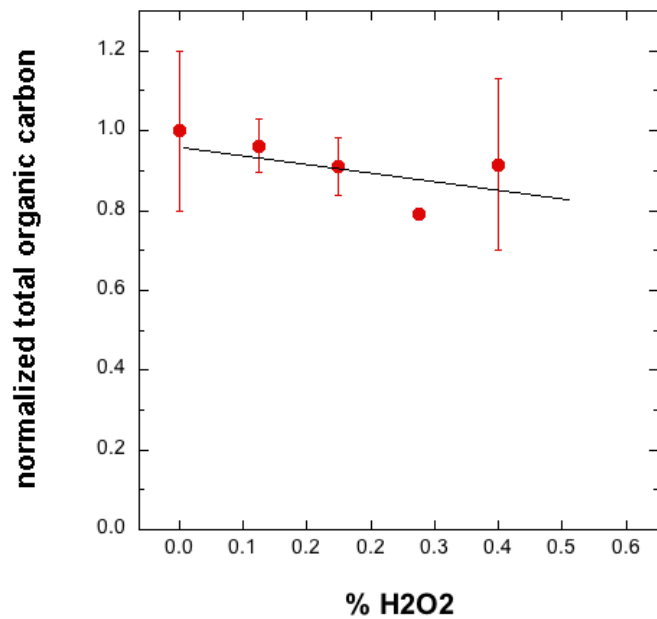


Figure S5. Total organic carbon analysis of reaction products for CMF reactions with LS as a function of $[H_2O_2]$ for $[LS] = 5$ mg/ml, $[FeCl_3] = [DHB] = 0.5$ mM at 40 °C

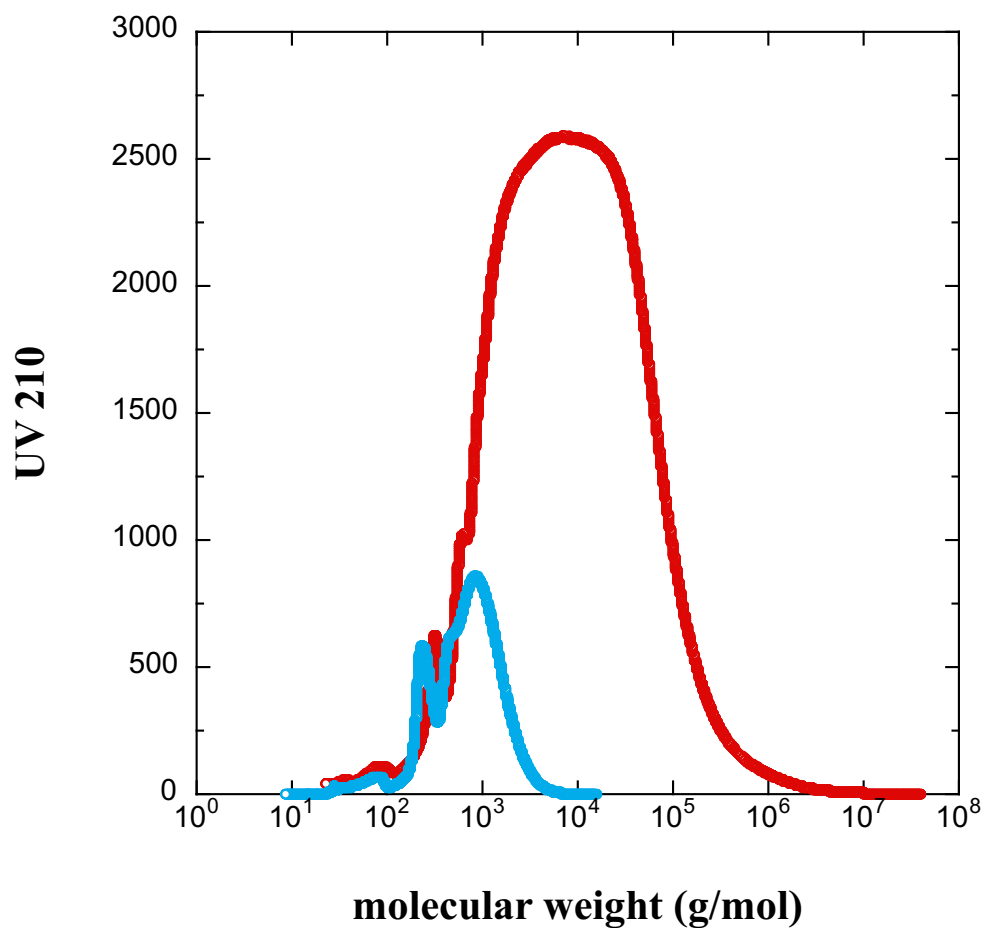


Figure S6. Molecular weight distribution for the depolymerized LS sample (cyan) used in the growth studies. The molecular weight distribution for the original LS sample is shown in red.

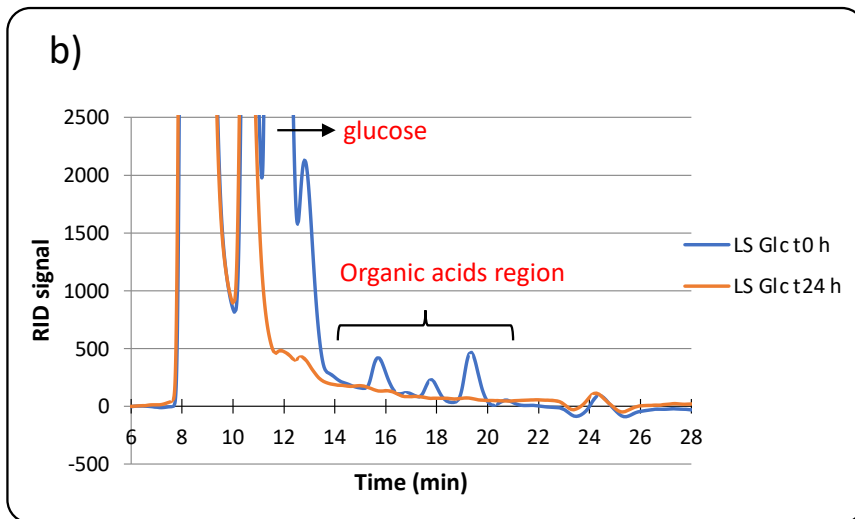
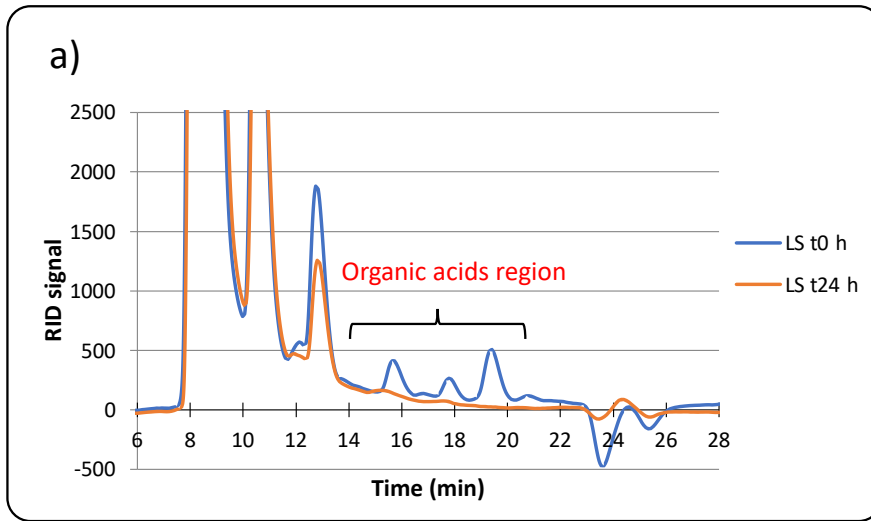


Figure S7. HPLC chromatograms for samples taken from cultures of *E. alcalophila* with a) depolymerized LS only, and b) depolymerized LS + 0.2% glucose. The chromatograms indicate that organic acids in the depolymerized LS are consumed by *E. alcalophila*.