Electronic Supplementary Material (ESI) for Biomaterials Science.

Supporting Information for:

Functionalized Lignin Biomaterials for Enhancing Optical Properties and Cellular Interactions of Dyes

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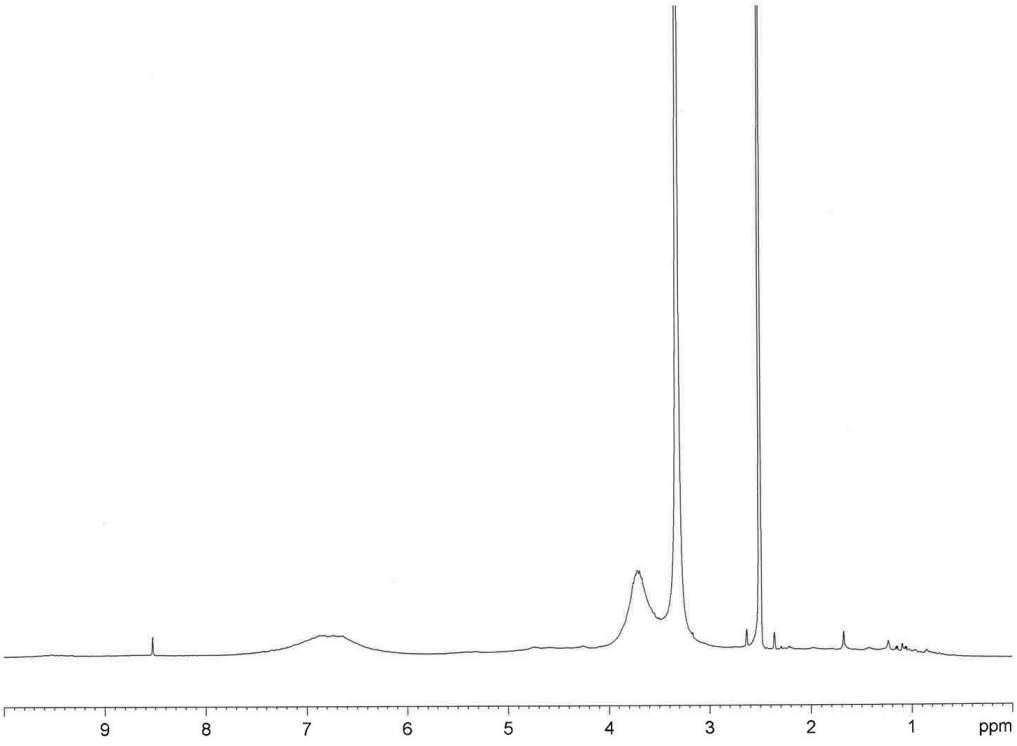

Figure S1. ^{1}H-NMR of lignin

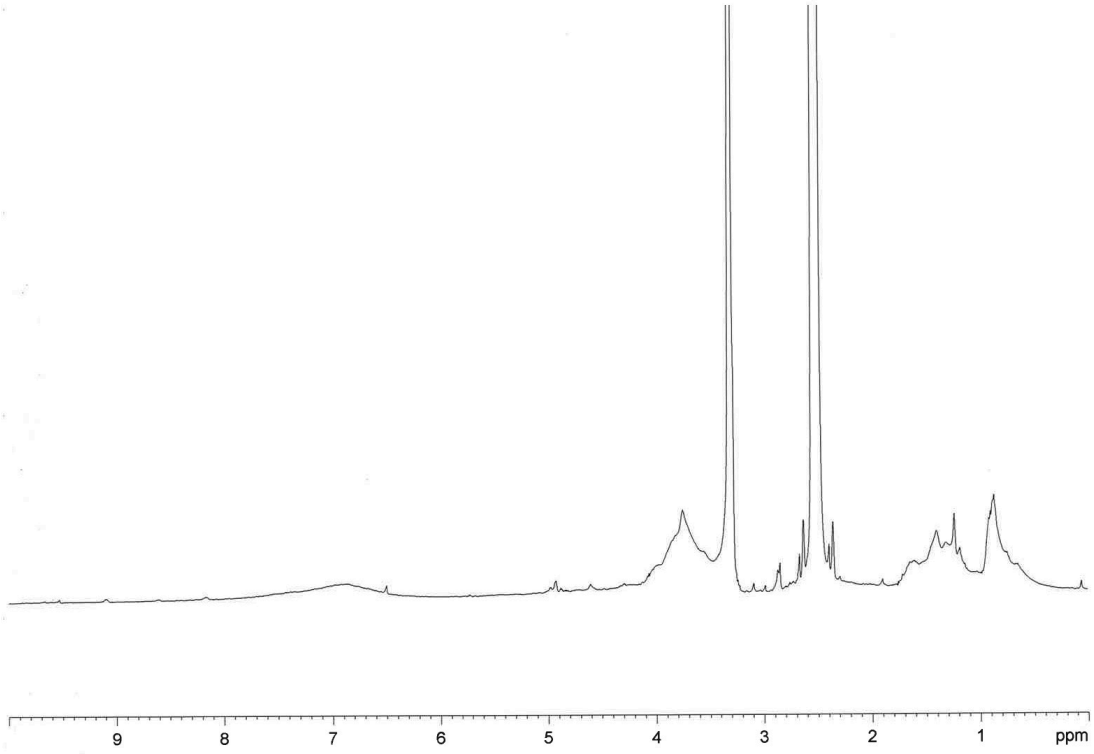

Figure S2. ^{1}H-NMR of L-Bu.

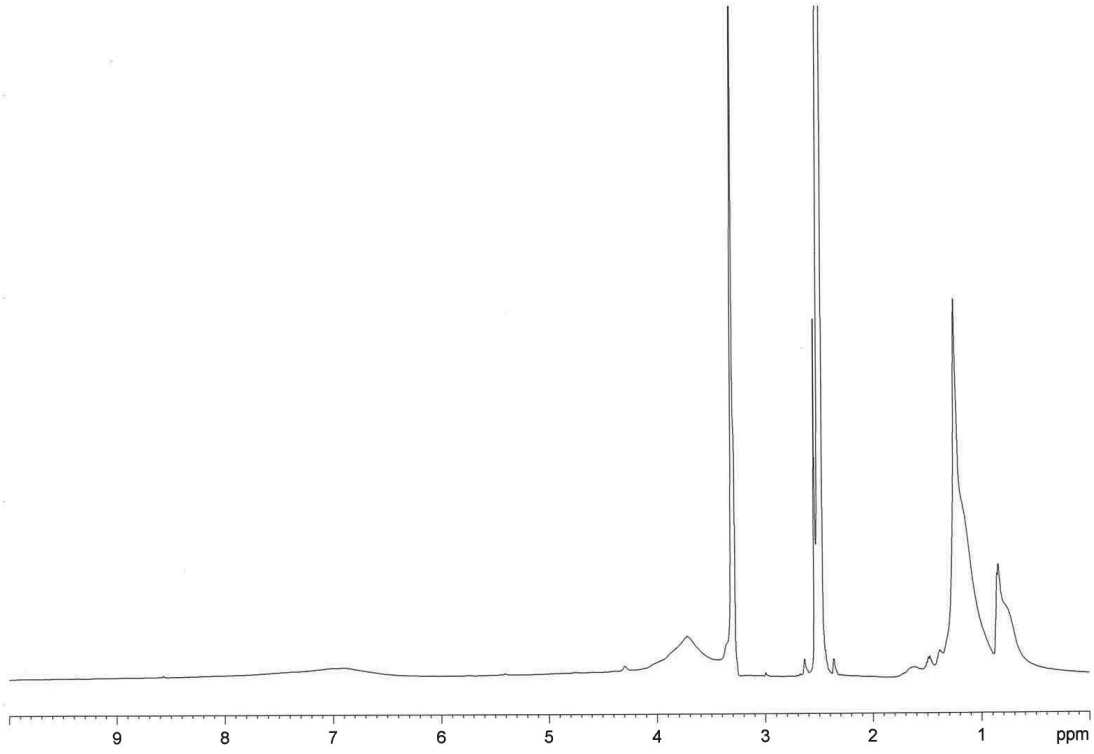

Figure S3. ^{1}H-NMR of L-Dec.

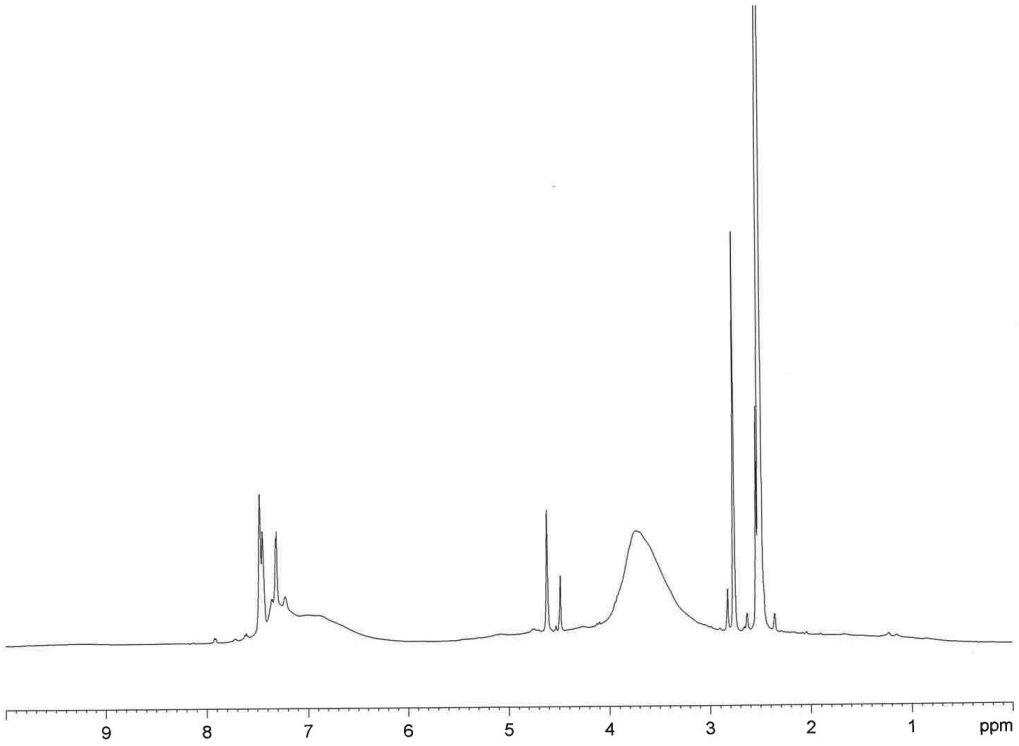

Figure S4. ^{1}H-NMR of L-Bn.

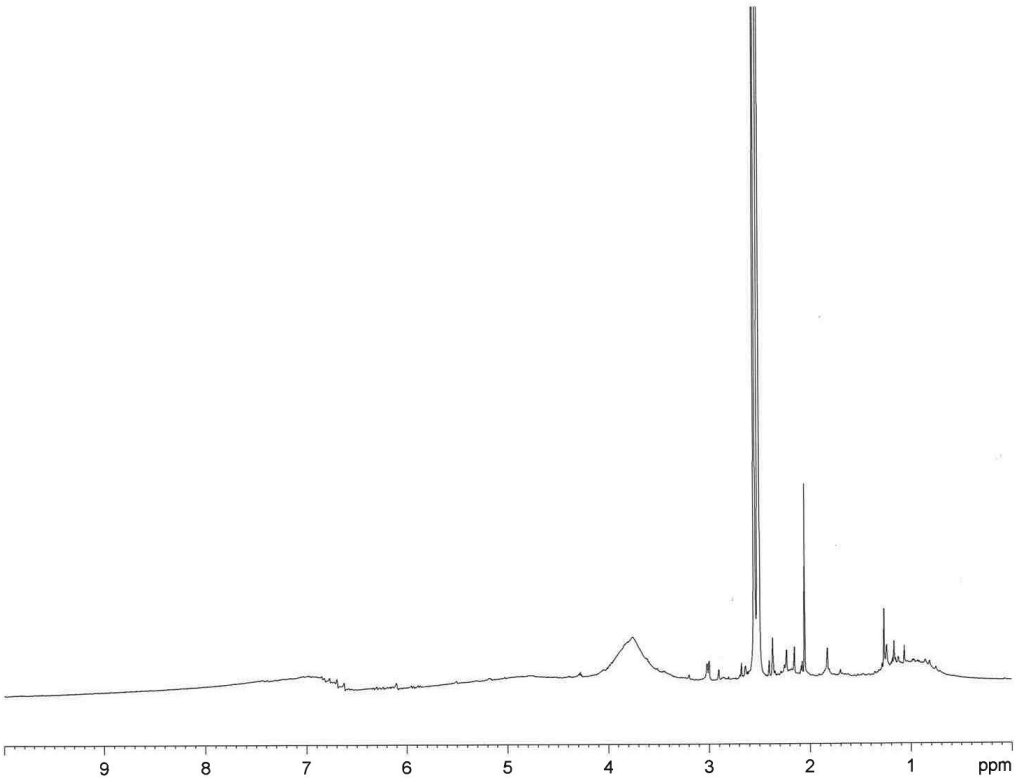

Figure S5. ^{1}H-NMR of L-PA.

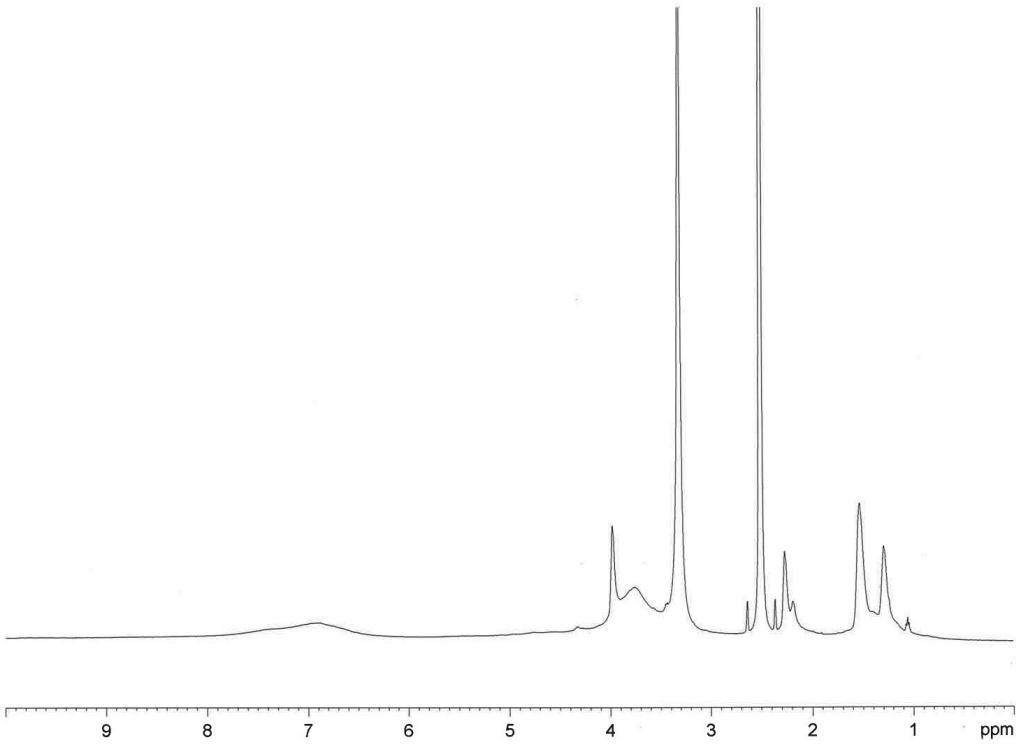

Figure S6. ^{1}H-NMR of L-HA.

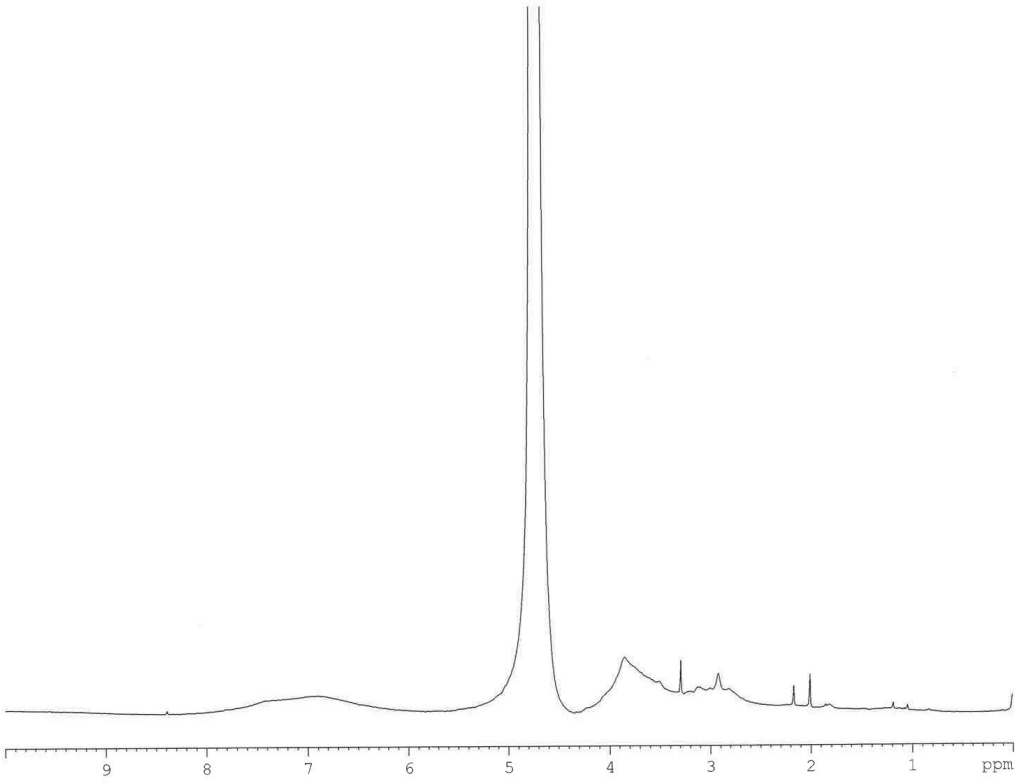

Figure S7. ^{1}H-NMR of L-PTMA.

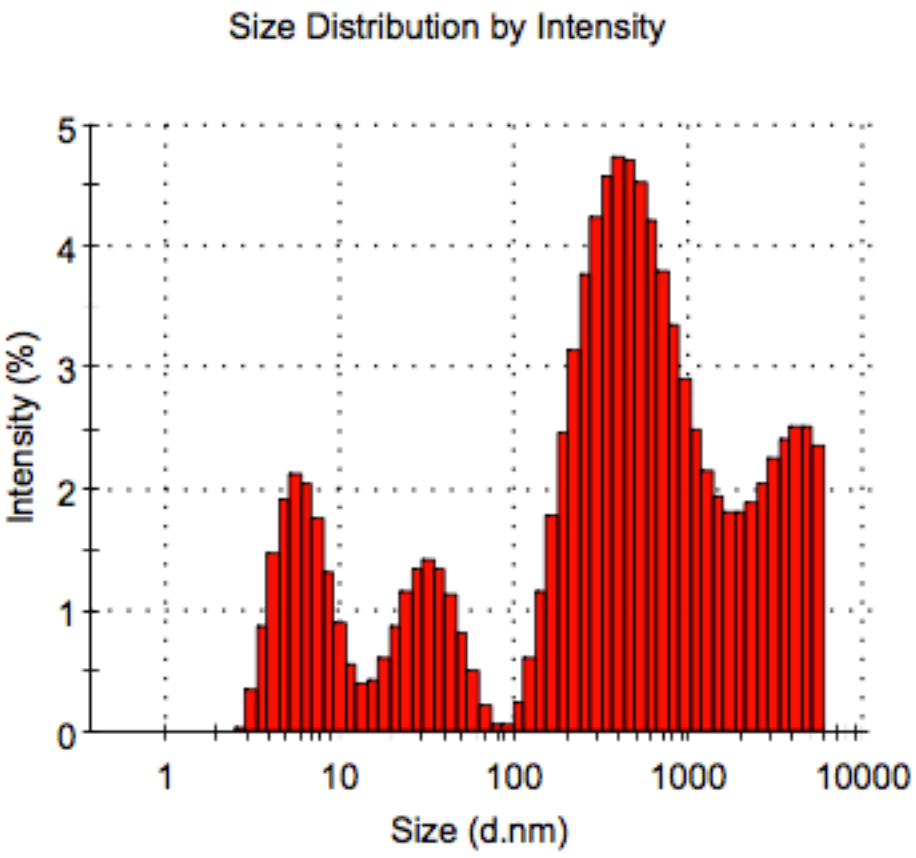

Figure S8. DLS Histogram of lignin.

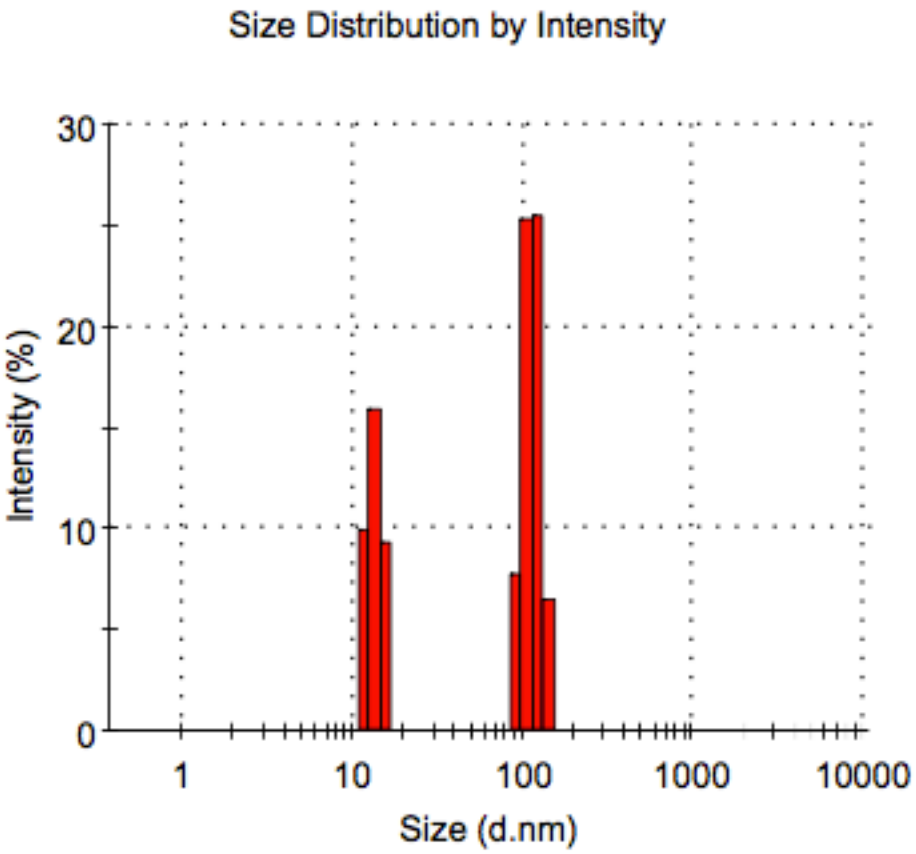

Figure S9. DLS Histogram of L-Bu.

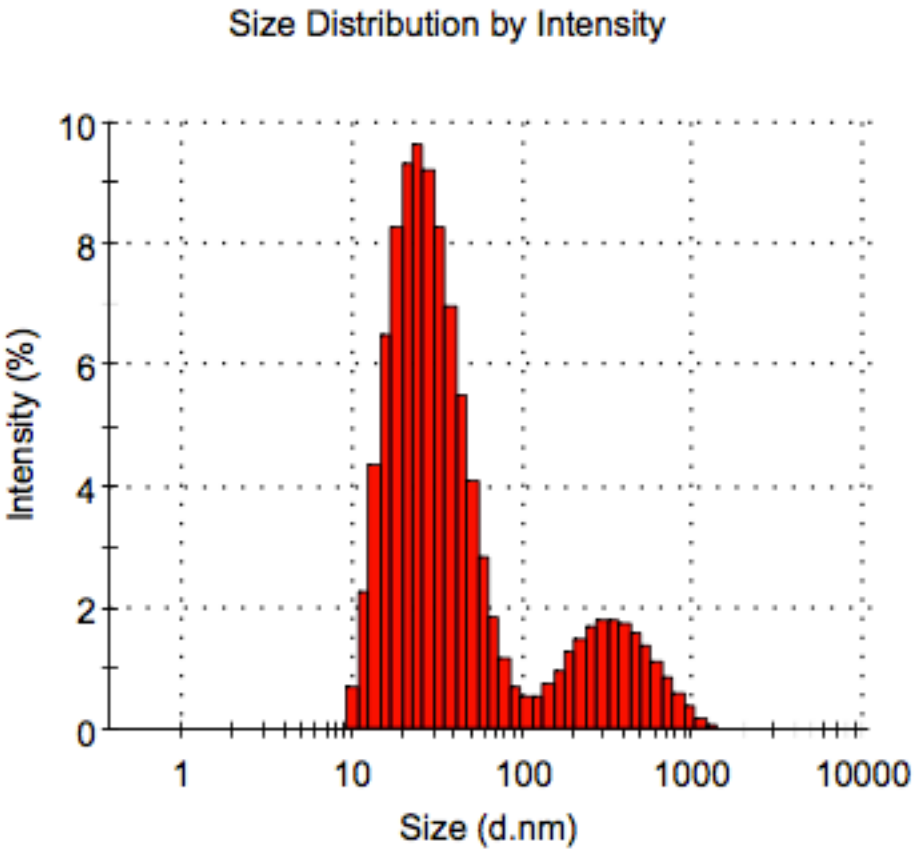

Figure S10. DLS Histogram of L-Dec.

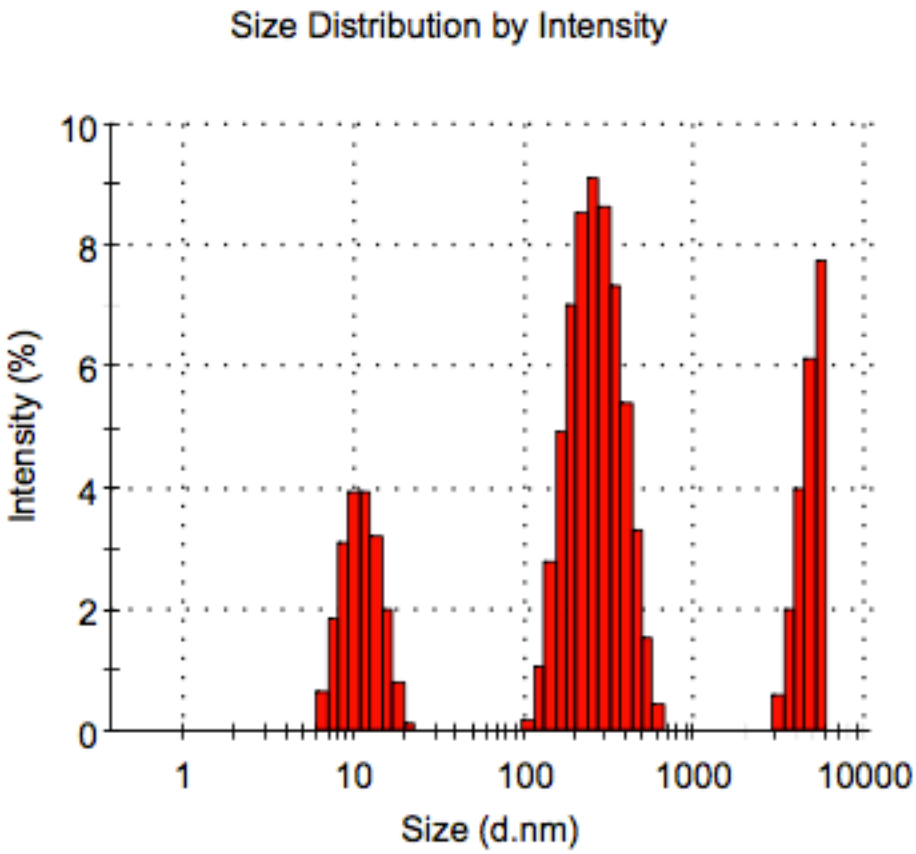

Figure S11. DLS Histogram of L-Bn.

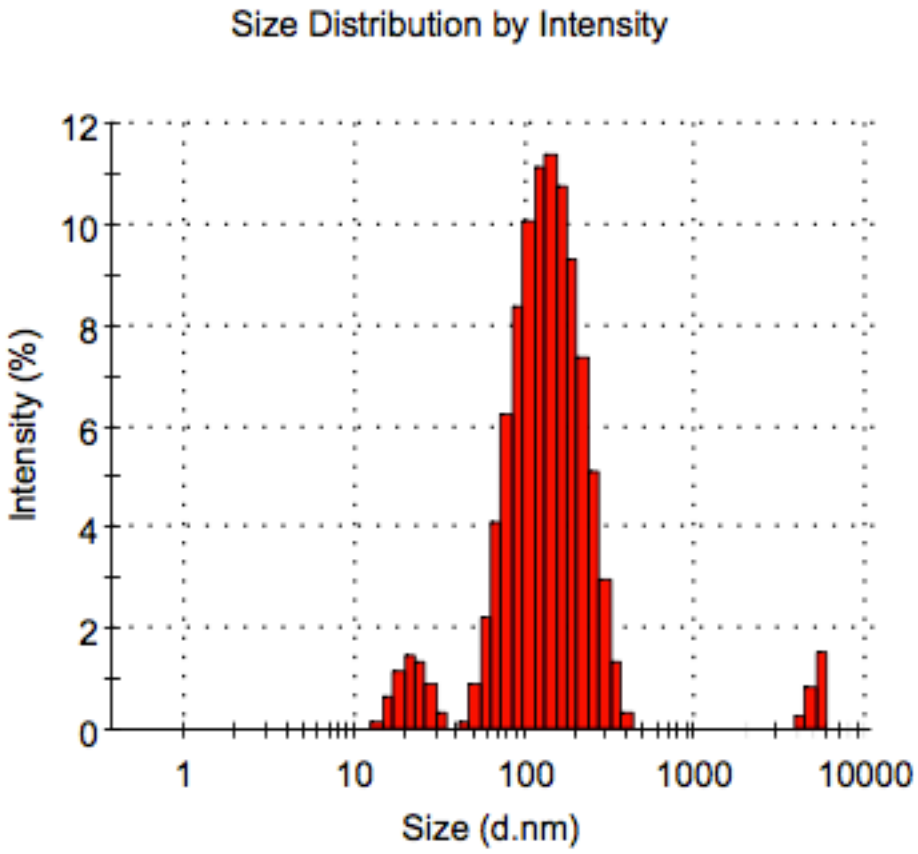

Figure S12. DLS Histogram of L-PA.

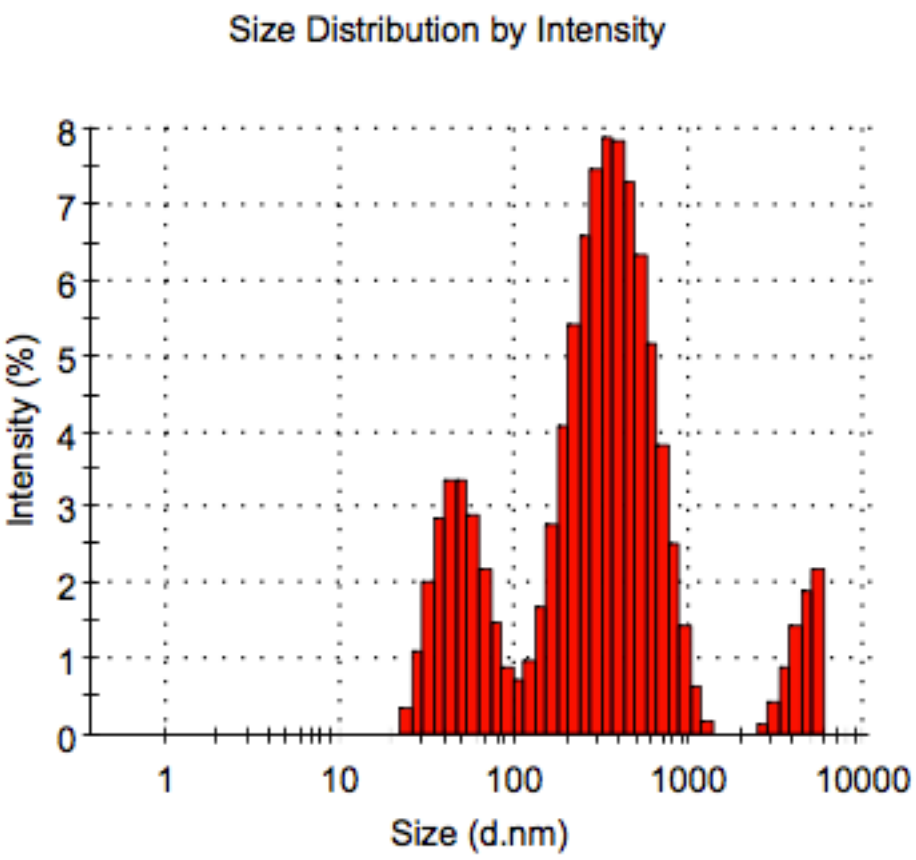

Figure S13. DLS Histogram of L-HA.

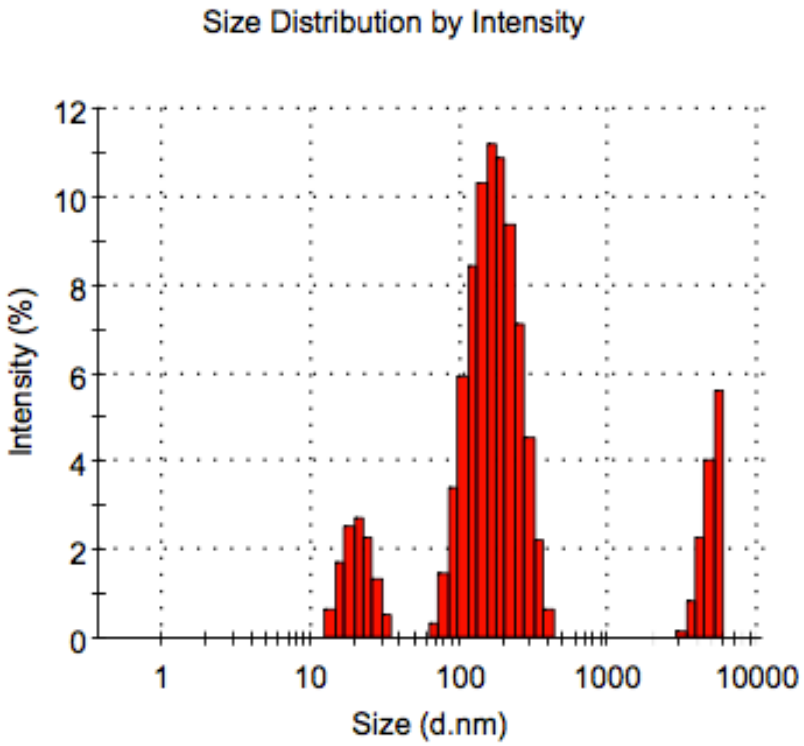

Figure S14. DLS Histogram of L-PTMA.

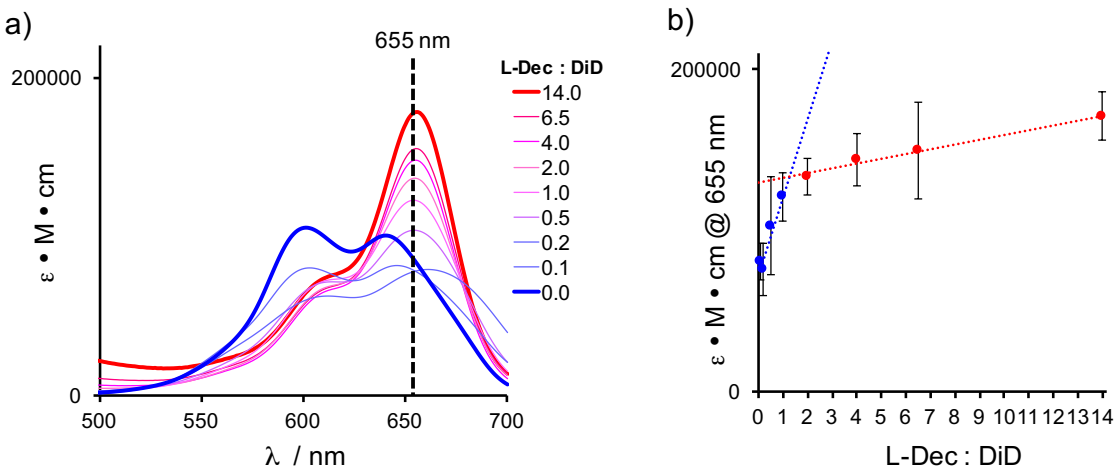

Figure S15. UV-vis analysis of L-Dec:DiD binding ratios. A) At low L-Dec (i.e. high DiD) concentrations, pronounced hypochromicity is observed as the dyes electronically couple. B) This is clearly seen in the analysis of the λ_{max} at 655 nm, as below a 1:1 ratio, i.e. lower L-Dec concentrations, there is a marked drop-off in ε (blue data points). Optimal dye loading is therefore kept at one dye molecule per lignin macromolecule, although these may be assembled into larger structures containing more dyes as seen in SEM images.