Electronic Supplementary Material (ESI) for Materials Advances.

Supporting Information

Polylactic acid/wood-based in-situ polymerized densified composite material

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Supplementary Results:

It was found that catalyst-free polycondensation yielded the oligomers with the degree of polymerization ranging from 3-mer to 8-mer, with a peak intensity at the 5-mer as calculated in Table S1.

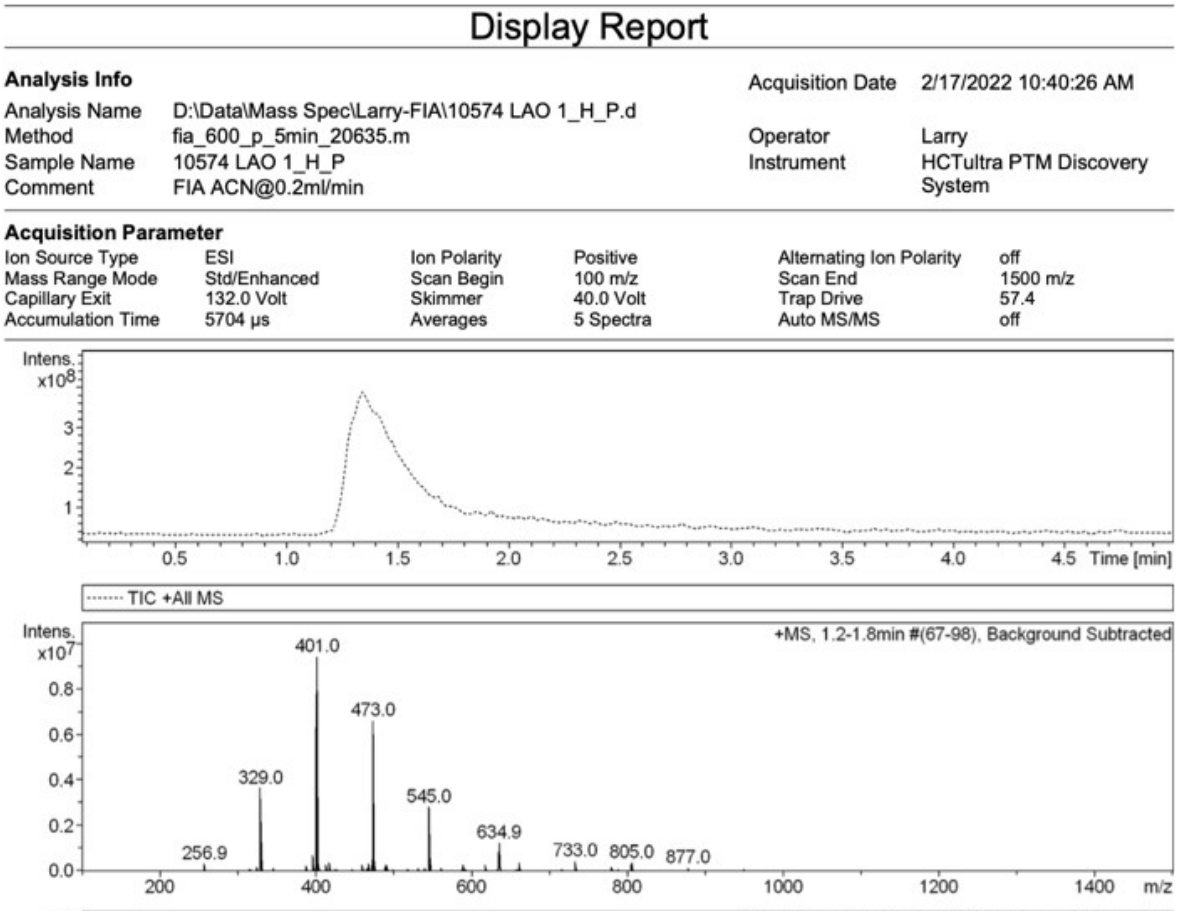

Figure S1: LC-MS data for the lactic acid oligomers (LAO) done using ESI with positive ion polarity. Top: Total ion chromatogram (TIC) labeled with (X-axis) retention time; Bottom: LC-MS

spectrum from 1.1 min to 1.7 mins shown oligomer signal from 3mer to 8mer with m/z 256.9–634.9 full-scale mass spectrum of LAO standard solution.

Table S1: LC-MS data showing the list of various Lactic Acid oligomers found ranging from 3mer to 8mer and their molecular weight.

Oligomer	Molecular formula	Calculated MW (g/mol)	Calculated $[M+Na]^+$ (m/z)	Observed $[M+Na]^+$ (m/z)
3mer	$C_9H_{14}O_7$	234.2	256.9	256.9
4mer	$C_{12}H_{18}O_9$	306.3	329.2	329
5mer	$C_{15}H_{22}O_{11}$	378.3	401.2	401
6mer	$C_{18}H_{26}O_{13}$	450.4	473.3	473
7mer	$C_{21}H_{30}O_{15}$	522.5	545.4	545
8mer	$C_{24}H_{34}O_{17}$	594.5	617.4	634.9

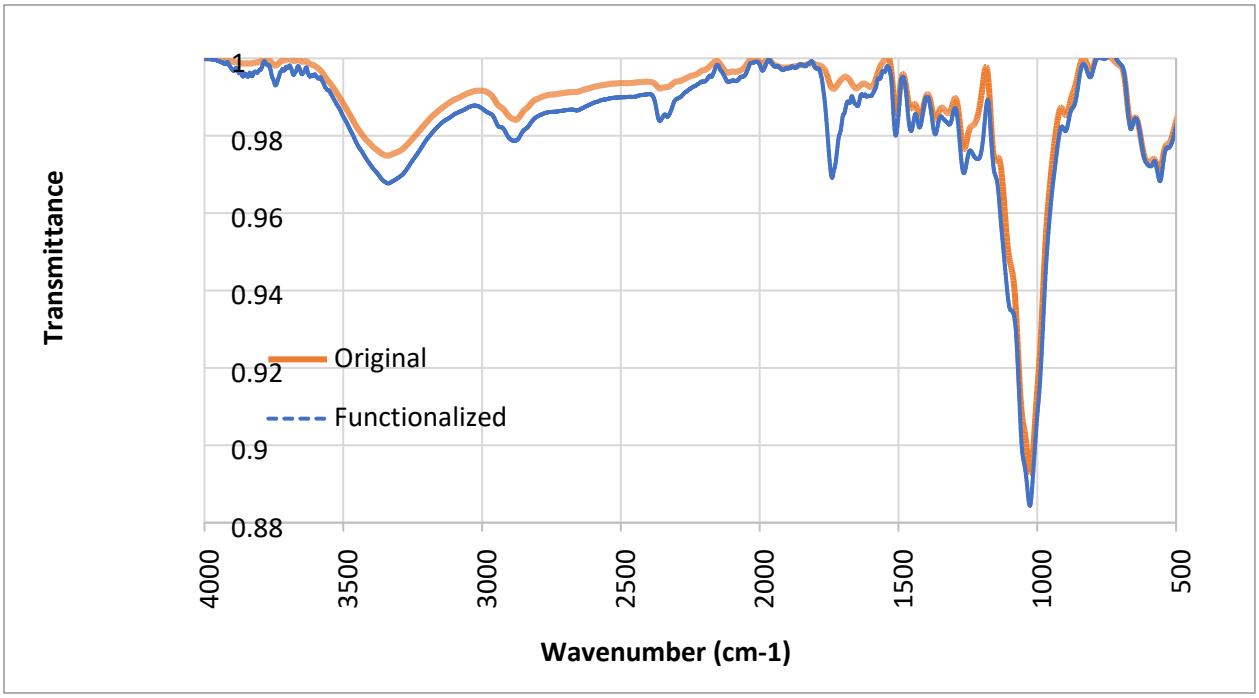

Figure S2: FTIR-ATR spectra of original wood and Functionalized densified wood after (OLA impregnation and heat treatment)