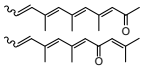
Supplementary Materials

Lignocelluloses-Based Furan-Acetone Adducts as Wood Adhesives for Plywood Production

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Table S1. The side chain structure of furan-acetone adducts.

Number of Acetone Molecules Condensed	R_2 [a]	MW [b] of HMF-Acetone Adduct	MW of Furfural-Acetone Adduct
1		166, 184	136, 154
2	 and isomers	206, 224, 242	176, 194, 212
3	and isomers	246, 264	216, 234
4	 and isomers	286, 304	256, 274

[a] Side chain might not be completely dehydrated. [b] Molecular weight.

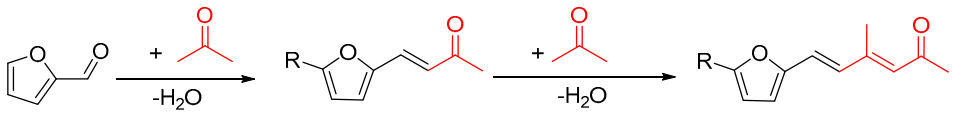


Figure S1. Reaction pathway for the condensation of furfural and one/two molecules of acetone.

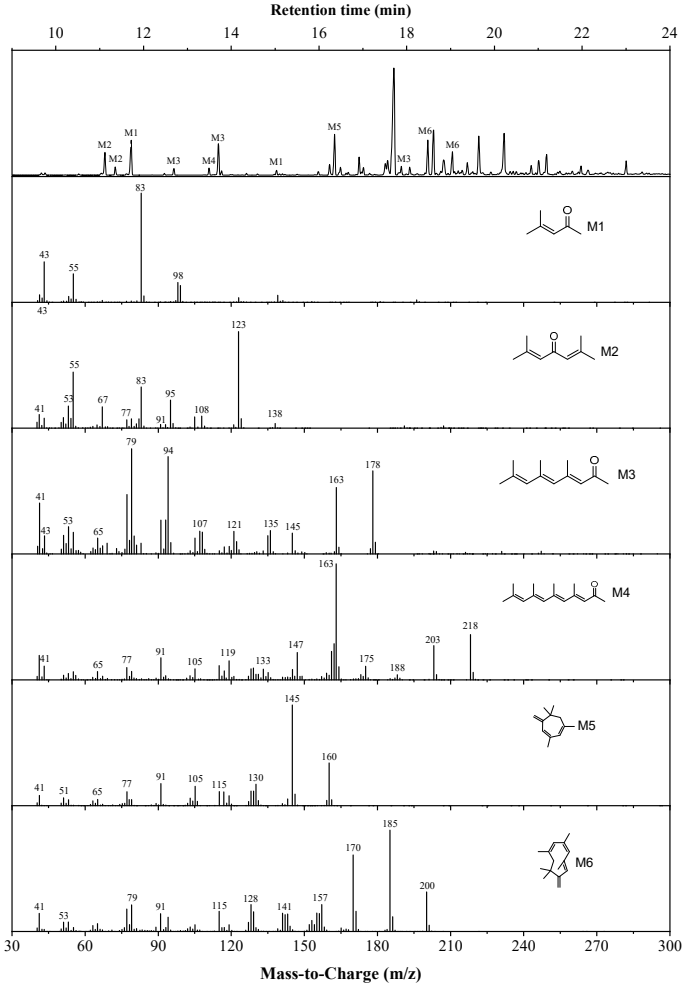


Figure S2. GC-MS and mass spectra of acetone self-condensation products.

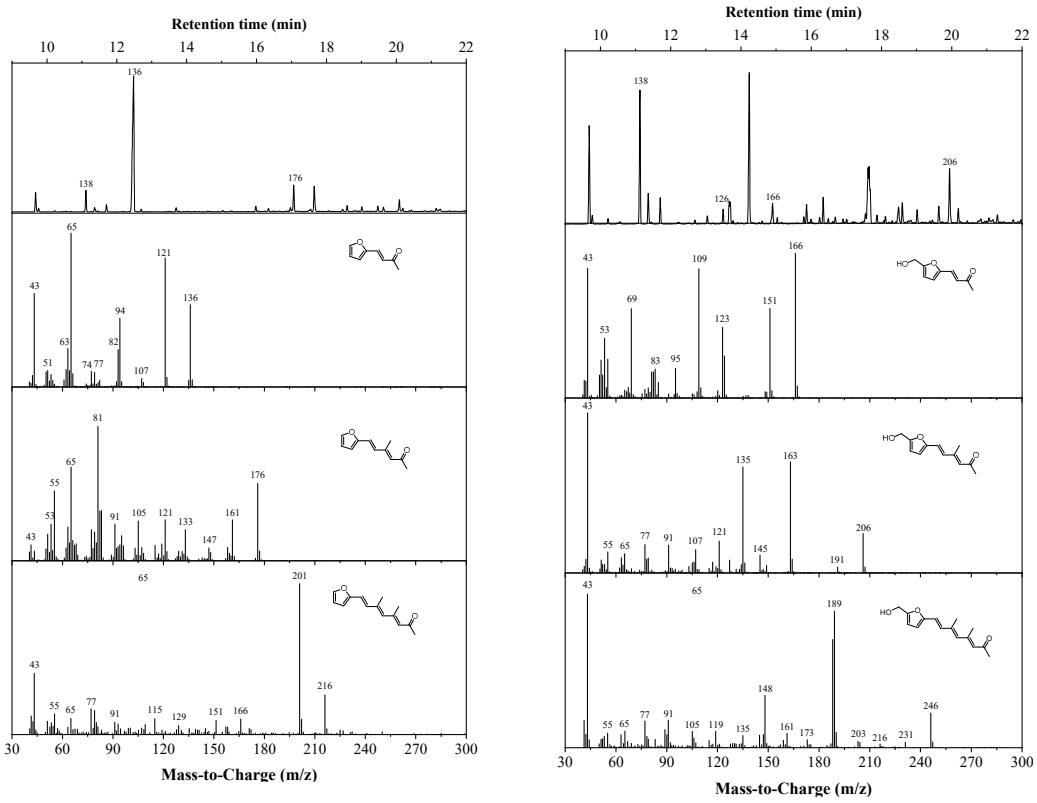


Figure S3. (a) GC-MS and mass spectra of furfural-acetone adducts; (b) GC-MS and mass spectra of HMF-acetone adducts.

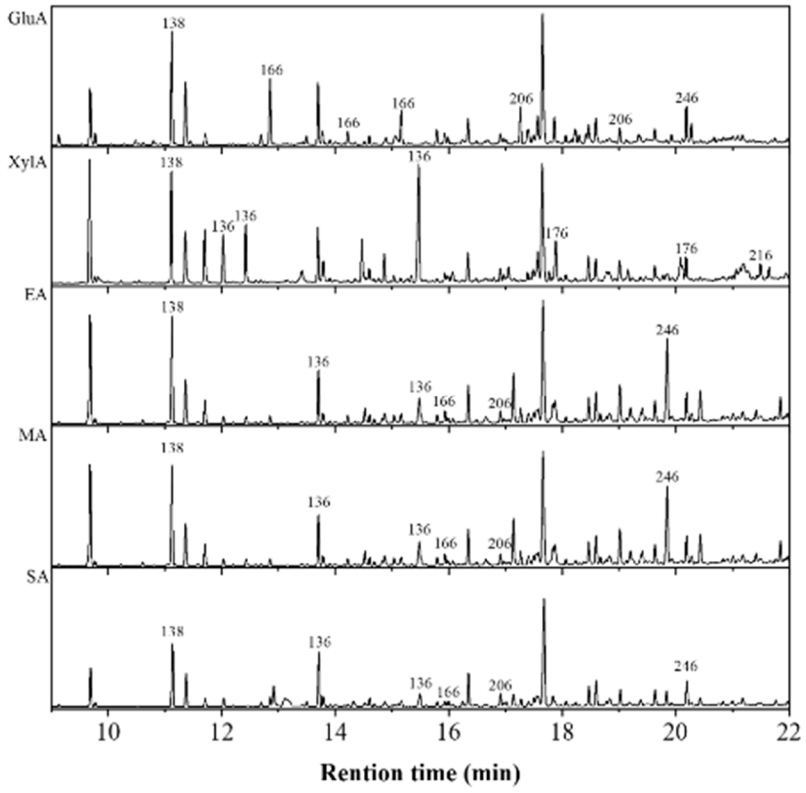


Figure S4. Comparisons of the GC-MS of GluA, XylA, EA, MA, and SA.

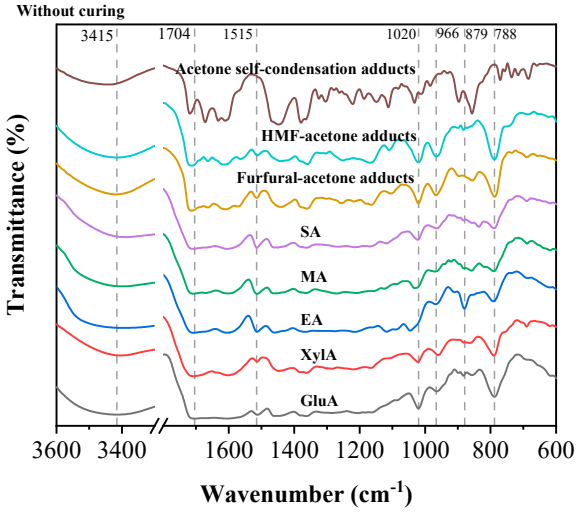
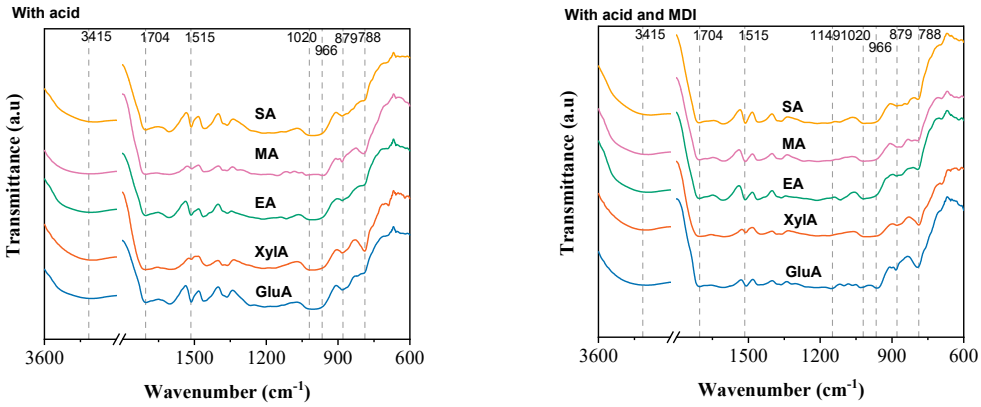


Figure S5. The FT-IR spectra of GluA, XylA, EA, MA, and SA, furfural-acetone adducts, HMF-acetone adducts, and acetone self-condensation adducts without curing.



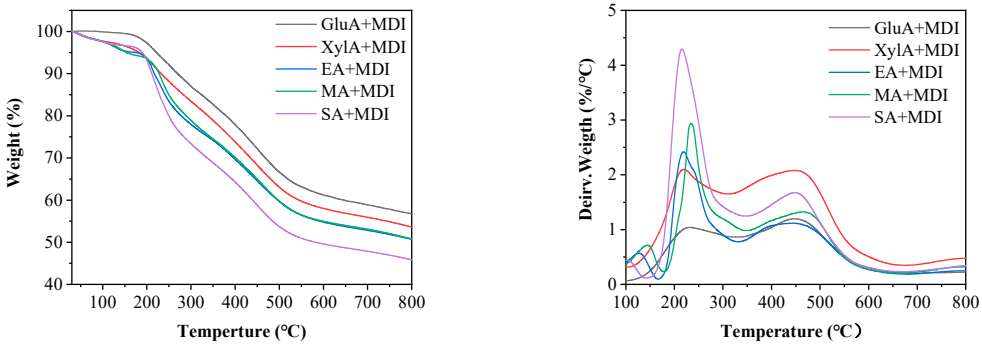
(**a**) (**b**)

Figure S6. (a) The FT-IR spectra of GluA, XylA, EA, MA, and SA after curing with acid; (b) the FT-IR spectra of GluA, XylA, EA, MA, SA after acid-catalyzed curing with 5 wt% MDI.

Table S2. Maximum weight-loss rate temperature and residual carbon rate of furan-acetone adhesives with or without modification by 5 wt% MDI.

Sample	T_1 (°C)	T_2 (°C)	Residual Carbon Rate under 800 °C (%)
GluA	210	454	56.8
XylA	203	450	53.6
EA	231	449	50.8
MA	230	408	50.8
SA	220	418	45.8
GluA+MDI	235	458	57.5
XylA+MDI	218	459	55.5
EA+MDI	229	467	54.5
MA+MDI	235	470	53
SA+MDI	225	451	51

Note: T_1 is the maximum weight loss rate temperature of the first stag, °C; T_2: is the maximum weight loss rate temperature of the second stage, °C.

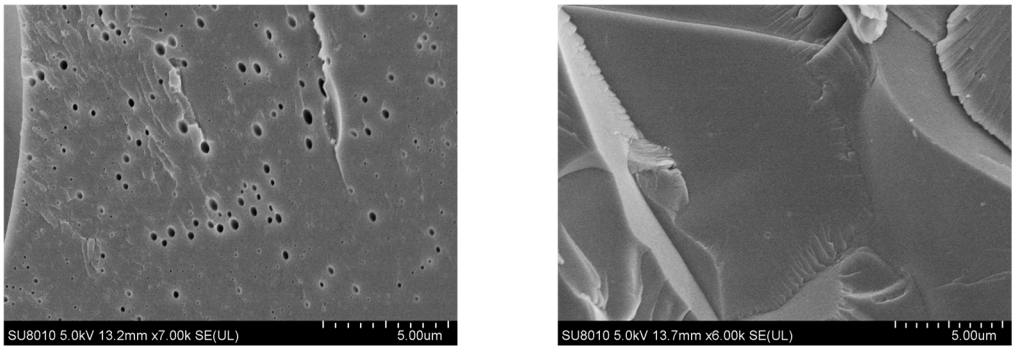


(**a**) (**b**)

Figure S7. (a) The TGA and (b) DTG curves of GluA, XylA, EA, MA and SA derived adhesives that modified by 5 wt% MDI during acid-catalyzed curing process.



Figure S8. Glue line of poplar plywood prepared by GluA derived adhesives. Reaction condition: 8 g glucose, 8 mL water, 24 g LiBr, 80 mL acetone and 0.44 mL HCl (37 wt%) were reacted at 120 °C for 1 h. Pressing conditions: 170 °C, 1.0 MPa, 270 g/m², 15 min, PA addition 10 wt%, MDI addition 5 wt%.



(**a**) (**b**)

Figure S9. The SEM images of GluA adhesive surface (a) without MDI and (b) with 5 wt% MDI.