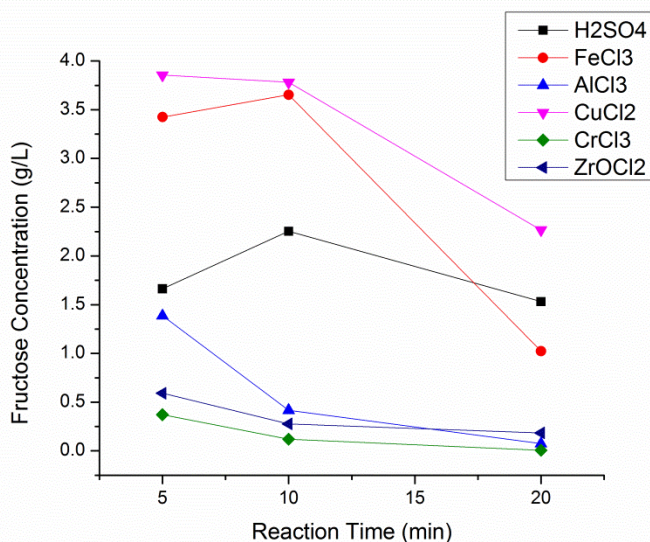


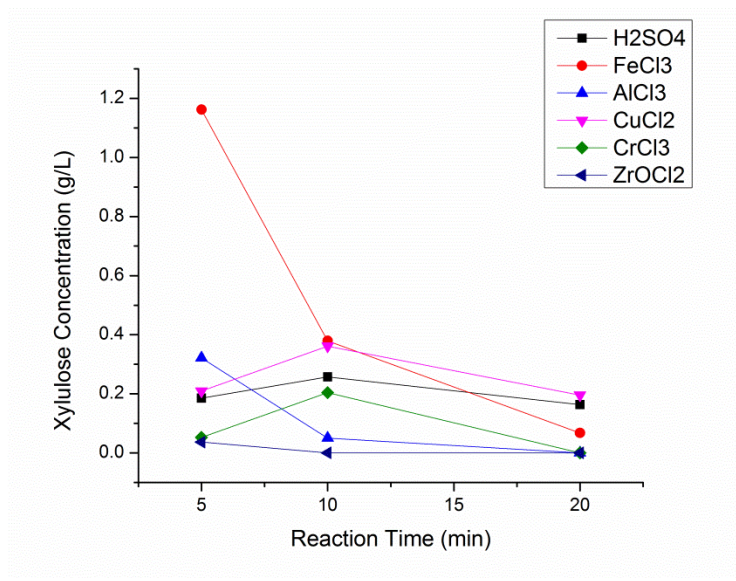
## Supplementary Information

**Table S1.** Numerical data and corresponding standard deviation from triplicate runs for compositional data (wt%, dry basis) presented in Figure 3 and Figure 4. Compositional determination was performed by following the NREL protocol TP-510-42618, ver. 8-03-2012.

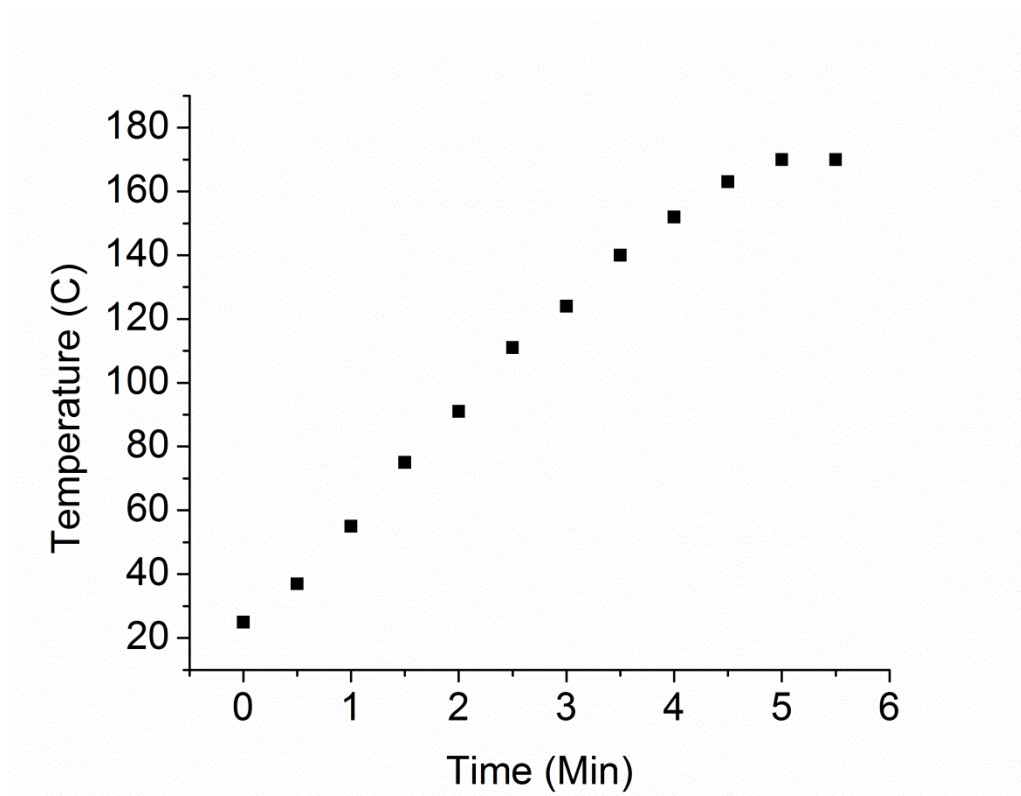
Figure 3	Glucan	stdev (Glucan)	Xylan	stdev (Xylan)	Lignin	stdev (Lignin)	Other
Raw	41.5	0.3	15.5	0.2	23.5	0.3	19.5
H2SO4	22.7	0.2	0.0	0.0	2.2	0.1	0.3
FeCl3	25.4	0.2	0.0	0.0	1.8	0.1	0.7
CuCl2	26.3	0.2	0.0	0.0	1.8	0.1	0.6
AlCl3	28.1	0.3	0.0	0.0	1.7	0.2	0.1
CrCl3	29.1	0.3	0.0	0.0	1.5	0.2	0.6
ZrOCl2	16.6	0.2	0.0	0.0	5.0	0.2	23.1
Figure 4	Glucan	stdev (Glucan)	Xylan	stdev (Xylan)	Lignin	stdev (Lignin)	Other
Raw	41.5	0.3	15.5	0.2	23.5	0.3	19.5
FeCl3 (1:1)	22.5	0.2	0.0	0.0	2.1	0.1	0.8
FeCl3 (4:1)	7.3	0.2	0.0	0.0	2.0	0.1	0.7
FeCl3 (7:1)	10.4	0.2	0.0	0.0	9.8	0.2	0.8



**Figure S1.** Liquid fructose concentration from pure glucose THF co-solvent reactions. Reaction conditions: 20 g L<sup>-1</sup> glucose, 1:1 THF:Water (vol), 170 °C, 0.1M catalyst loading based on anhydrous mass.

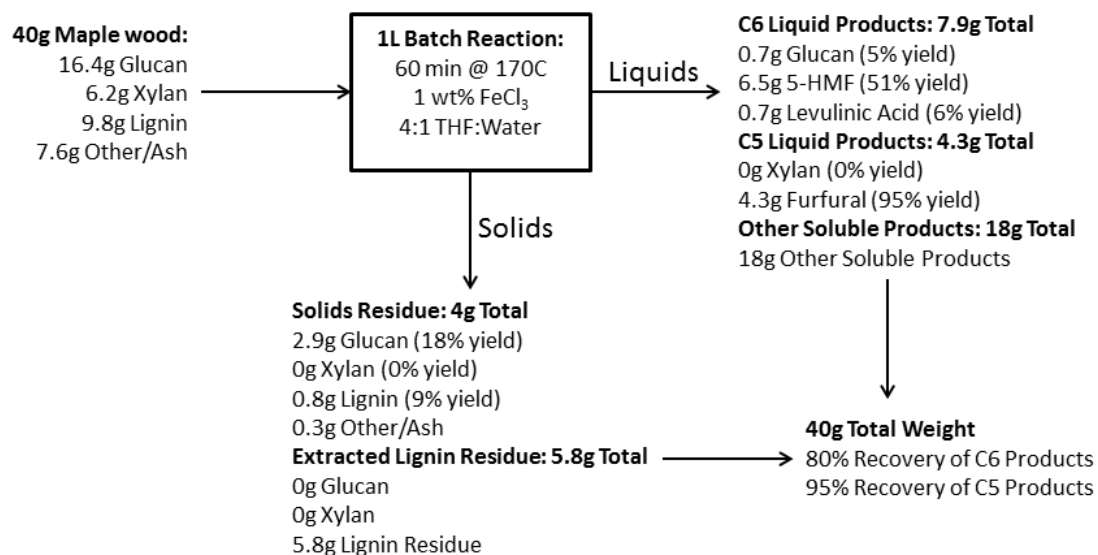


**Figure S2.** Liquid xylulose concentration from pure xylose THF co-solvent reactions. Reaction conditions: 10 g L<sup>-1</sup> xylose, 1:1 THF:Water (vol), 170 °C, 0.1M catalyst loading based on anhydrous mass.



**Figure S3.** Typical heating profile for the 1 L Parr reactor during THF co-solvent reaction with biomass. Reaction temperature of 170°C is achieved in less than 5 min and is quickly stabilized by raising the reactor over the fluidized sand bath. Overheating is prevented by spraying water

from a spray bottle directly to the outside wall of the reactor. Stabilization of reaction temperature in this fashion takes less < 20 seconds.



**Figure S4.** Product flow and mass balance diagram describing the mass and yield of products recovered in both the solid and liquid portion after reaction. Data shown for reaction conditions listed in Table 2 Run 17 in the main article when the highest furfural and 5-HMF co-production yields were obtained. Total recovery of C6 and C5 products are calculated from the liquid and solid yields.