

Supplementary Information

Optimizing 5-Hydroxymethylfurfural Production via Ionic Liquid-Catalysis in Deep Eutectic Solvents from Diverse Biomass-Derived Sources: A Study on Sonication and Thermal Conditions

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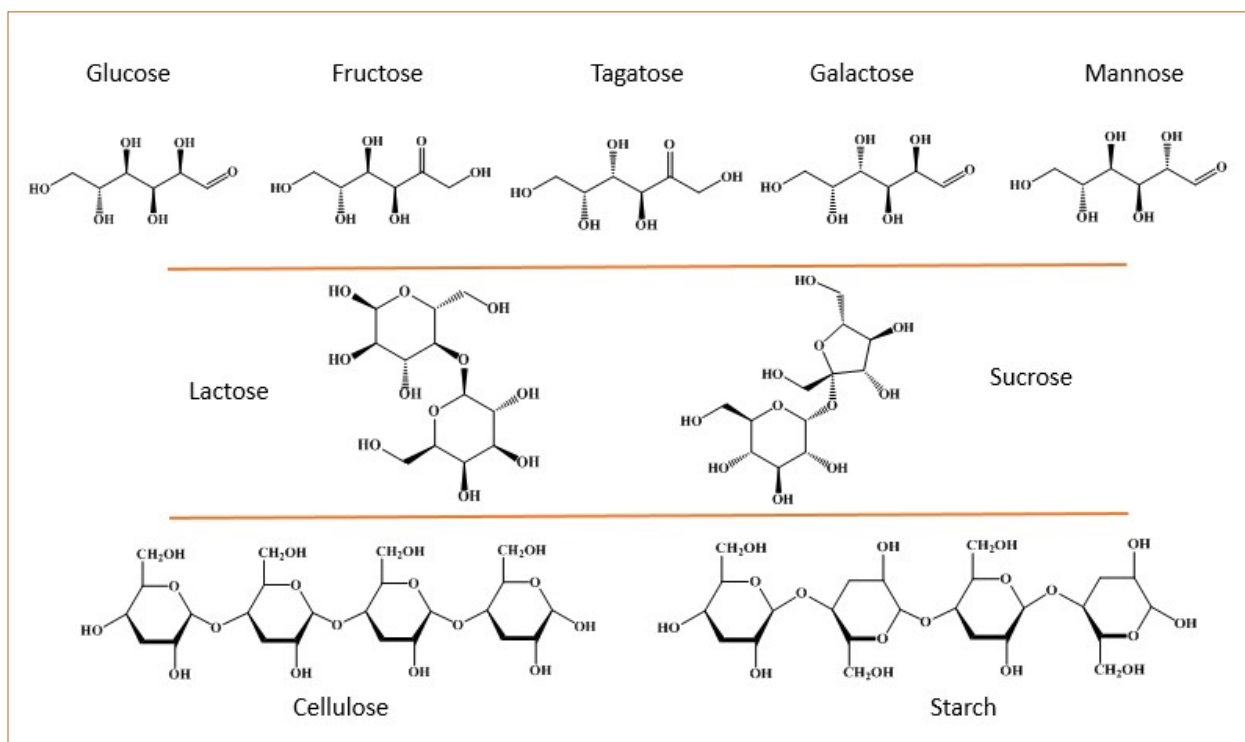


Fig. S1. Structural formula of biomass-derived carbohydrates used in this work.

1. Synthesis of DESs

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Deep eutectic solvents (DES) are a type of ionic liquid formed by the complexation of a hydrogen bond donor and acceptor. These solvents have unique properties and are often used as environmentally friendly alternatives to traditional solvents. The synthesis of deep eutectic solvents typically involves mixing specific components in a certain molar ratio.

DESs	T(°C)	Time (min)
ChCl/Gly (1:2)	80	15
ChCl/EG (1:2)	80	15
ChCl/Urea (1:2)	80	20
DMAC/Gly (1:2)	80	15
DMAC/EG (1:2)	80	20
DMAC/Urea (1:2)	90	15
TEAB/Gly (1:2)	80	15
TEAB/EG (1:2)	80	15
TEAB/Urea (1:2)	90	20
TPAB/Gly (1:2)	80	15
TPAB/EG (1:2)	80	15
TPAB/Urea (1:2)	80	20
TBAB/Gly (1:2)	80	15
TBAB/EG (1:2)	80	15
TBAB/Urea (1:2)	80	20

2. Characterization of 5-HMF

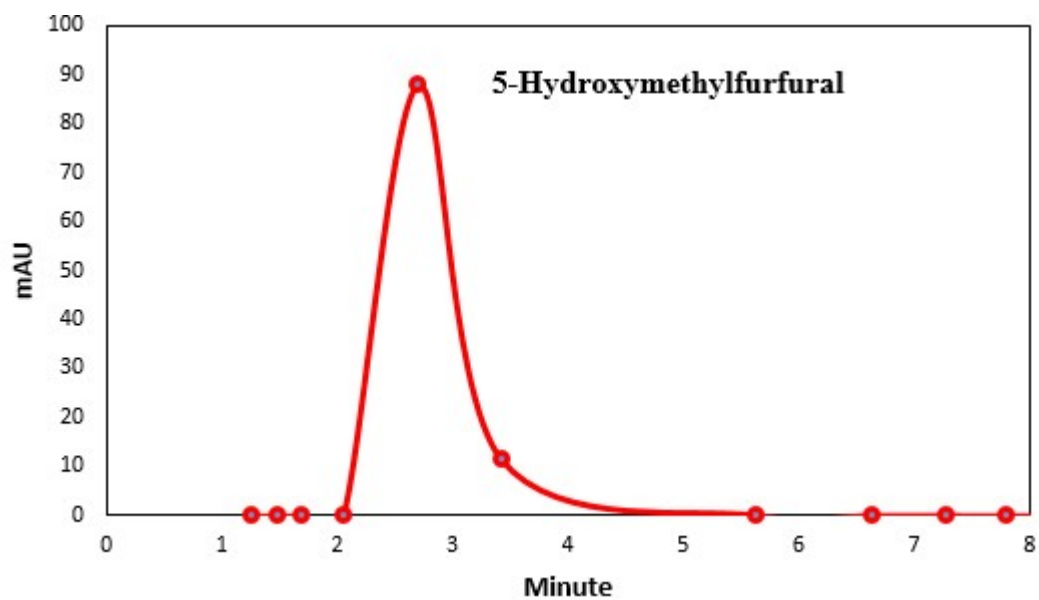


Fig. S2. HPLC analysis result of the isolated 5-HMF.

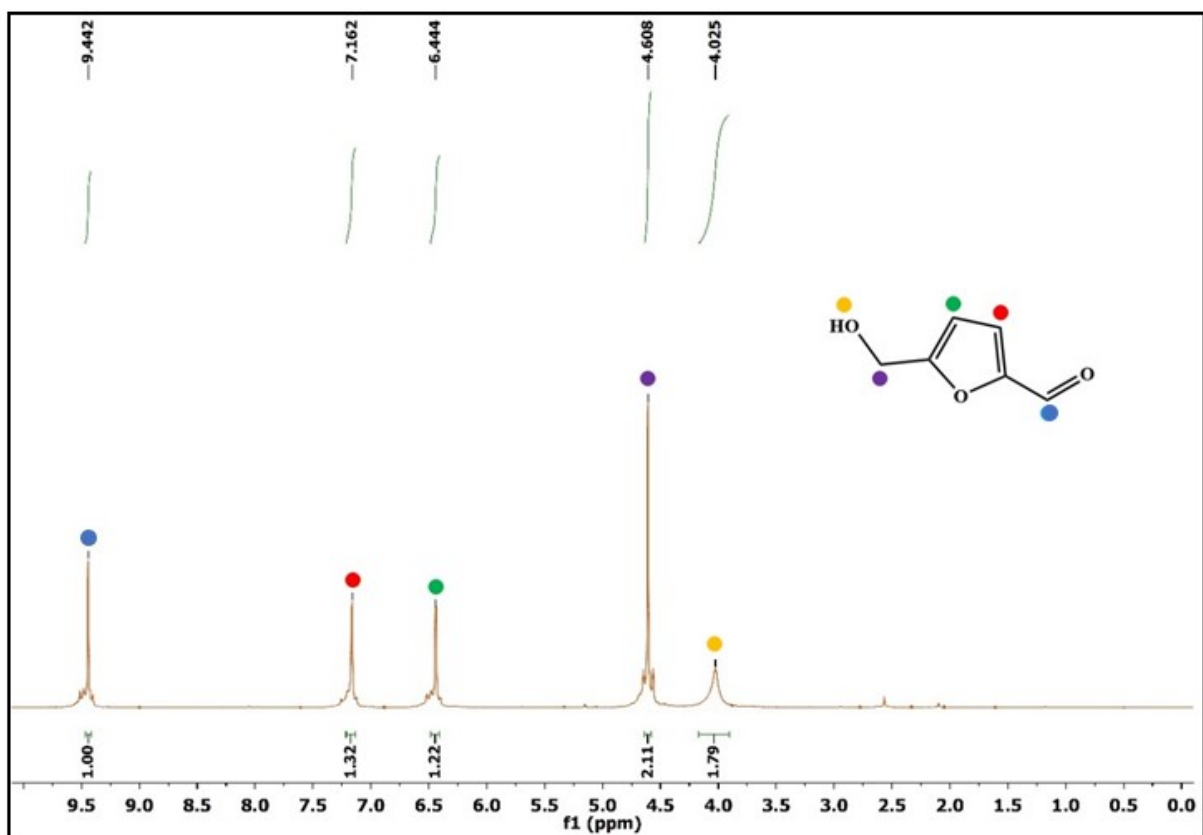


Fig. S3. ^1H NMR spectrum of the isolated 5-HMF in CDCl_3 .

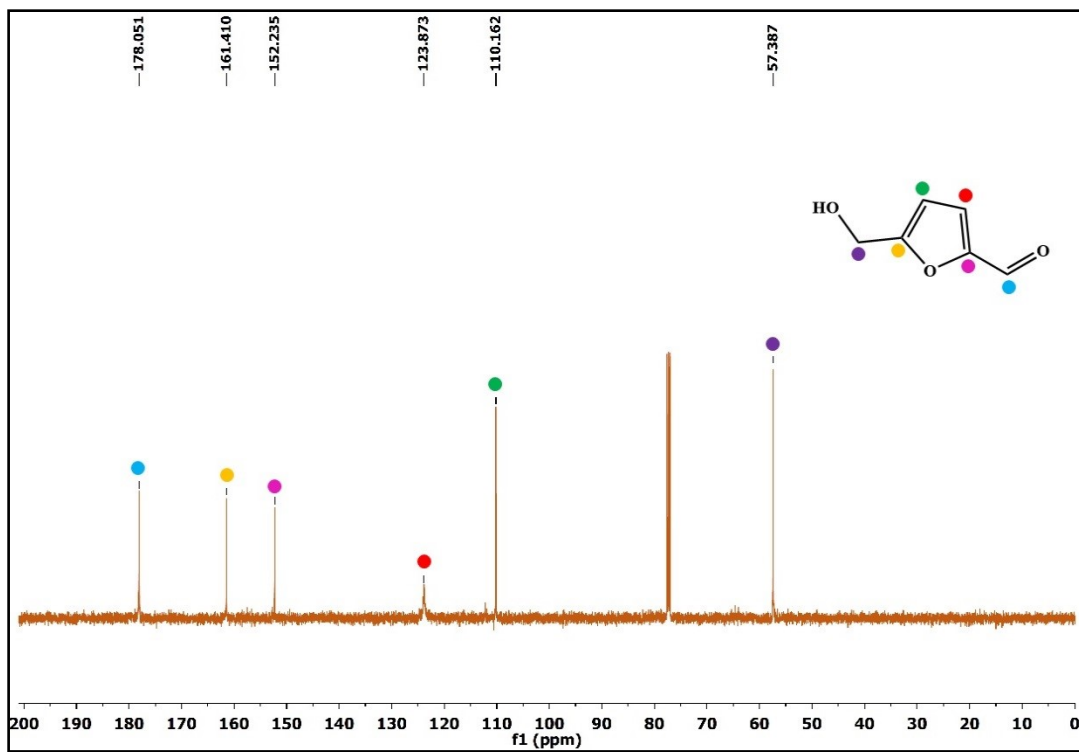


Fig. S4. ^{13}C NMR spectrum of the isolated 5-HMF in CDCl_3 .

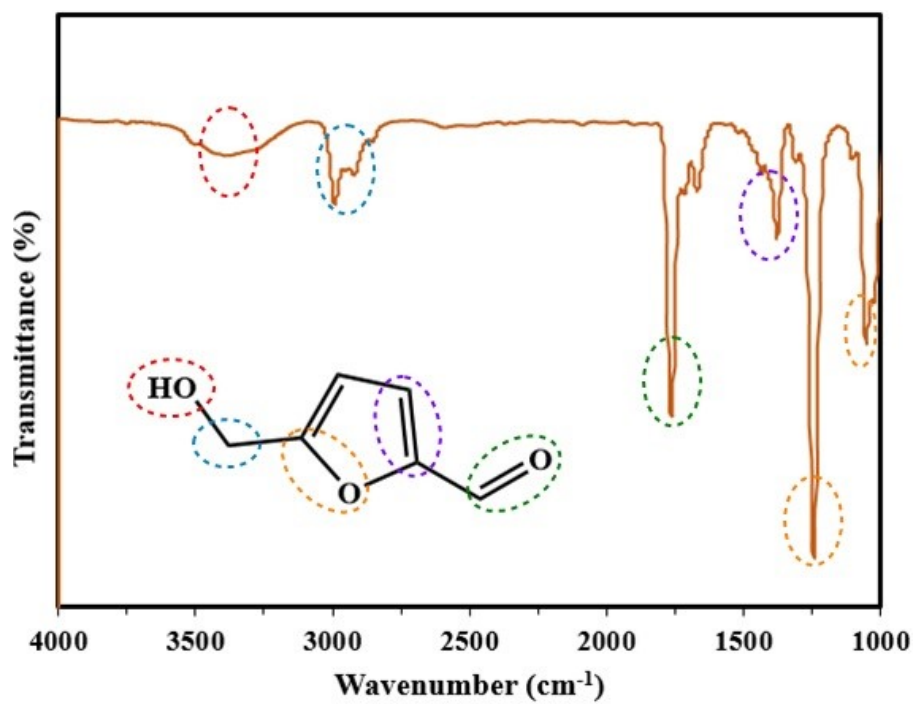


Fig. S5. FT-IR spectrum of the isolated 5-HMF.