

# Catalytic Transfer Hydrogenation of Furans to Methylfurans with Alcohols as a Hydrogen Carrier

## Scientific Achievement

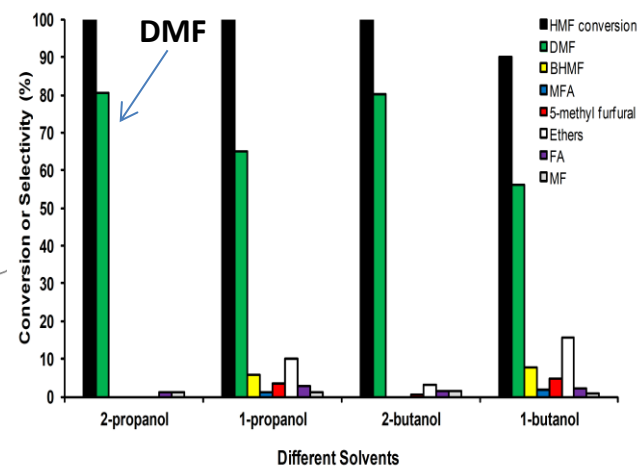
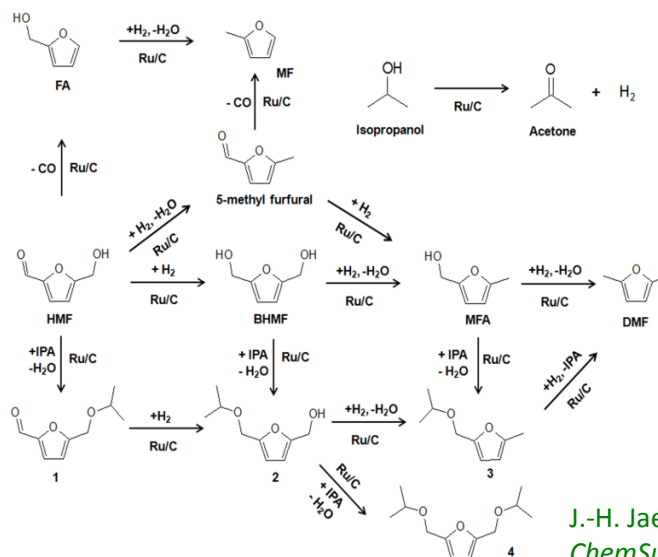
Catalytic transfer hydrogenation (CTH) using alcohols as hydrogen carrier on Ru/C leads to selective conversion of hydroxymethylfurfural (HMF) to dimethylfuran (DMF) with the highest ever (>80%) yield.

## Significance and Impact

- The reductive upgrading of biomass-derived molecules is a key step in producing renewable chemicals and transportation fuels from lignocellulosic biomass.
- DMF has a high octane number and is the precursor to green para-xylene.
- CTH enables selective hydrogenation of HMF to DMF without the need for high H<sub>2</sub> pressure and acid co-catalysts.

## Research Details

- Hydrogen can be effectively delivered from alcohols to HMF over a Ru/C catalyst to selectively produce DMF.
- Kinetic studies reveal the reaction network.
- Secondary alcohols are more effective hydrogen donors.



J.-H. Jae, W. Zheng, R. F. Lobo, and D. G. Vlachos, *ChemSusChem*, 2013, 6, 1158-1162; 10.1002/cssc.201300288

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