

Converting Cellulose to Bio-diesel with Inexpensive Catalysts

Scientific Achievement

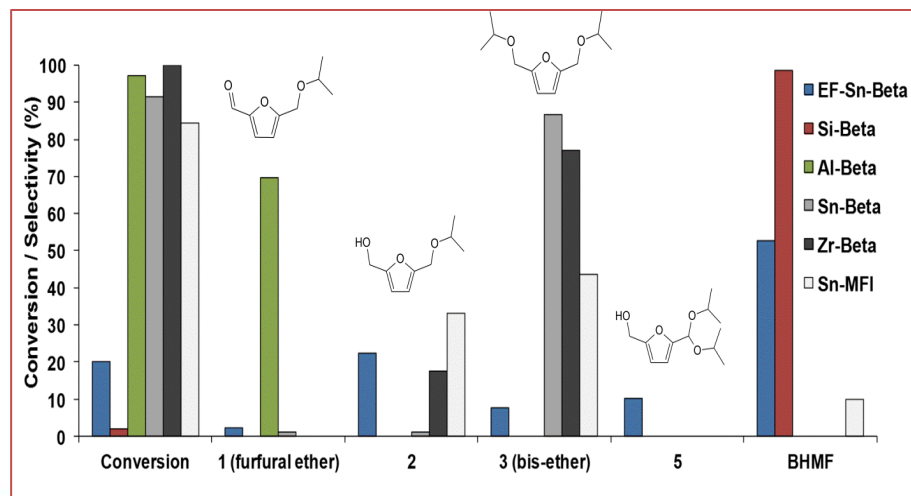
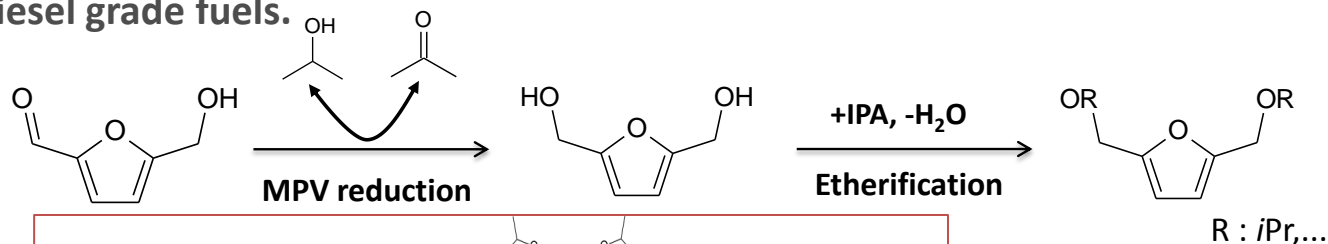
A single pot reaction converts an abundant biomass platform (HMF) to bio-diesel (>80% yield) with Sn-Beta catalyst and secondary alcohols.

Significance and Impact

- The reductive upgrading of biomass-derived molecules and the increase in molecular weight are key steps in producing renewable transportation fuels from lignocellulosic biomass.
- Now a single inexpensive catalyst can do both reactions in a single pot enabling inexpensive, high yield production of bio-diesel grade fuels.

Research Details

- Hydrogen can effectively and very selectively be delivered from alcohols to HMF over Lewis acid catalysts.
- Upon reduction, etherification happens twice on the same active site to increase the molecular weight.



Work was performed by the groups of Dion Vlachos and Raul Lobo at the University of Delaware



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