

Towards sustainability pathway with bio-based platinum and palladium catalyst for furfural hydrogenation - a novel greener approach in catalysis

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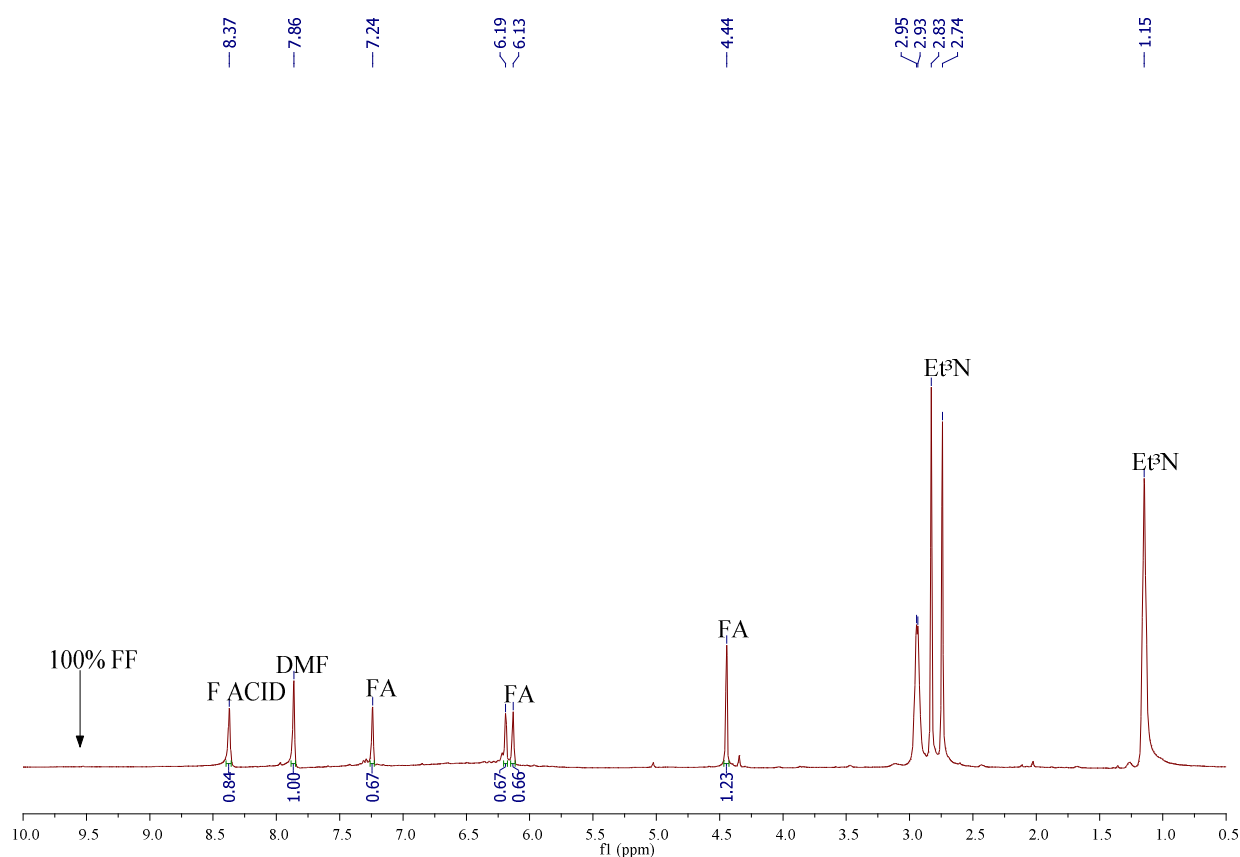


Figure S1. ^1H NMR spectrum with (@PtCassCat) showing total conversion of furfural (FF) to furfuryl alcohol (FA).

Typical calculation of the furfural converted

We used DMF as internal standard (20 μL) equivalence to 0.2594 mmol

Hence,

$\int 1 \text{ DMF} = 0.2594 \text{ mmol}$

$\int 0.67 \text{ FA} = x \text{ mmol}$

$x = 0.17 \text{ mmol}$ contained in the NMR tube of 0.05 mL sample

Therefore, Y mmol will be present in 2.95 mL of the fed reaction mixture in the auto-clave steel reactor.

Thus, $Y = 10 \text{ mmol}$

$\text{TON} = \text{mmol of the product formed} / \text{mmol of the catalyst} = 10 / 2.47 \times 10^{-4} = 40607$

$\text{TF} = \text{TON} / \text{Time} = 40607 / 24 \text{ h} = 1692$

Recall, FA: FF = 1:1

Conversion = mmol of FF converted / mmol of furfural fed $\times 100\%$

= 10/10 x 100% = 100% conversion

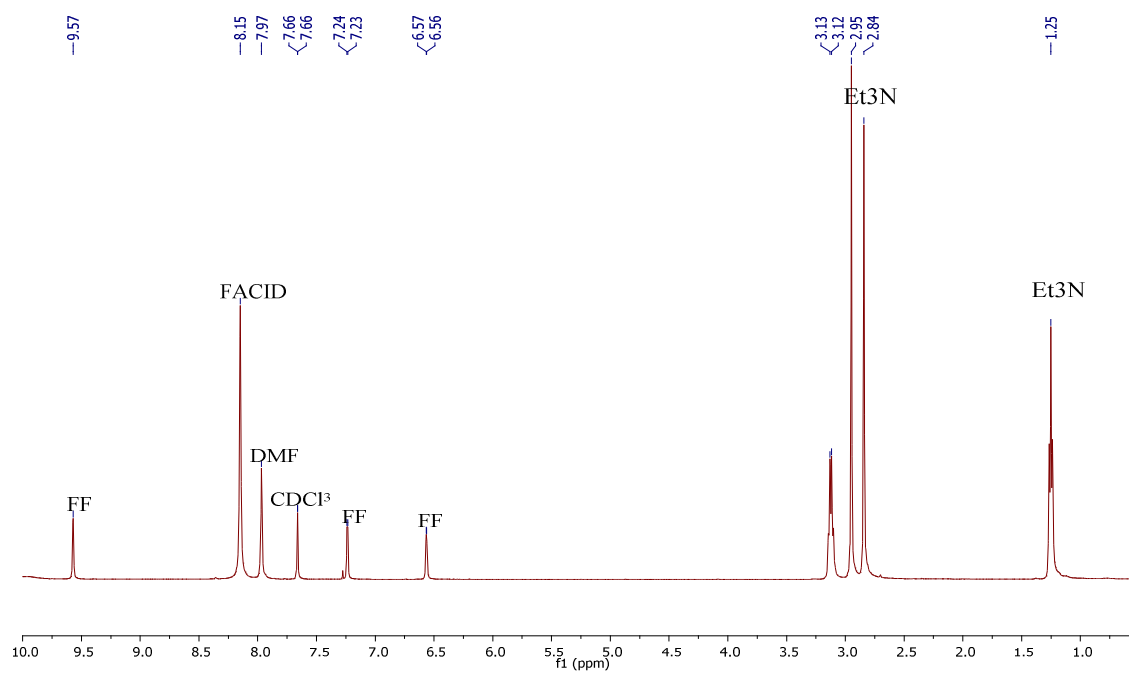


Figure S2. ^1H NMR of control biomass sample without product formation.