

## Supplementary Information

### Synthesis of renewable diesel and jet fuel range alkanes using 2-methylfuran and cyclohexanone

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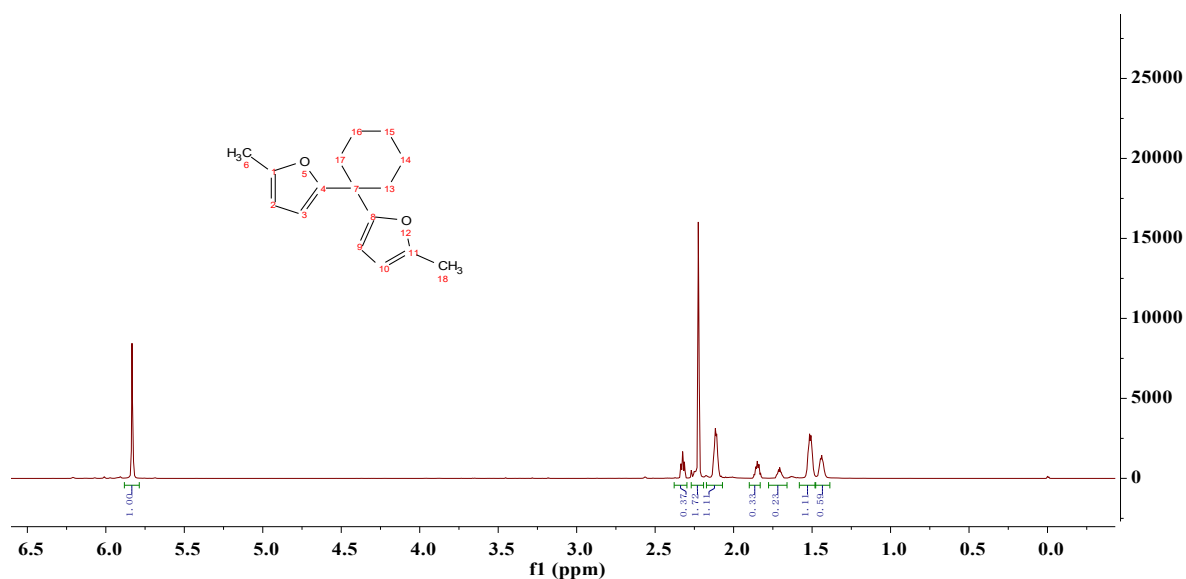
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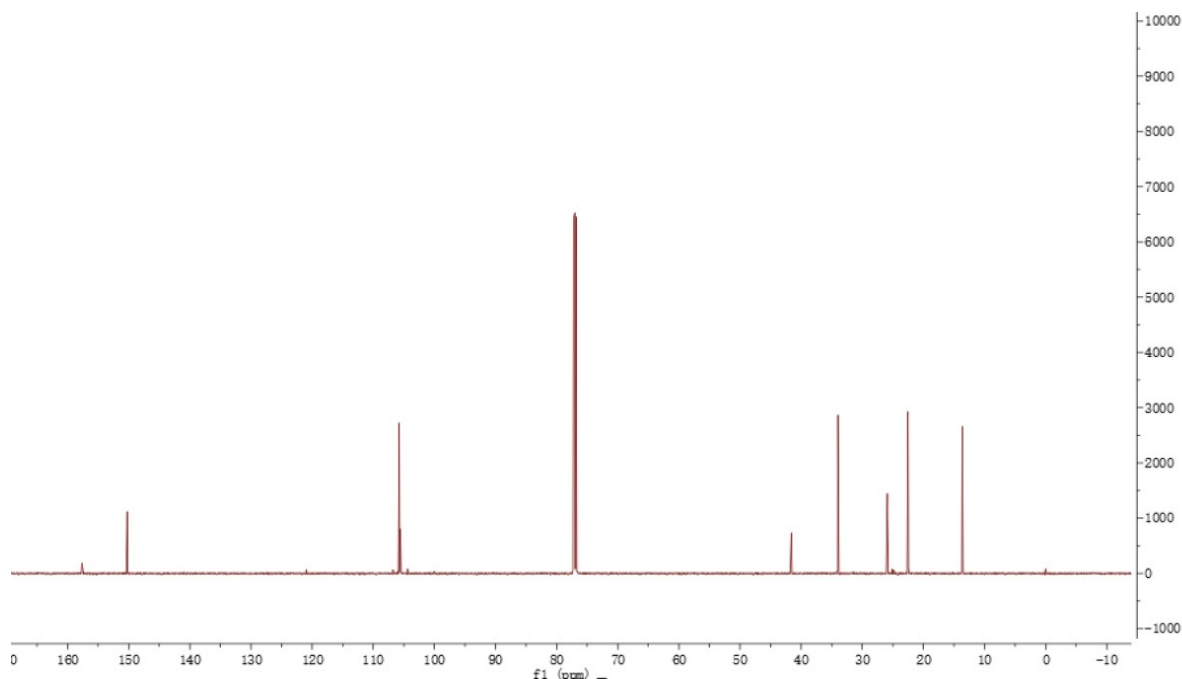
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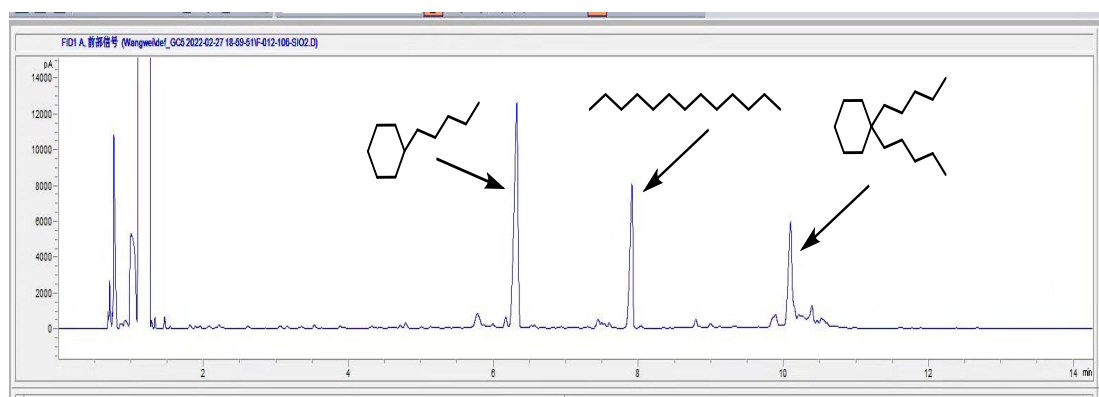
S1 5,5'-(cyclohexane-1,1-diyl)bis(2-methylfuran)  $^1\text{H}$  NMR spectrum of HAA production of 2-MF with cyclohexanone.

Synthesis of 5,5'-(cyclohexane-1,1-diyl)bis(2-methylfuran):  $^1\text{H}$  NMR ( $\text{CDCl}_3\text{-d}$ ),  $\delta$ : 5.99 (s, 2H), 5.96 (s, 2H), 2.30 (s, 6H), 2.09 (d, 4H,  $J=12$ ), 1.51 (m, 6H);



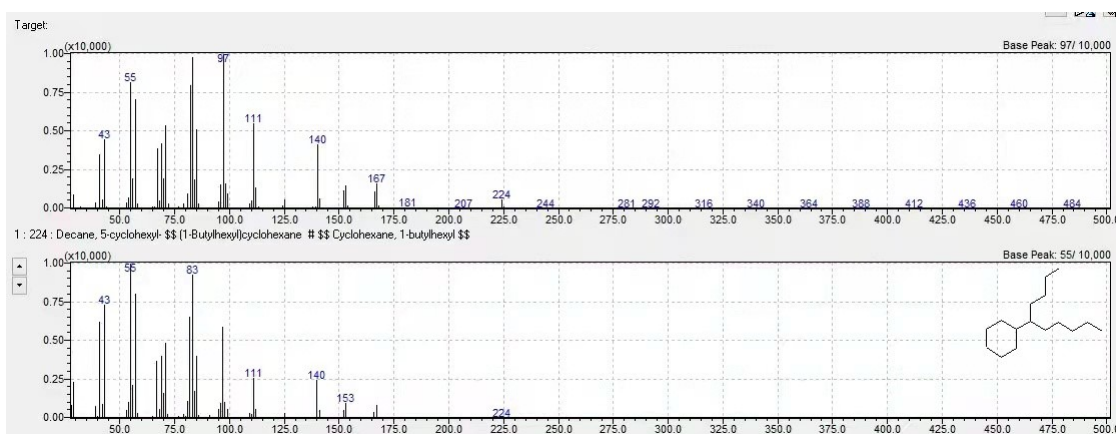
S2  $^{13}\text{C}$  NMR spectrum of 5,5'-(cyclohexane-1,1-diyl)bis(2-methylfuran) produced by HAA of 2-MF with cyclohexanone.

Synthesis of 5,5'-(cyclohexane-1,1-diyl)bis(2-methylfuran):  $^{13}\text{C}$  NMR ( $\text{CDCl}_3\text{-d}$ ),  $\delta$ : 154.8 (2C), 150 (2C), 106.2 (2C), 105.6 (2C), 45.7 (1C), 36.1 (2C), 25.1 (1C), 18 (2C), 13.7 (2C).



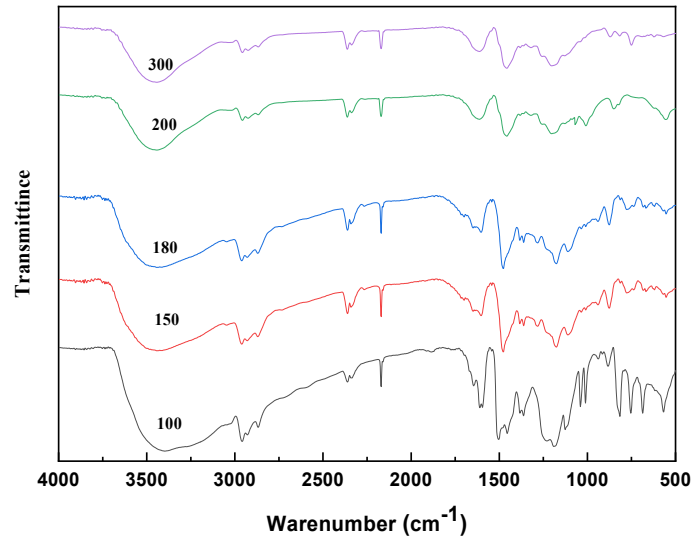
S3 Hydrodeoxygenation gas chromatogram of 5,5'-(cyclohexane-1,1-diyl)bis(2-methylfuran).

Reaction conditions: 553 K, 3.0-4.0 MPa H<sub>2</sub>, 0.20 g catalyst(SiO<sub>2</sub>), rotating speed 800 r/min. 0.50 g 5,5'-(cyclohexane-1,1-diyl)bis(2-methylfuran).



S4 Mass spectrum of 5,5'-(cyclohexane-1,1-diyl)bis(2-methylfuran) hydrodeoxygenation product.

Reaction conditions: 553 K, 3.0-4.0 MPa H<sub>2</sub>, 0.20 g catalyst, rotating speed 800 r/min. 0.50 g 5,5'-(cyclohexane-1,1-diyl)bis(2-methylfuran).



S5 Infrared spectra of phenolic resin carrier calcined at different temperatures.