catalysts

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Supporting Information

Synthesis of Diesel and Jet Fuel Range Cycloalkanes with Cyclopentanone and Furfural

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S1 GC chromatogram of the aldol condensation product of cyclopentanone and furfural

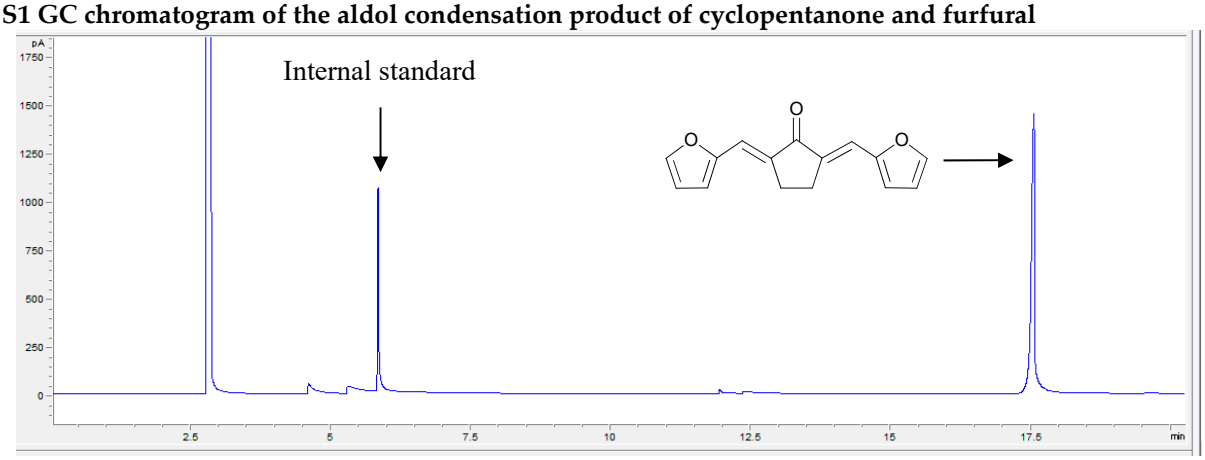

Figure S1 GC chromatogram of the aldol condensation product of cyclopentanone and furfural.

S 2 ^{1}H and ^{13}C NMR spectra of 2,5-bis (2-furylmethylidene) cyclopentanone

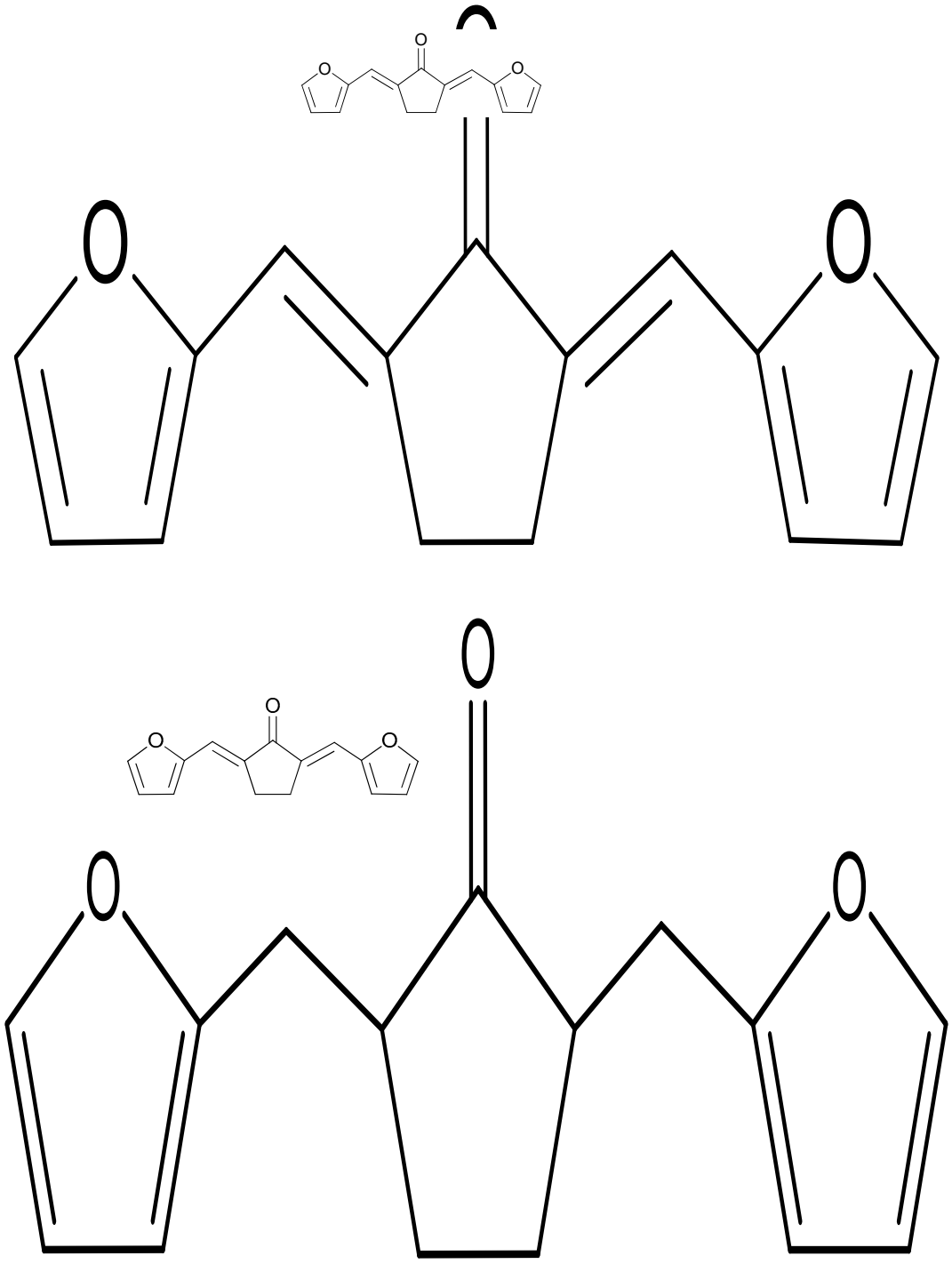

Figure S2 ^{1}H and ^{13}C NMR spectra of 2,5-bis(2-fury lmethylidene)cyclopentanone from the aldol condensation of cyclopentanone and furfural.

S3 The influences of catalyst dosage and temperature on cyclopentanone conversion, and 2,5-bis(2-furylmethylidene)cyclopentanone conversion carbon yield over CaO catalyst.

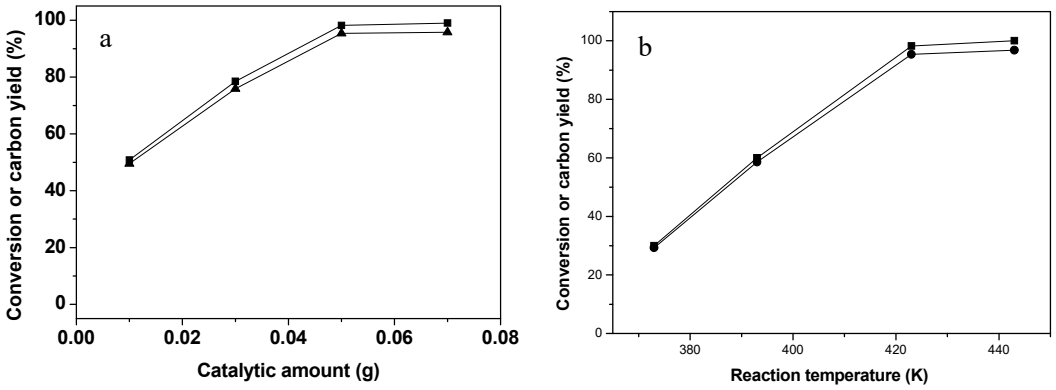

Figure S3. Cyclopentanone conversion and carbon yield of 2,5-bis(2-furylmethylidene)-cyclopentanone over the CaO catalyst. Experim-ental conditions: 10 h, 423 K; 0.84 g (10 mmol) cyclopentanone and 1.92 g (20 mmol) furfural were used in the tests.

S4 GC chromatogram of the 2,5-bis(furan-2-ylmethyl)cyclopentanone from the one-pot aldol condensation/hydrogenation reaction.

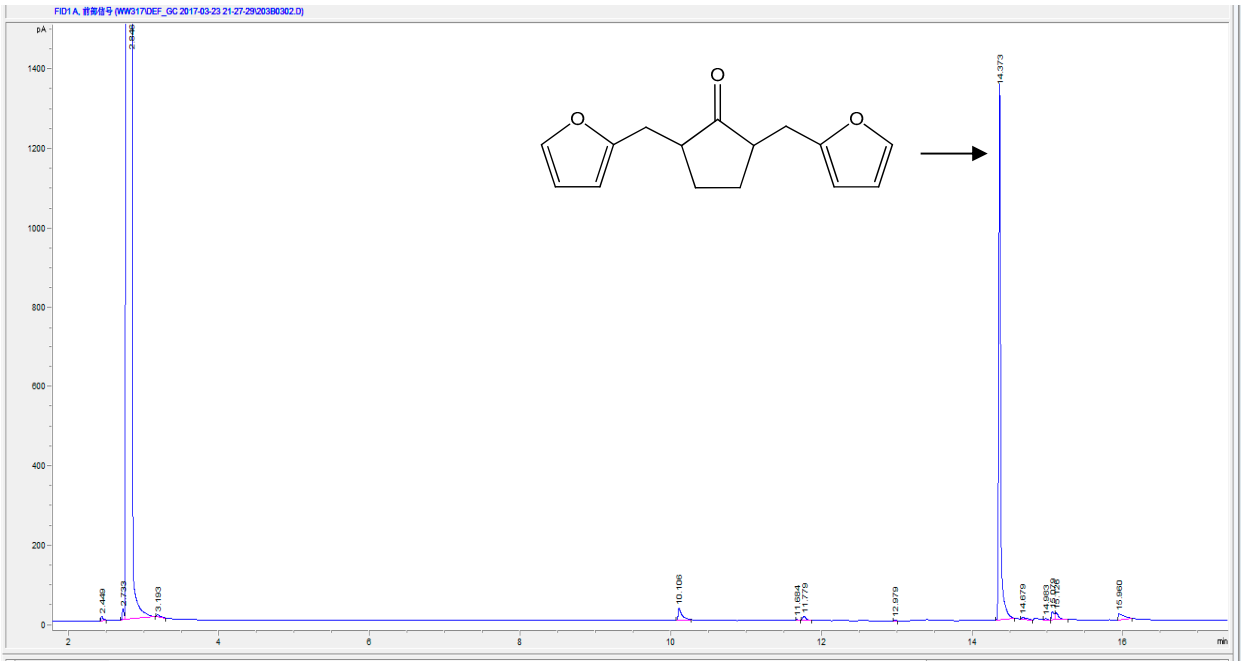

Figure S4 GC chromatogram of the 2,5-bis(furan-2-ylmethyl)cyclopentanone from the one-pot aldol condensation/hydrogenation reaction of cyclopentanone, furfural and hydrogen.

S5 ^{1}H and ^{13}C NMR spectra of 2,5-bis(furan-2-ylmethyl)cyclopentanone

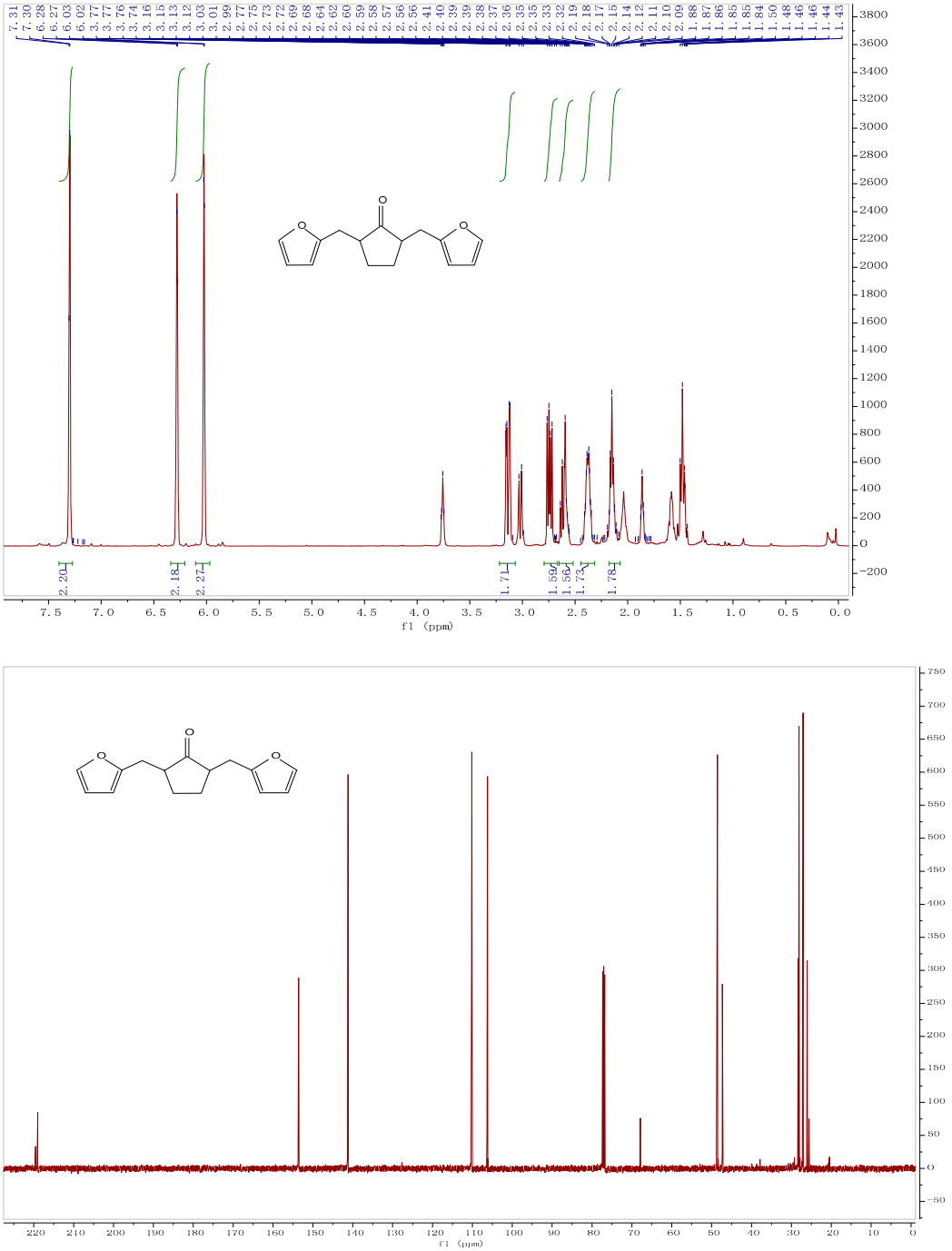

Figure S5 ^{1}H and ^{13}C NMR spectra of 2,5-bis(furan-2-ylmethyl)cyclopentanone from the one-pot aldol condensation/hydrogenation reaction of cyclopentanone, furfural and hydrogen.

S6 Mass spectrogram of the 2,5-bis(furan-2-ylmethyl)cyclopentanone from the one-pot reaction of cyclopentanone, furfural and hydrogen.

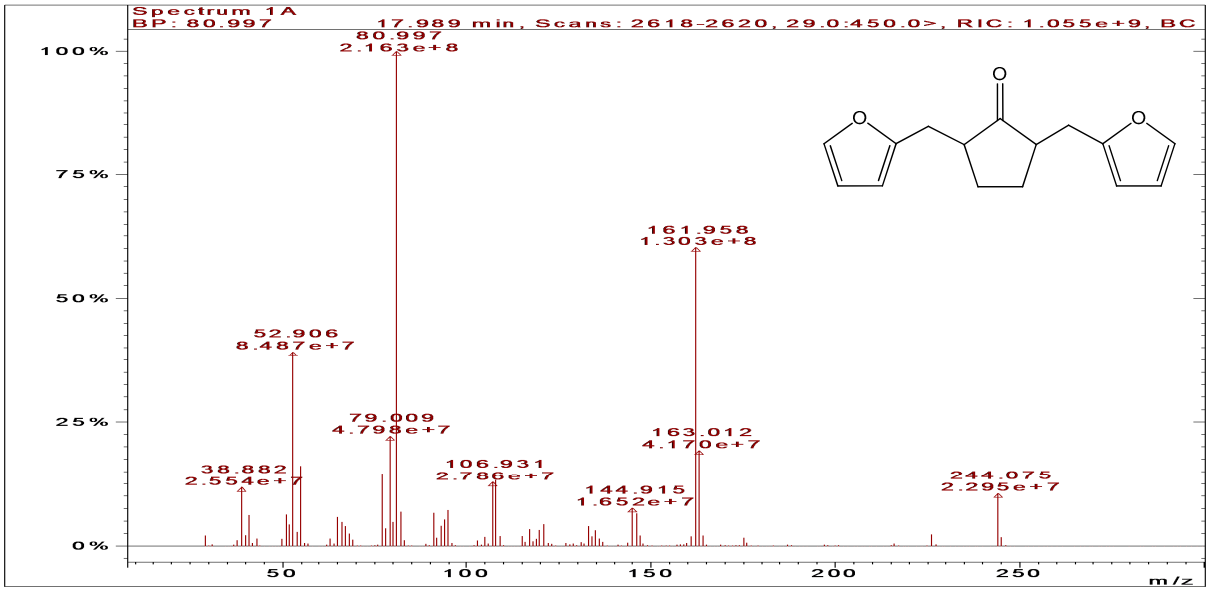

Figure S6 Mass spectrogram of the 2,5-bis(furan-2-ylmethyl)cyclopentanone from the one-pot reaction of cyclopentanone, furfural and hydrogen.

S7 GC chromatogram of the products from the solvent-free HDO of 2,5-bis(furan-2-ylmethyl)-cyclopentanone.

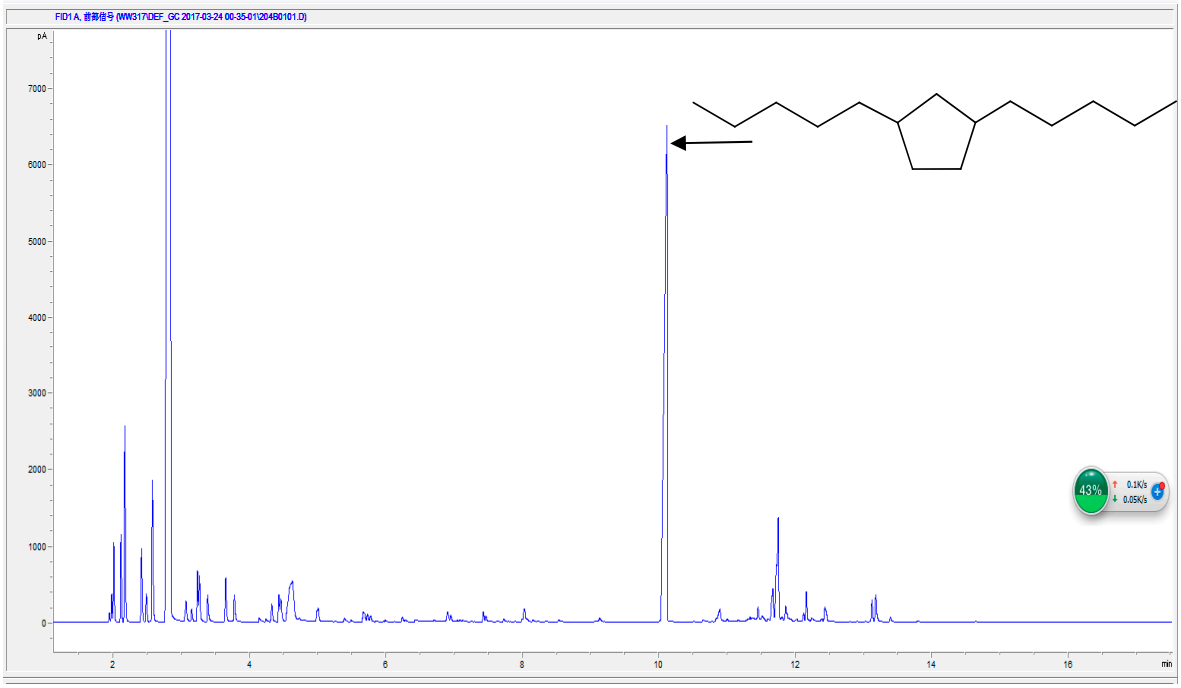

Figure S7 GC chromatogram of the products from the solvent-free HDO of 2,5-bis(furan-2-ylmethyl)cyclopentanone over the Pd/H-ZSM-5 catalyst. Reaction conditions: 573 K, 6.0 MPa; 1.80 g catalyst, liquid feedstock flow rate 0.04 mL min^{-1}, hydrogen flow rate: 120 mL min^{-1}.

S8 Mass spectrogram of the 1,3-dipentylcyclopentane from the solvent-free HDO of 2,5-bis(furan-2-ylmethyl)cyclopentanone.

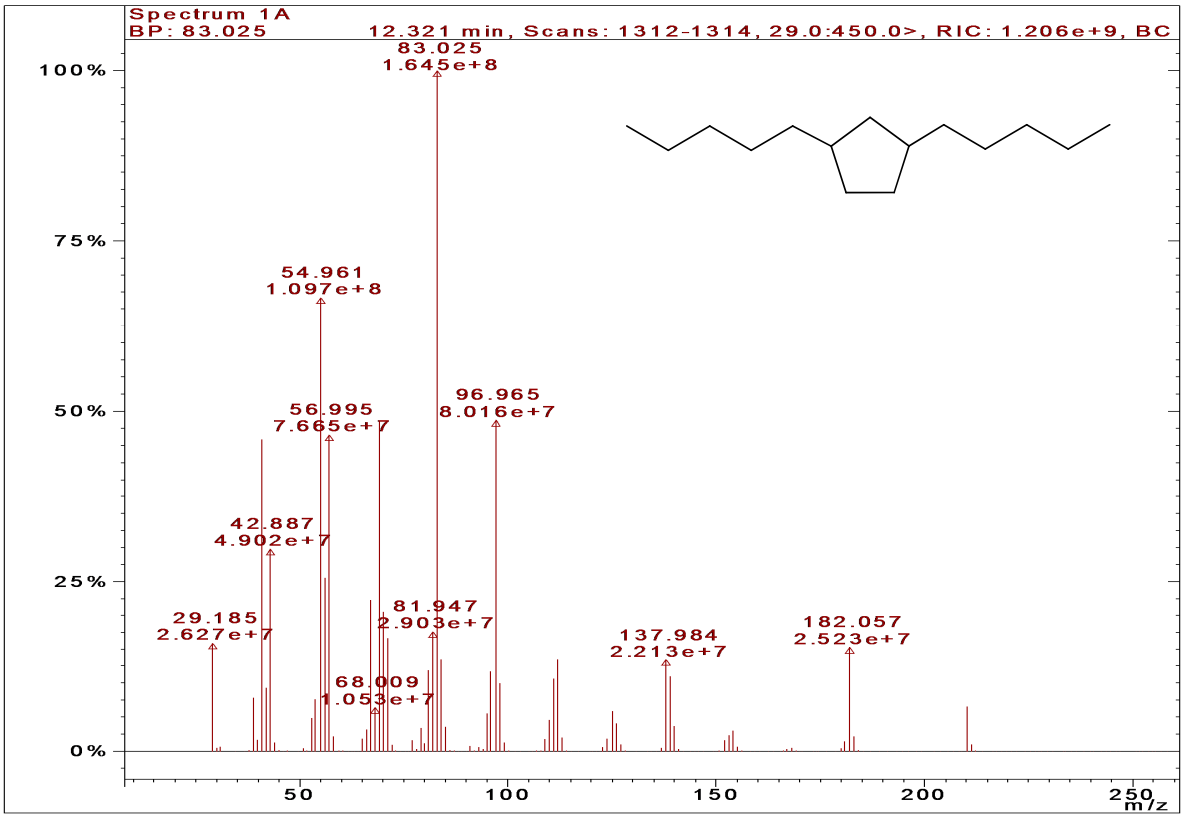

Figure S8. Mass spectrogram of the 1,3-dipentylcyclopentane from the solvent-free HDO of 2,5-bis(furan-2-ylmethyl)cyclopentanone.