Supplementary Information

Nature of polymeric condensates during furfural rearrangement to cyclopentanone and cyclopentanol over Cu-based catalysts

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1. Cu particle size of synthesized catalysts

Table S1. Cu particle sizes calculated via Scherrer equation from XRD diffraction peaks.

Catalyst	Cu particle size / nm
Cu	46.0
Cu-Na	48.7
Cu-Mg	44.1
Cu-K	40.6
Cu-Ca	29.0
Cu-Ba	53.3

2. Blank tests for furfural and FOL reactions without catalyst.

Table S2. Reactivity of all catalysts for furfural rearrangement reaction at 180 °C.

Reactant	Conversion / %	Yield / %		Carbon balance / %
		CPO	CPL	
FAL	47.6	-	-	52.4
Reaction conditions: reactant: 0.25 mL furfural in 20 mL water, hydrogen pressure: 1 MPa, reaction time: 4 h.				

3. FT-IR spectrum of all fresh catalysts.

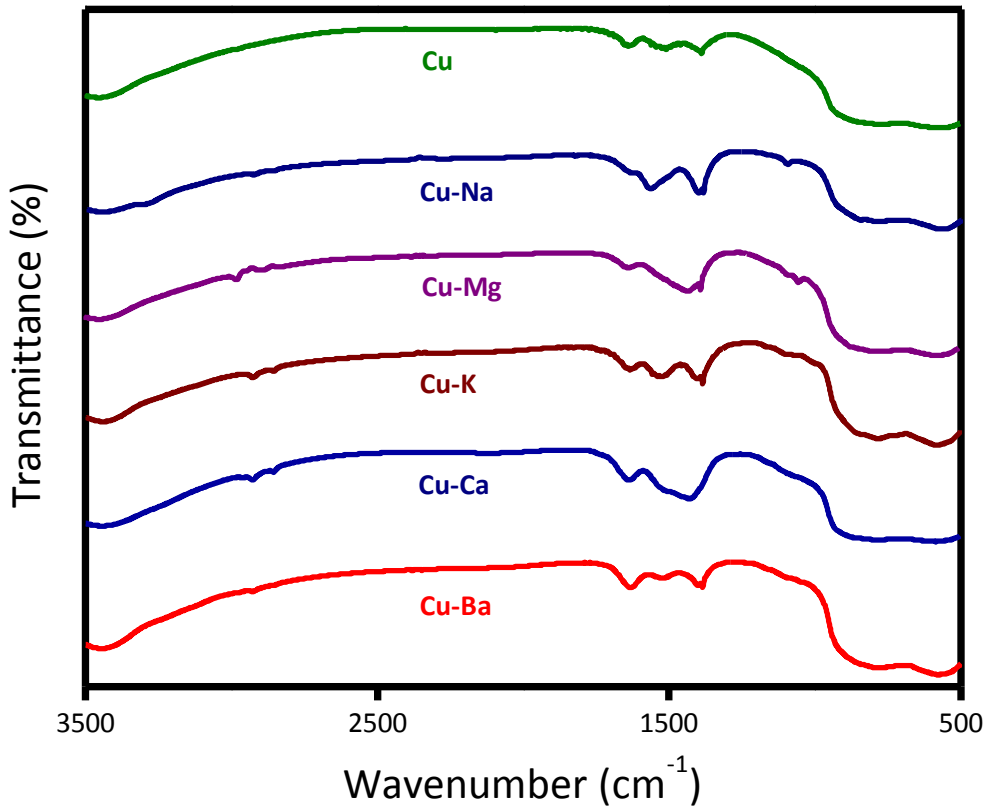


Figure S1. FT-IR spectra of all fresh catalysts.

4. Pyrolysis GC-MS of spent Cu-Ba catalyst

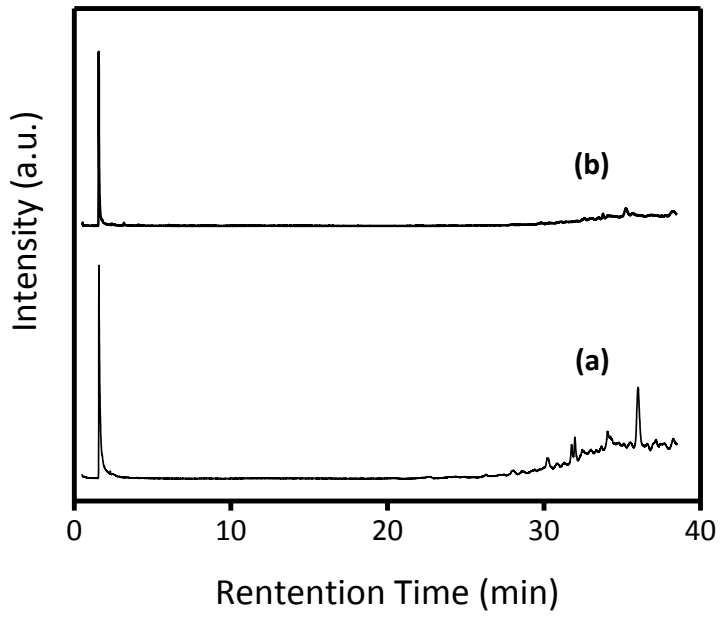
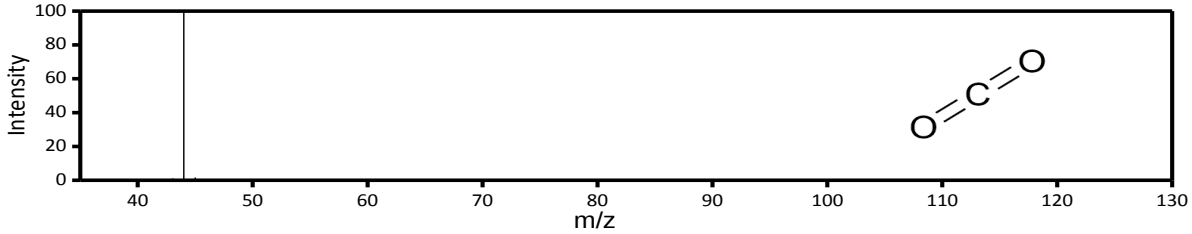
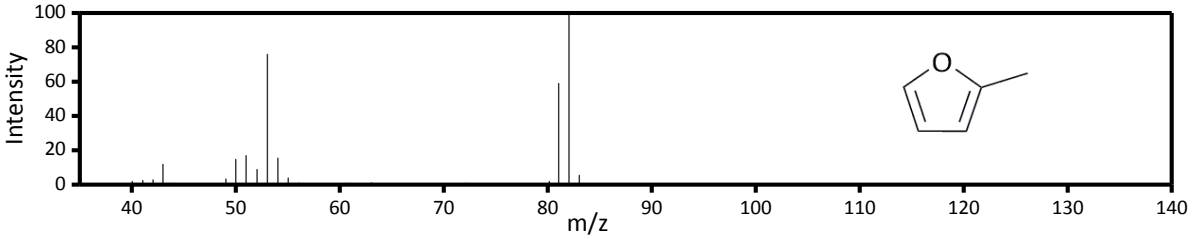
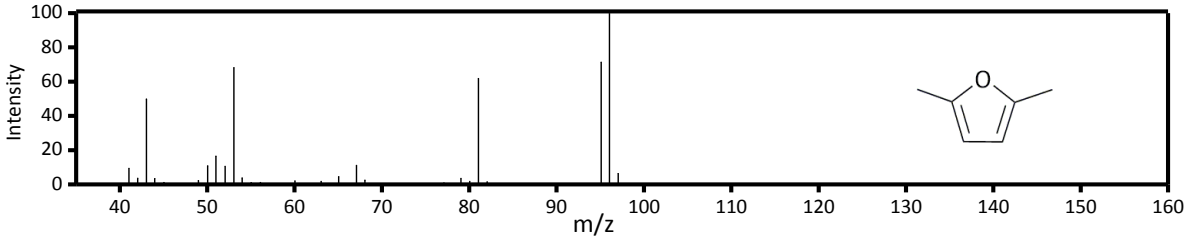


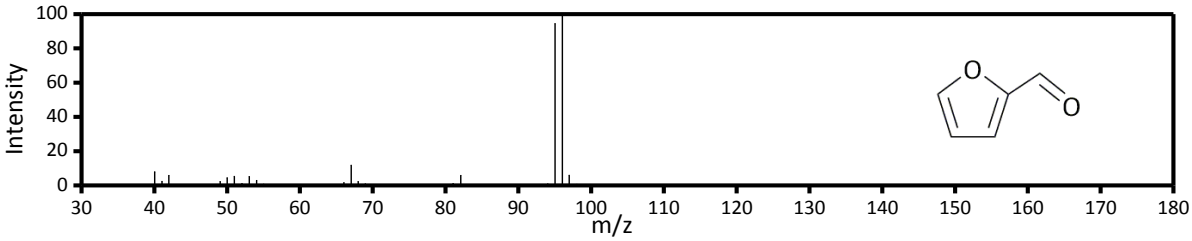
Figure S2. Total ion intensity of pyrolysis GC-MS for spent catalysts from (a) furfural rearrangement and (b) FOL rearrangement.

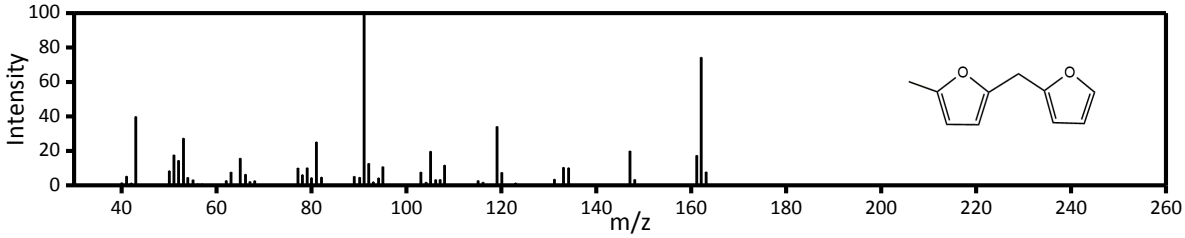
5. Original MS traces from pyrolysis GC-MS of spent Cu/Al_2O_3 catalyst from furfural rearrangement



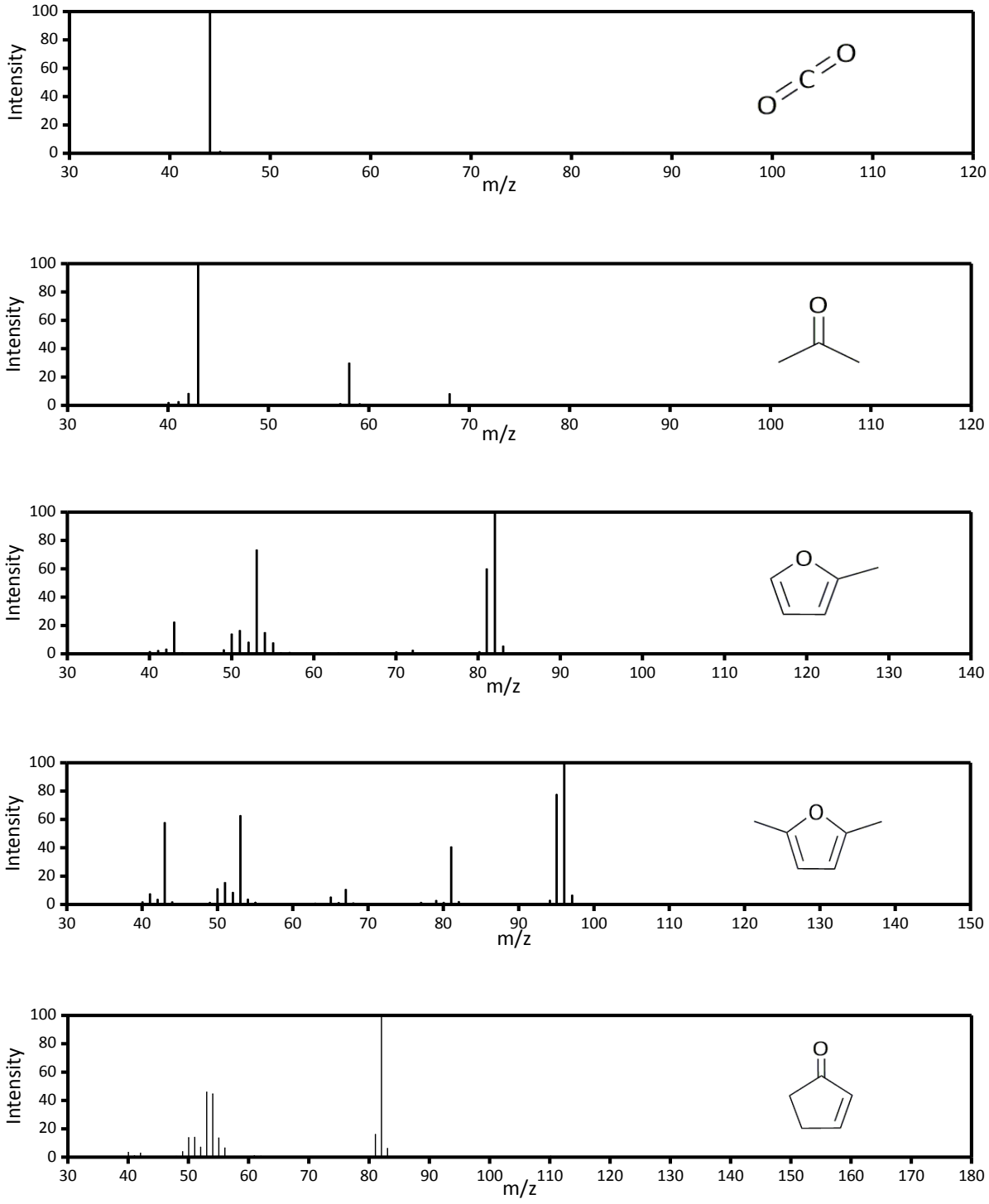


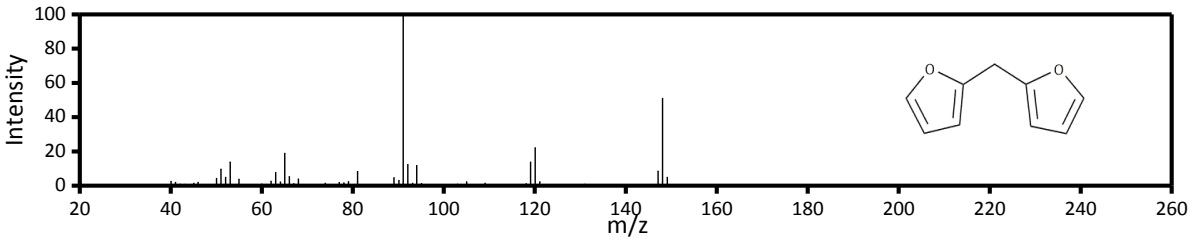






6. Original MS traces from pyrolysis GC-MS of spent Cu/Al_2O_3 catalyst from furfuryl alcohol rearrangement

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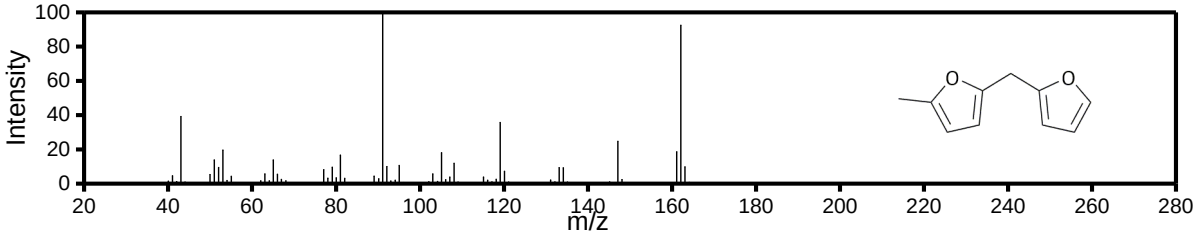
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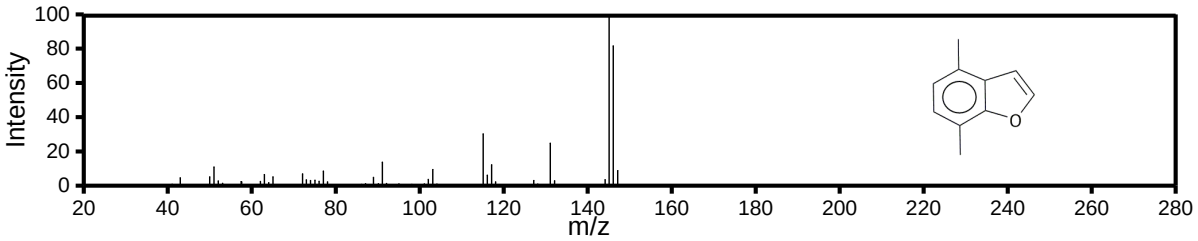
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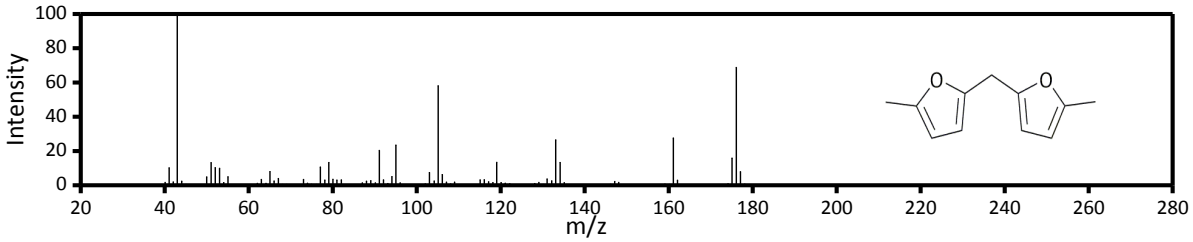
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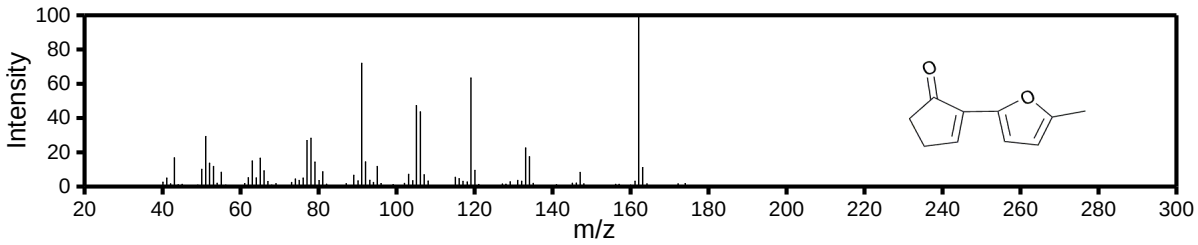
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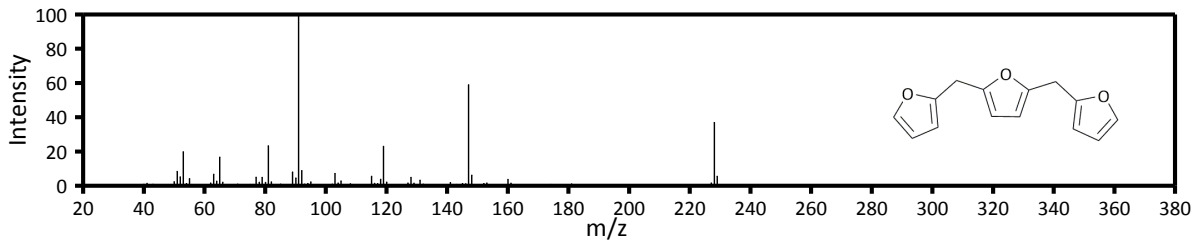
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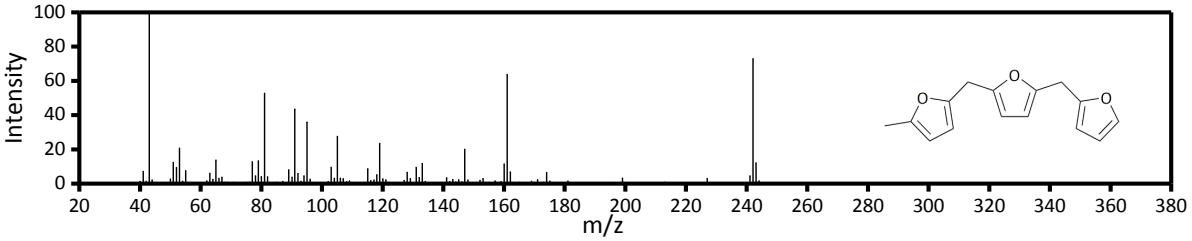
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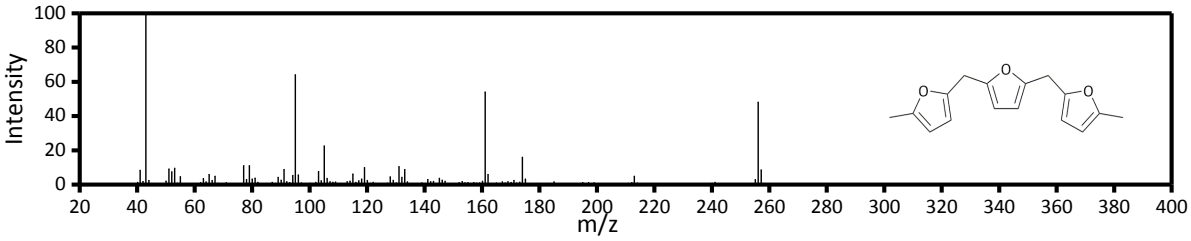
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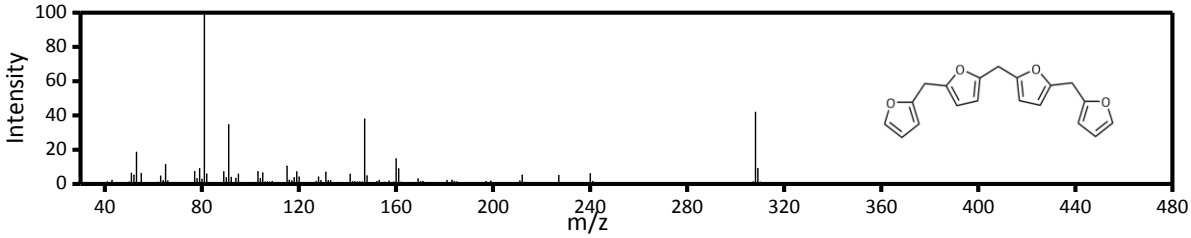
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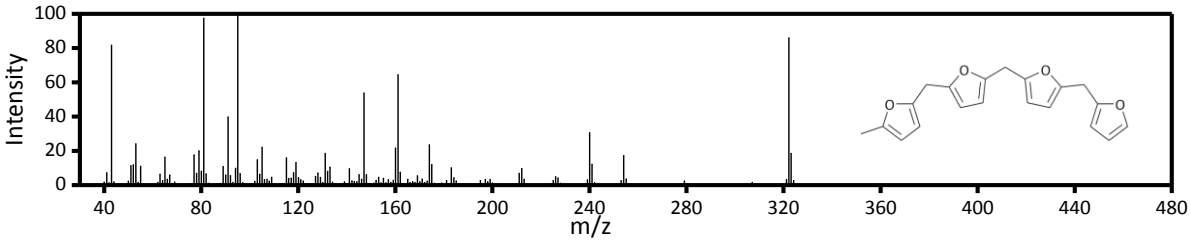
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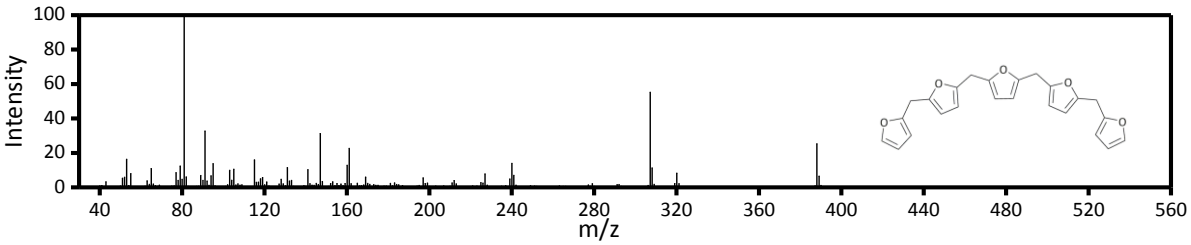
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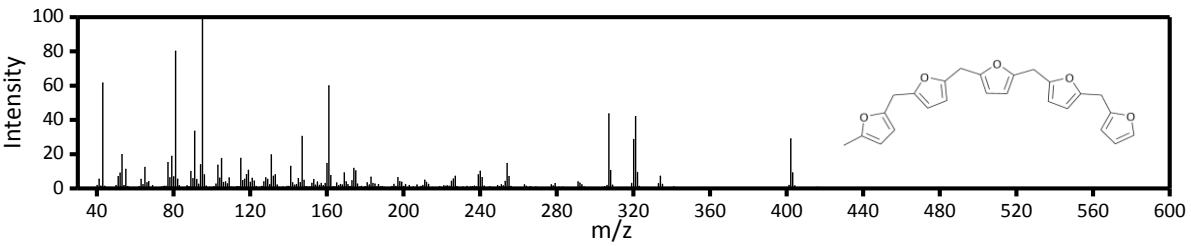
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