Supporting information for

Selective aldol condensation of biomass-derived levulinic acid and furfural in aqueous-phase over MgO and ZnO

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Table S1 TOF values of 4b on nano-ZnO-x normalized with acid sites.

Catalyst	Crystalline size/ nm	acid sites/ umol g^{-1}	Normalised TOF / h^{-1}
Nano-ZnO-250	15.5	119.2	34
Nano-ZnO-450	19.4	90.6	49
Nano-ZnO-650	34.8	47.2	73
Nano-ZnO-850	41.8	31.7	116

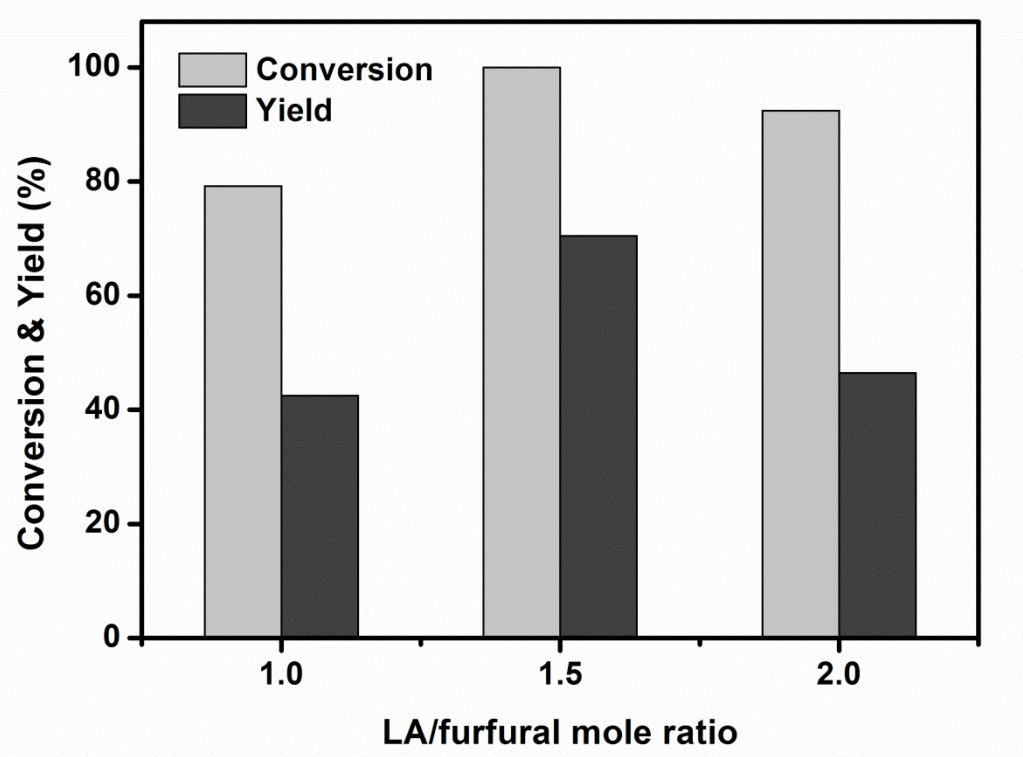

Figure S1 Effect of LA/furfural mole ratio on furfural conversion and yield of **4a** in the aldol reaction of furfural and sodium levulinate on MgO. Reaction conditions: 4 mmol furfural, 3 mL H_2O, 0.1 g MgO, 85 °C, 1.5 h, and 1 atm Ar.

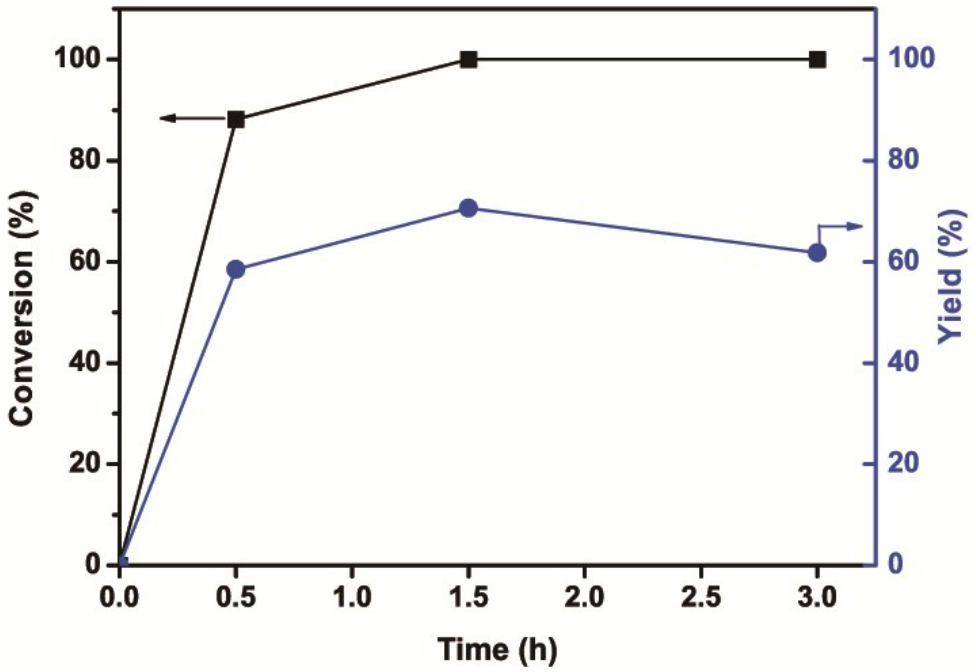

Figure S2 Conversion of furfural and yield of **4a** as a function of time in the aldol reaction of furfural and sodium levulinate on MgO. Reaction conditions: 6 mmol sodium levulinate, 4 mmol furfural, 3 mL H_2O, 0.1 g MgO, 85 °C, and 1 atm Ar.

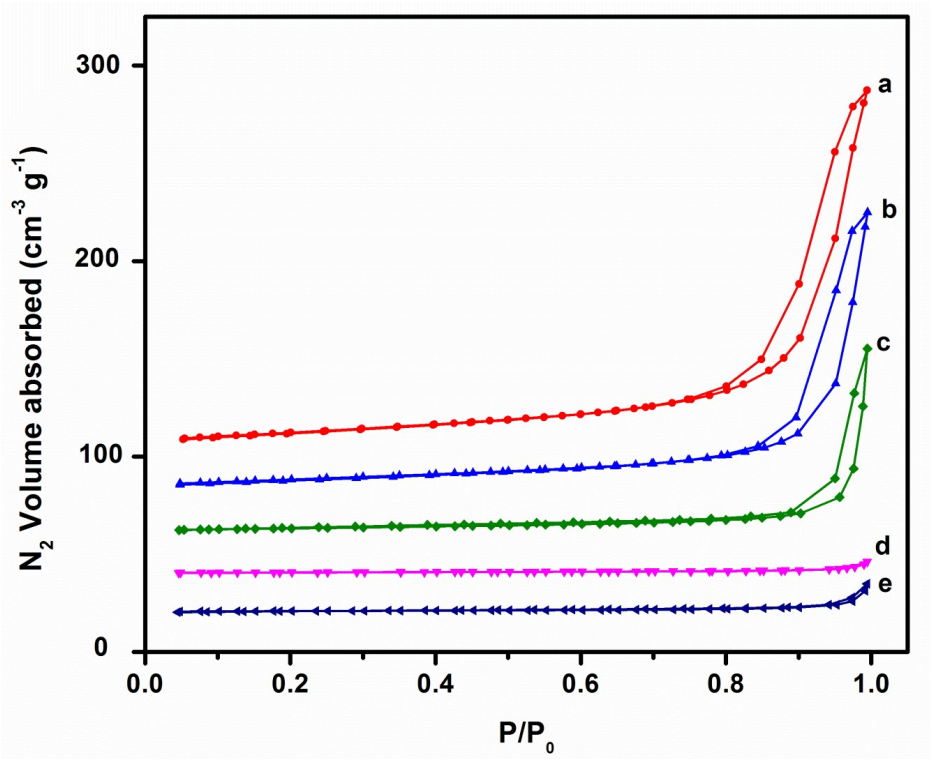

Figure S3 Nitrogen adsorption and desorption isotherms curves of ZnO samples: (a) nano-ZnO-250, (b) nano-ZnO-450, (c) nano-ZnO-650, and (d) nano-ZnO-850, and (e) ZnO.

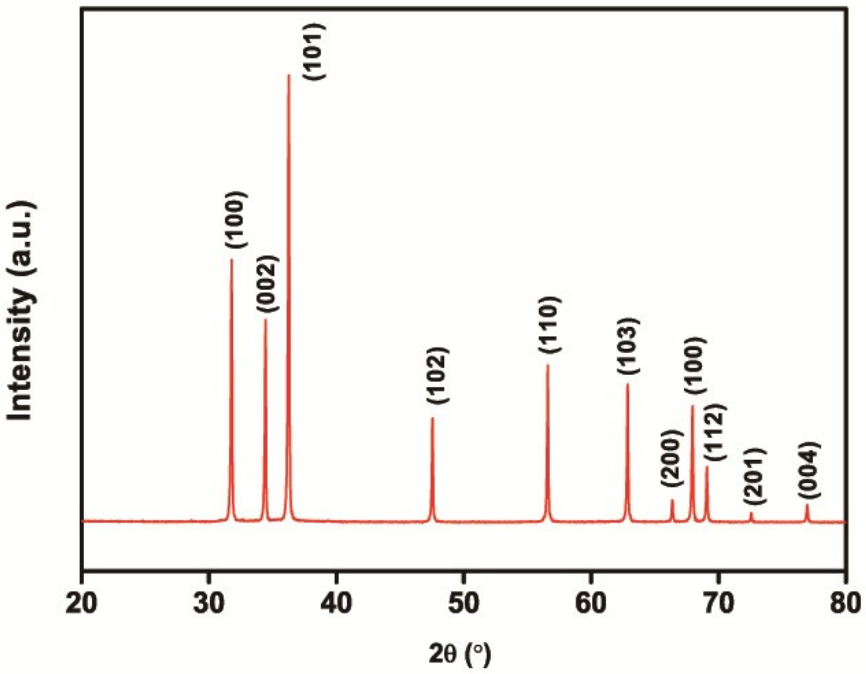

Figure S4 XRD patterns of ZnO

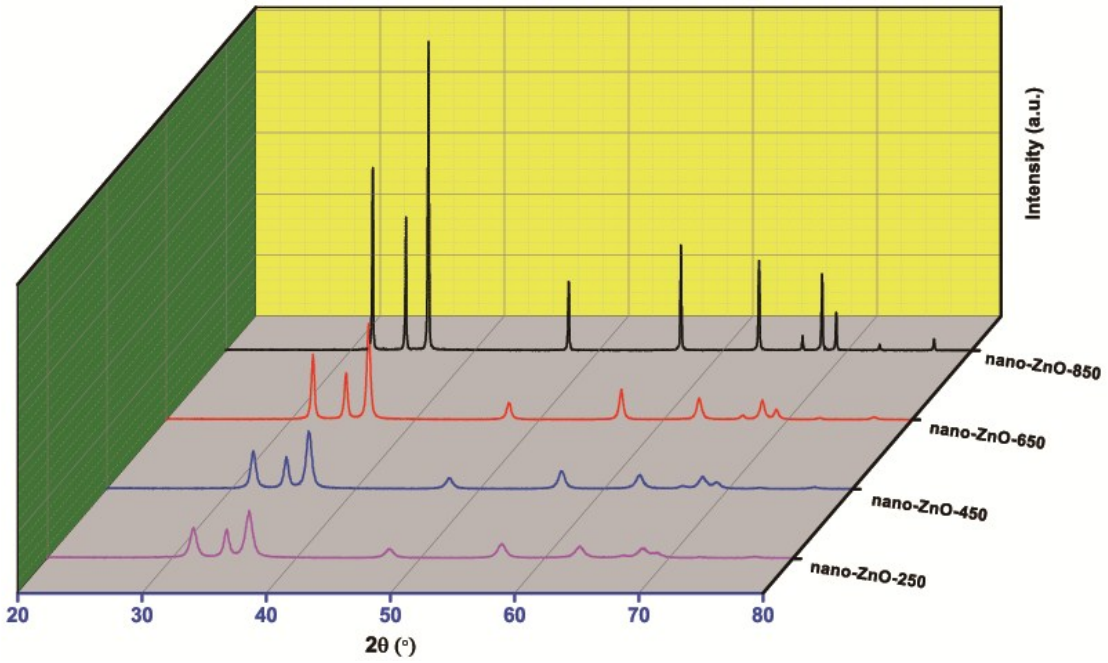

Figure S5 XRD patterns of nano- ZnO calcined at different temperatures.

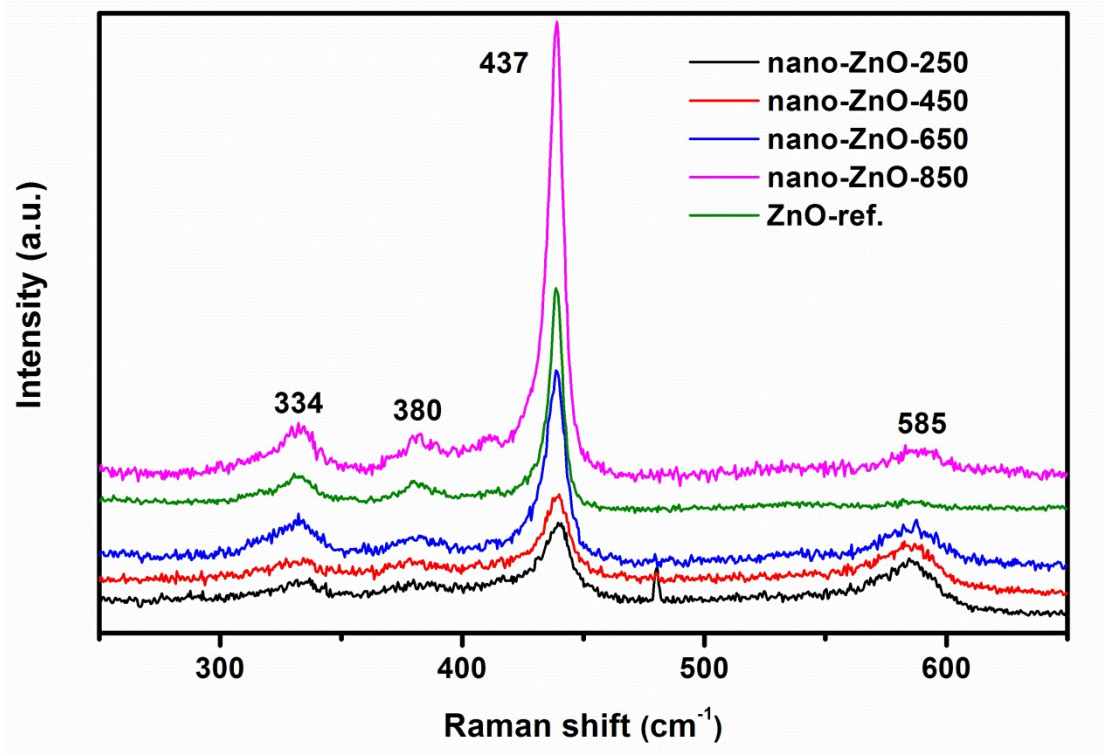

Figure S6 Raman spectra of nano-ZnO calcined at different temperatures.

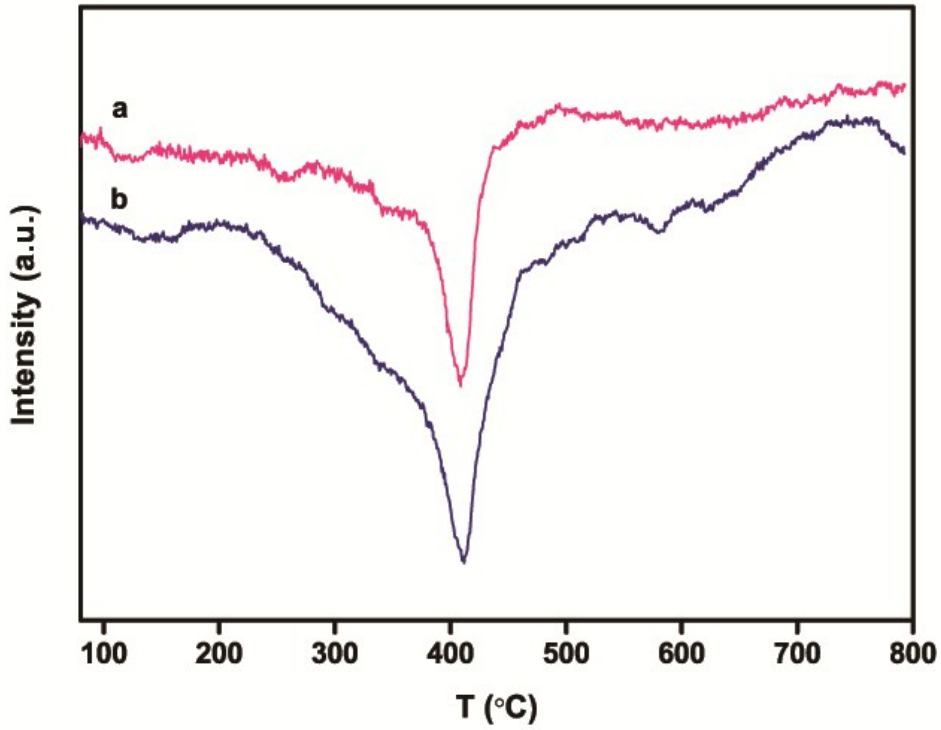

Figure S7 Temperature-programmed desorption profile of H_2O on ZnO pretreated at (a) 450, and (b) 200 °C in flowing Ar.

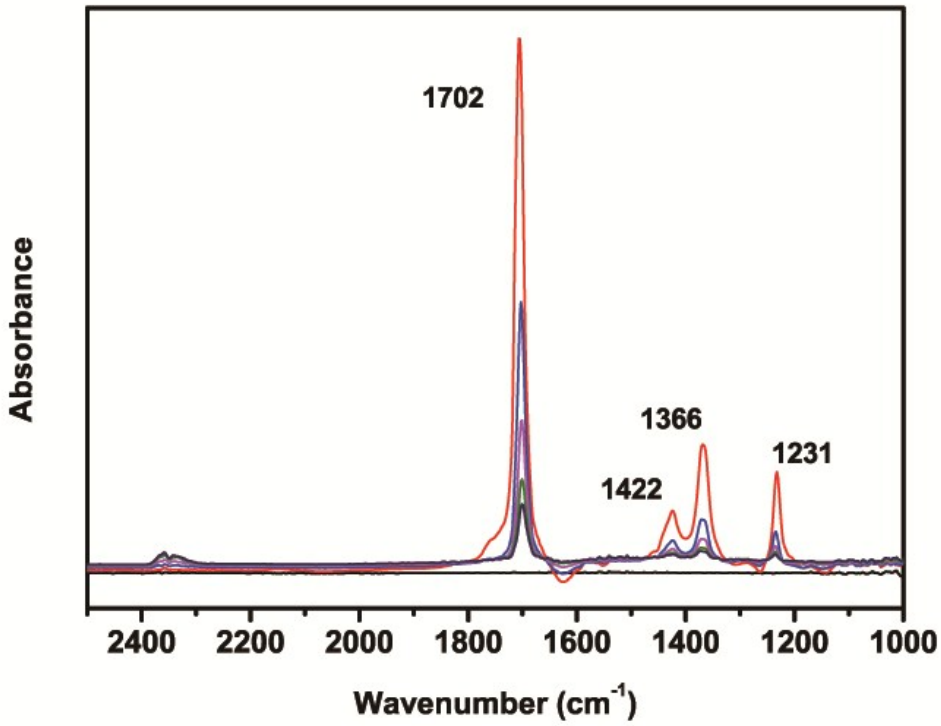

Figure S8 In situ DRIFT spectra of chemisorbed acetone on nano- ZnO-450 with He purging.

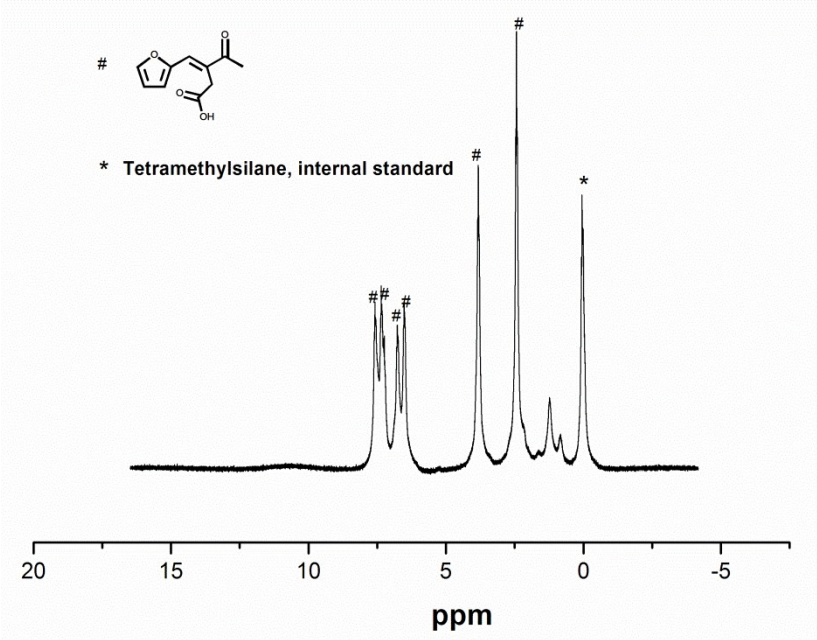

Figure S9 1H NMR spectra of **4b** with $CDCl_3$ as solvent at room temperature.

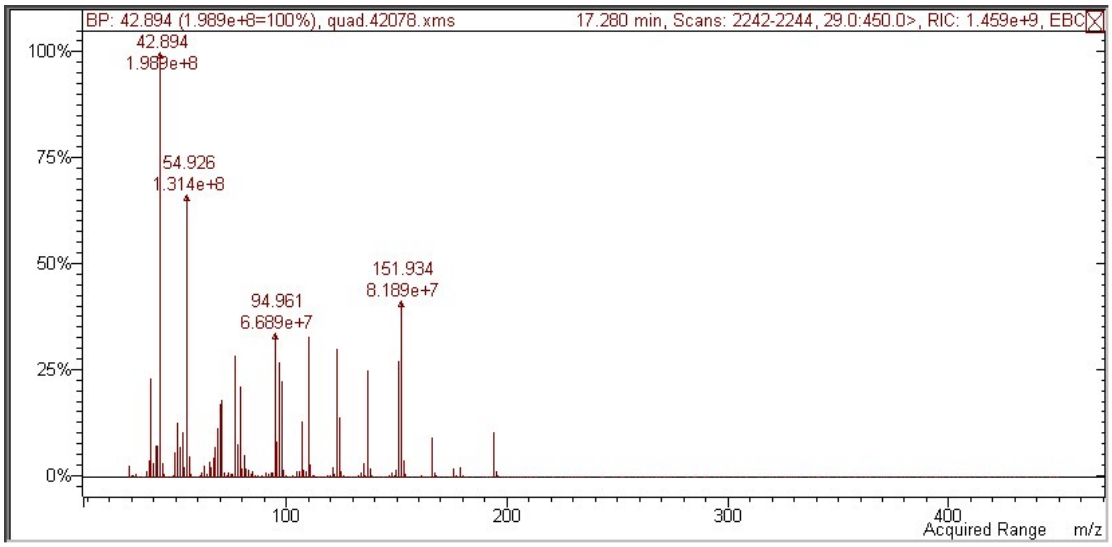

Figure S10 GC-MS spectra of **4b**.

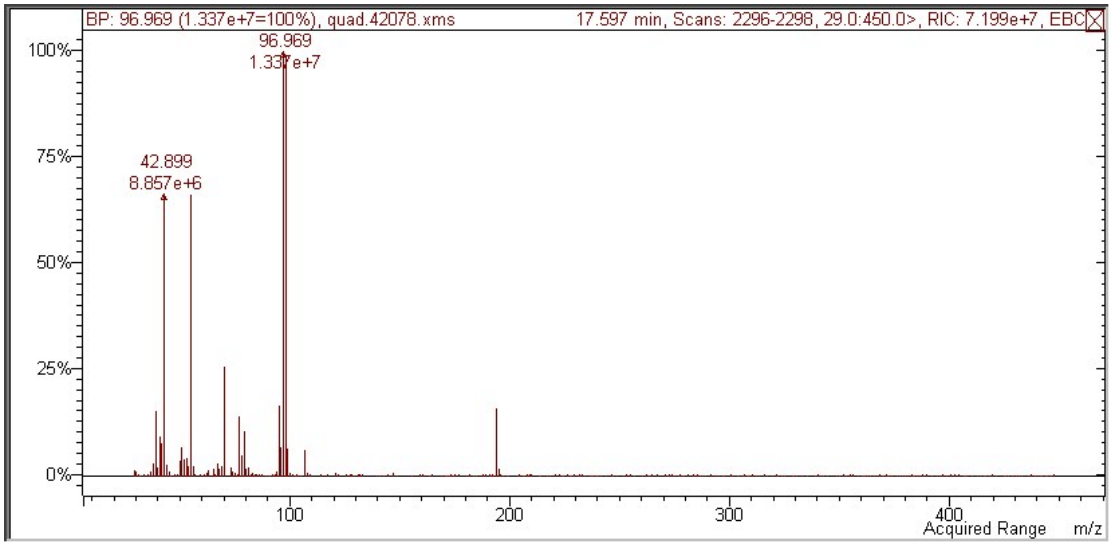

Figure S11 GC-MS spectra of **4a**.