**Synthesis and characterization of potential impurities of Vigabatrin-An anti epileptic drug**

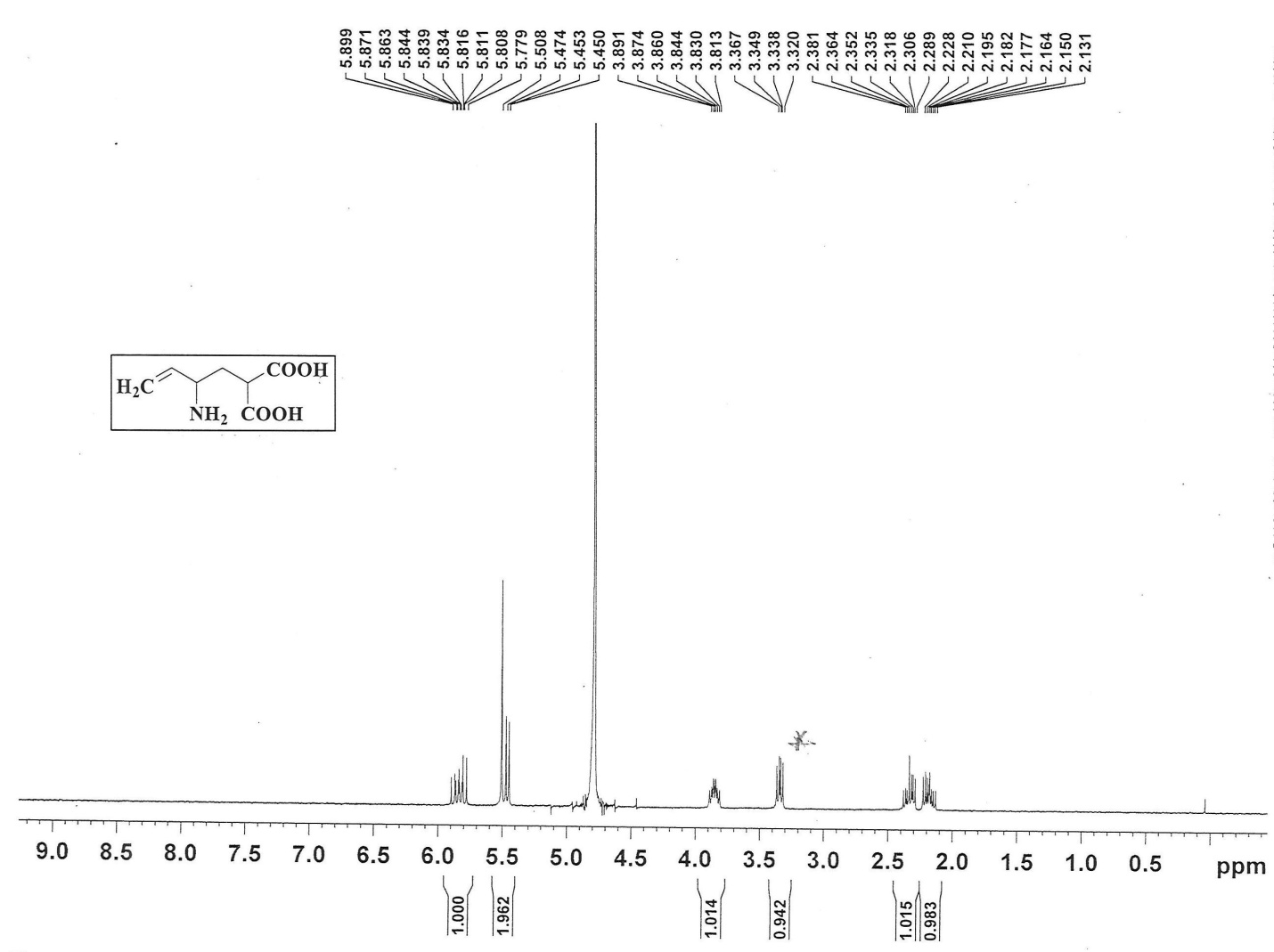
Kishore Karumanchi,a, b\* Senthil Kumar Natarajan,a Sunil Gadde,a Ramadas Chavakula,a Raghu Babu Korupolub and Kishore Babu Bonigeb

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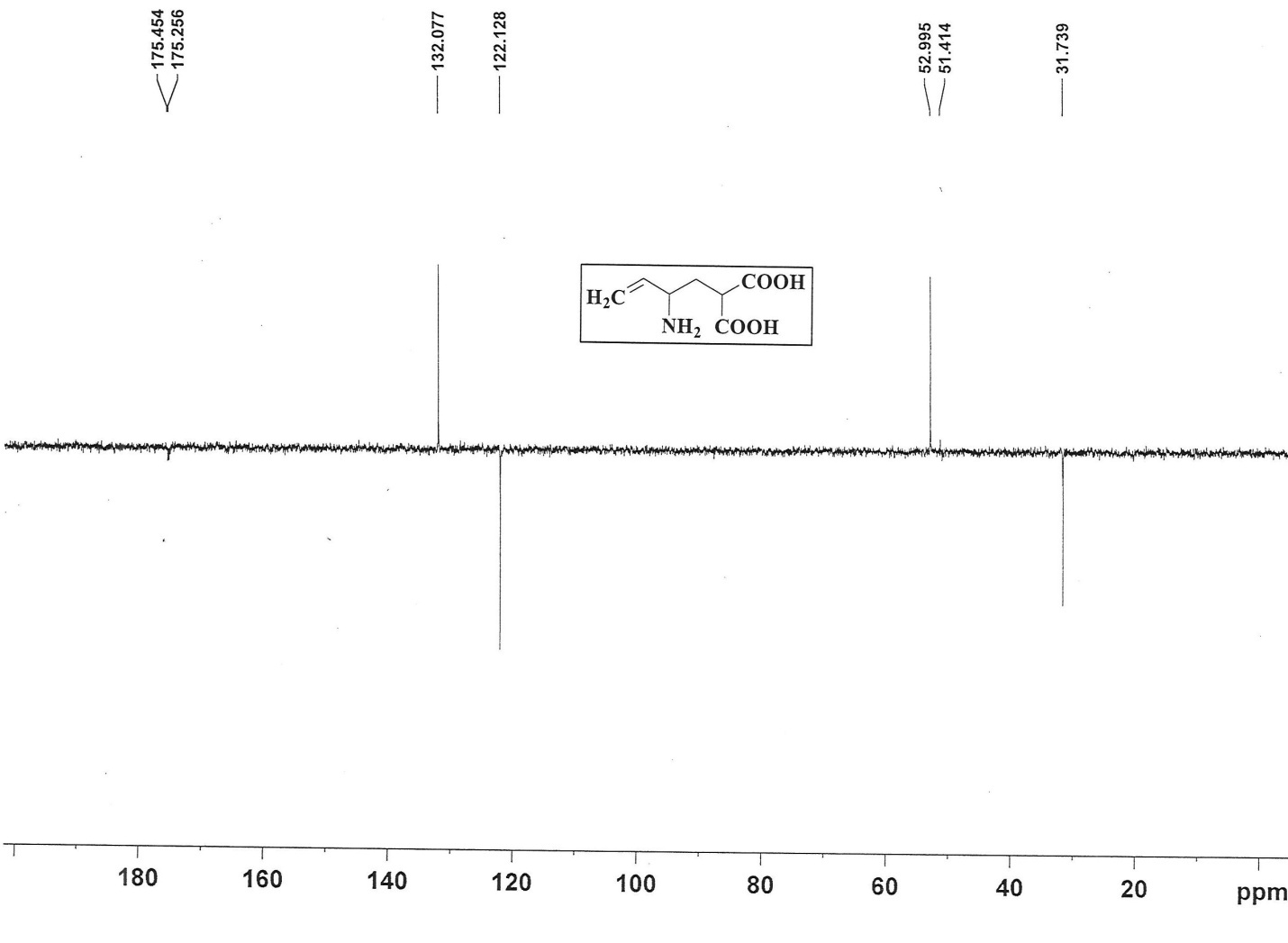
**EXPERIMENTAL SECTION**

**Preparation of 5-ethyl-2-pyrrolidinone (18)**

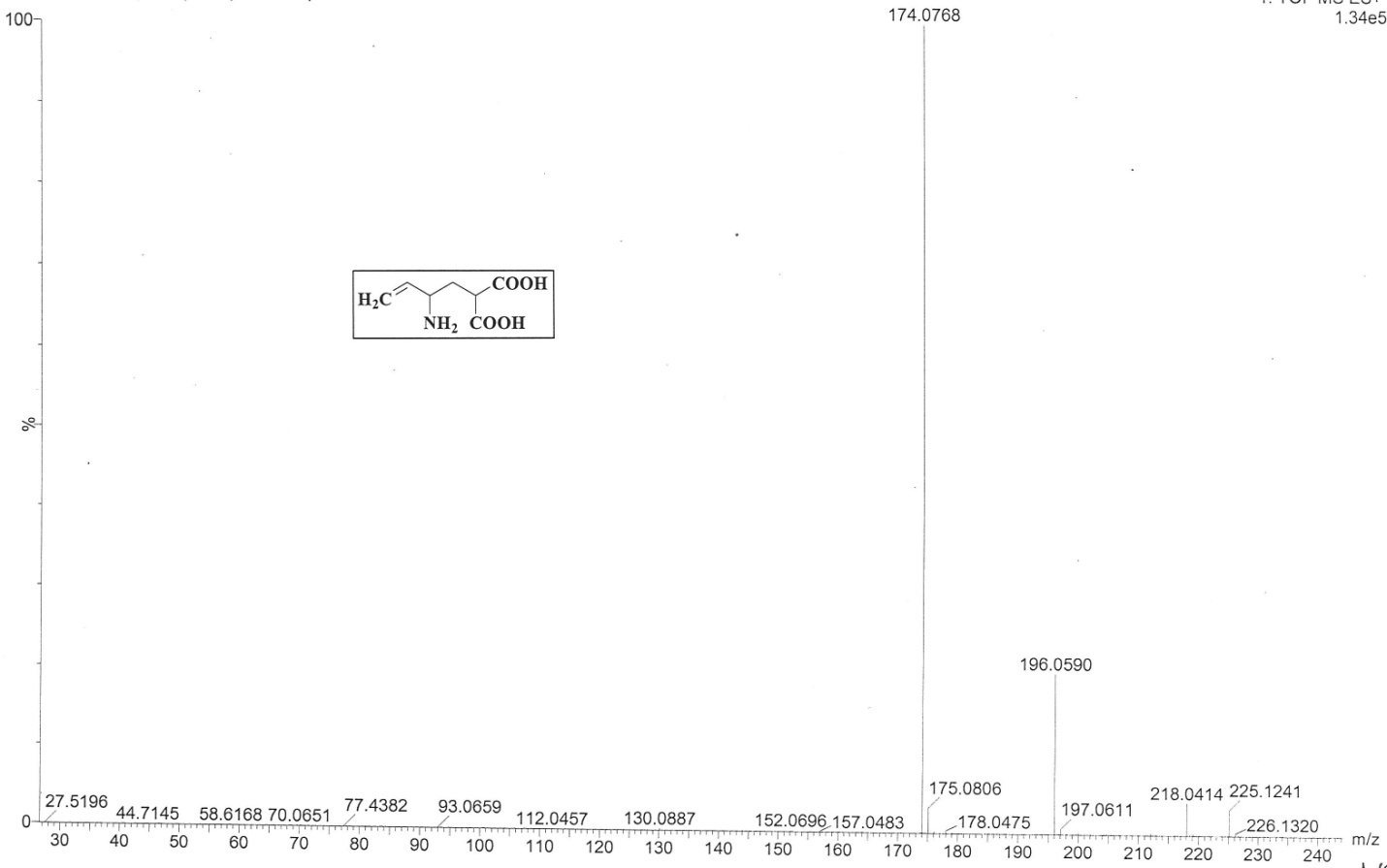
Ethyl magnesium bromide (2 M, 495 mL, 0.97 mol) was added to a solution of **16** (50 g, 0.39 mol) in THF (150 mL) at -15 to -10°C potion wise over 1h under nitrogen atmosphere. The reaction mixture was warmed slowly to reflux and was stirred for 2 h under reflux. The reaction mixture was cooled to 0 °C and treated cautiously with the mixture of DM water (500 mL) and acetic acid (100 mL). The THF in the reaction mass was distilled out completely under reduced pressure and the aqueous layer was extracted with DCM (500 mL). The organic layer was separated and distilled out completely under reduced pressure to afford **18** as brown syrup. The pure product was obtained by distilling at 120-140 °C at 16 mm of pressure to afford **18** (26 g, 50%) as pale yellow oil. 1H NMR (500 MHz, CDCl3): 0.92 (t, 3H, *J*=7.75 Hz), 1.43-1.58 (m, 2H), 1.67-1.83 (m, 1H), 2.20-2.32 (m, 3H), 3.69 (m, 1H), 6.47 (s, 1H); 13C NMR (300 MHz, D2O): 8.96, 25.79, 28.43, 30.19, 56.62, 181.15; GCMS (m/z) 113; IR (KBr) 3223, 2966, 2933, 2878, 1693, 1462, 1353, 1177, 1131 cm-1.

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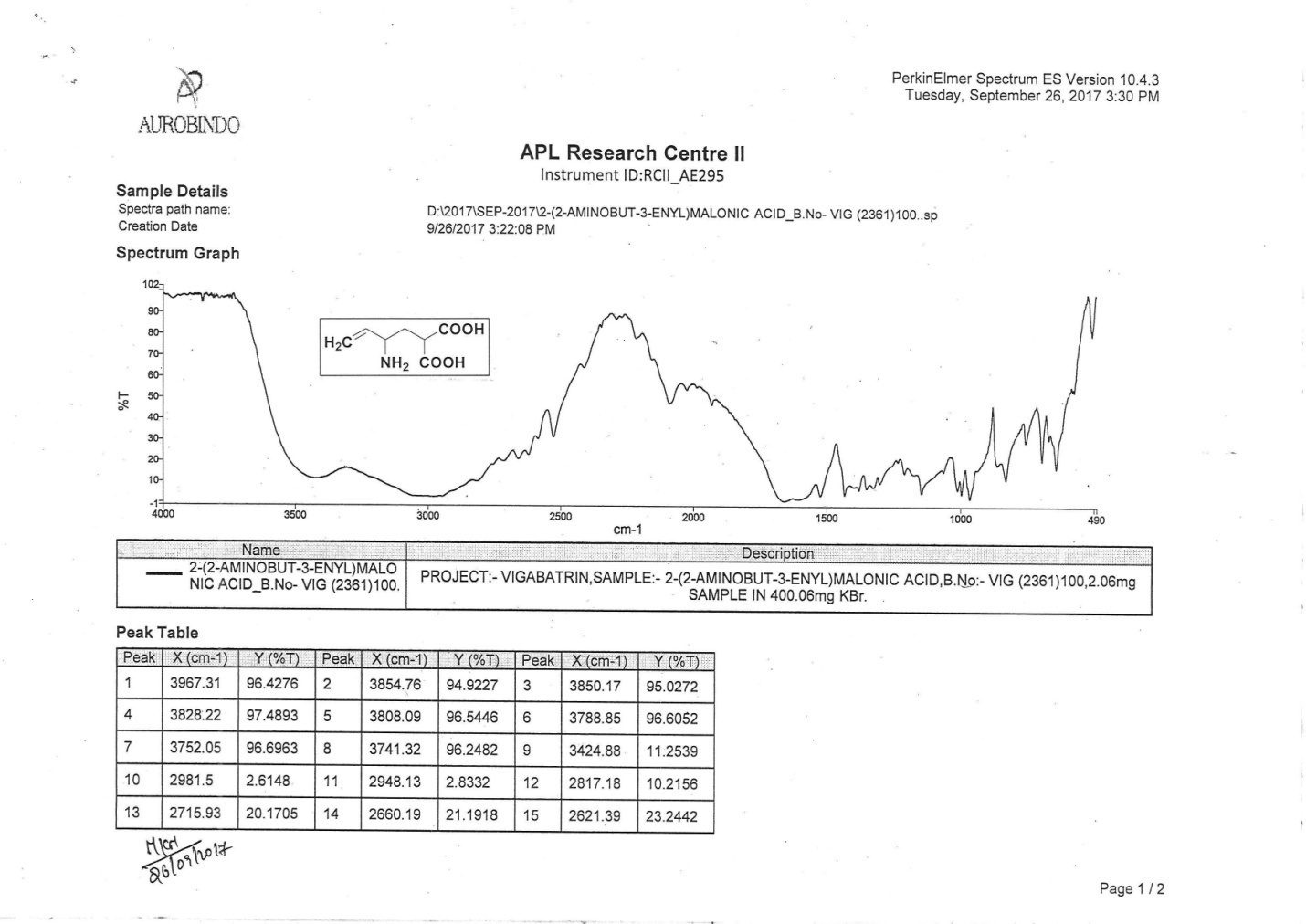
1H NMR spectrum of compound **2** in D2O

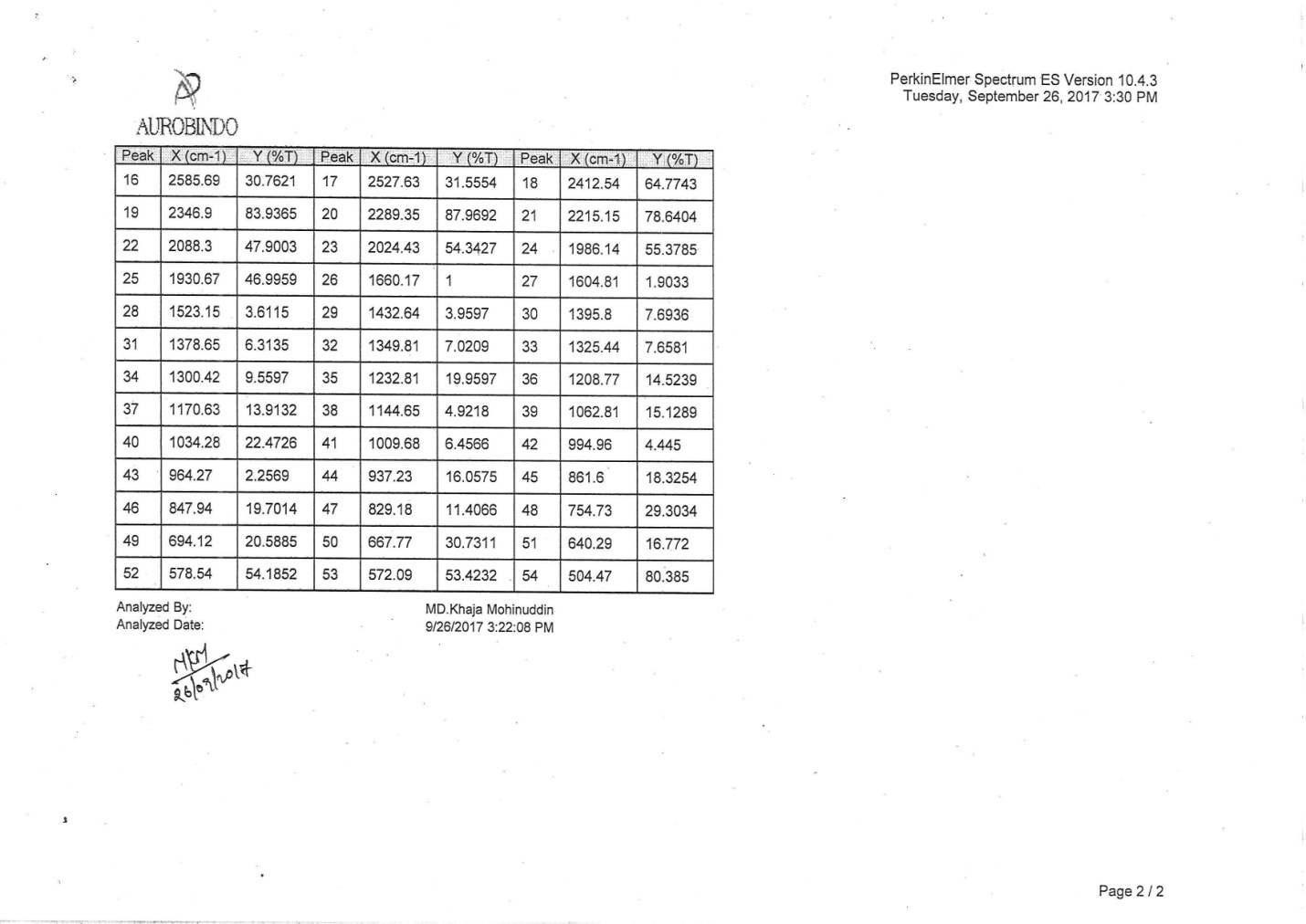
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13C NMR spectrum of compound **2** in D2O

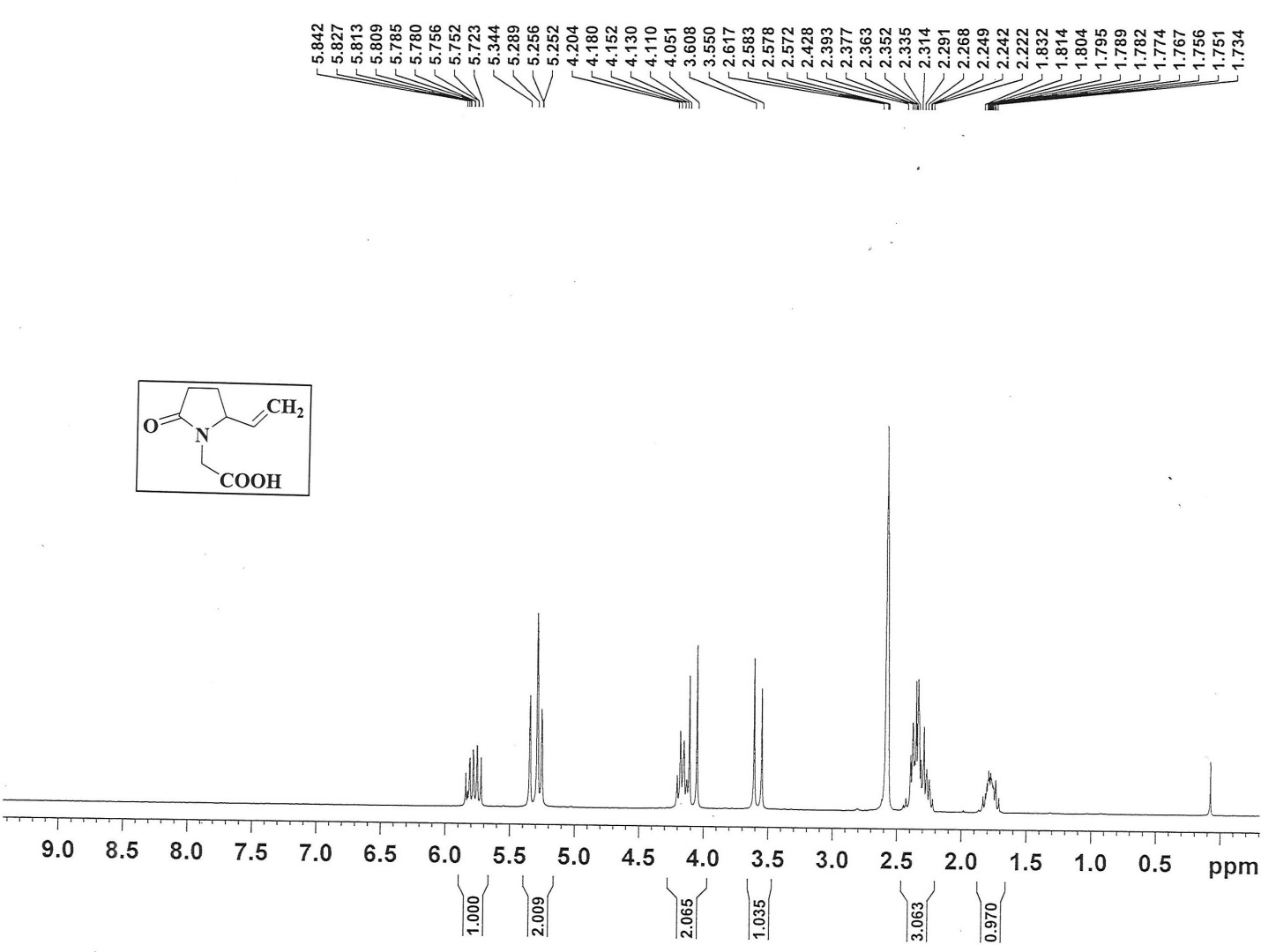


HRMS spectrum of compound **2**

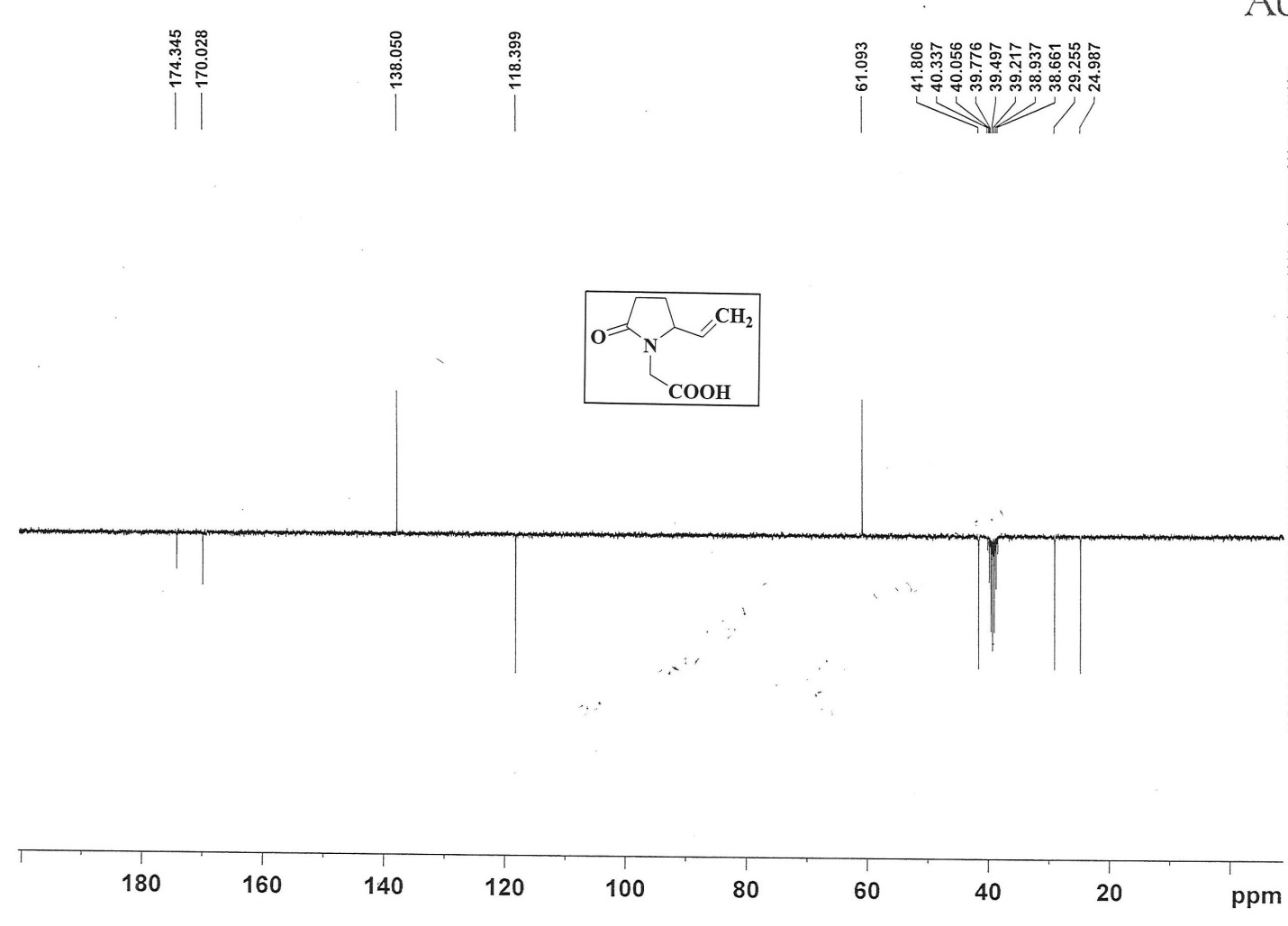
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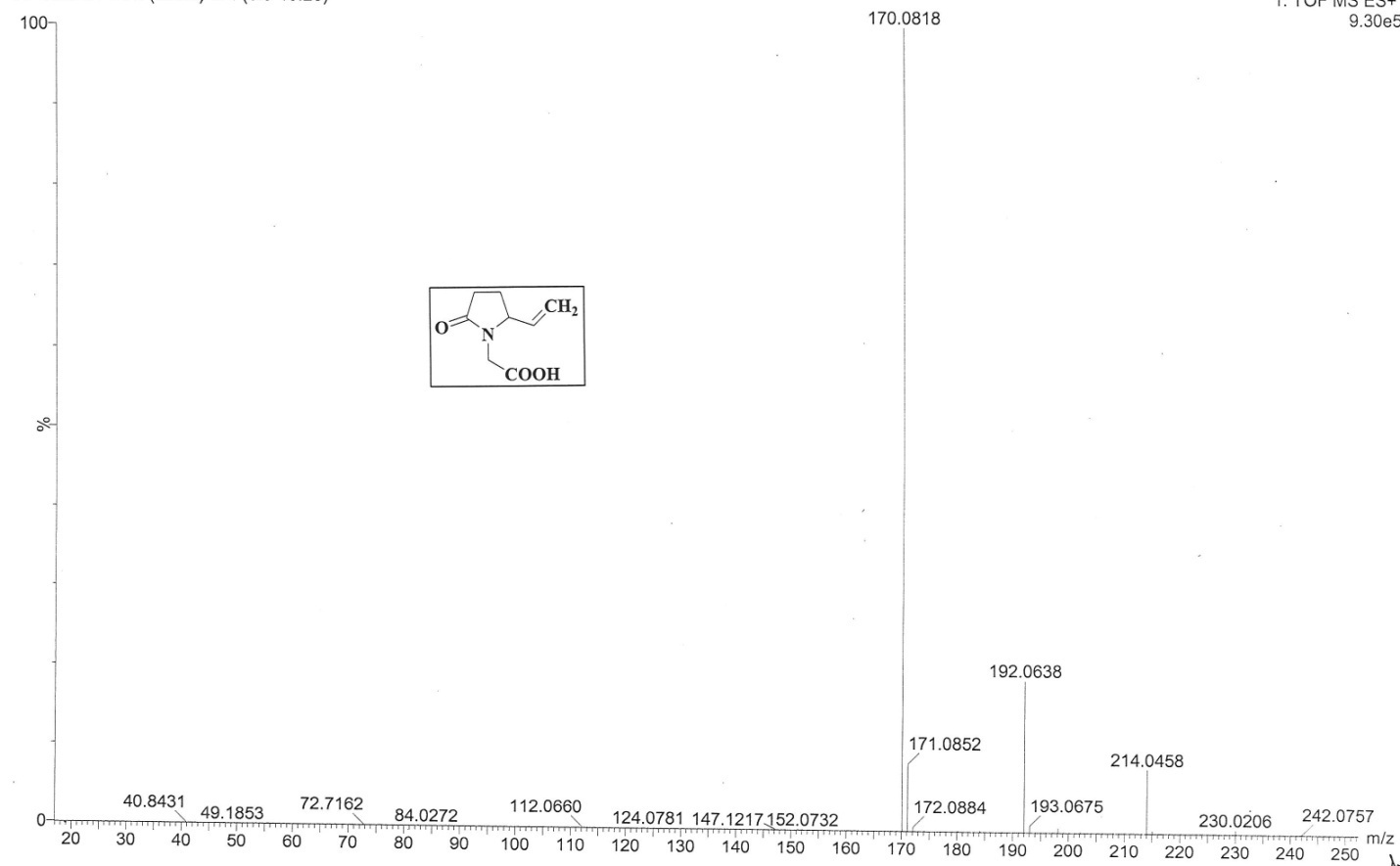
IR spectrum of compound **2**



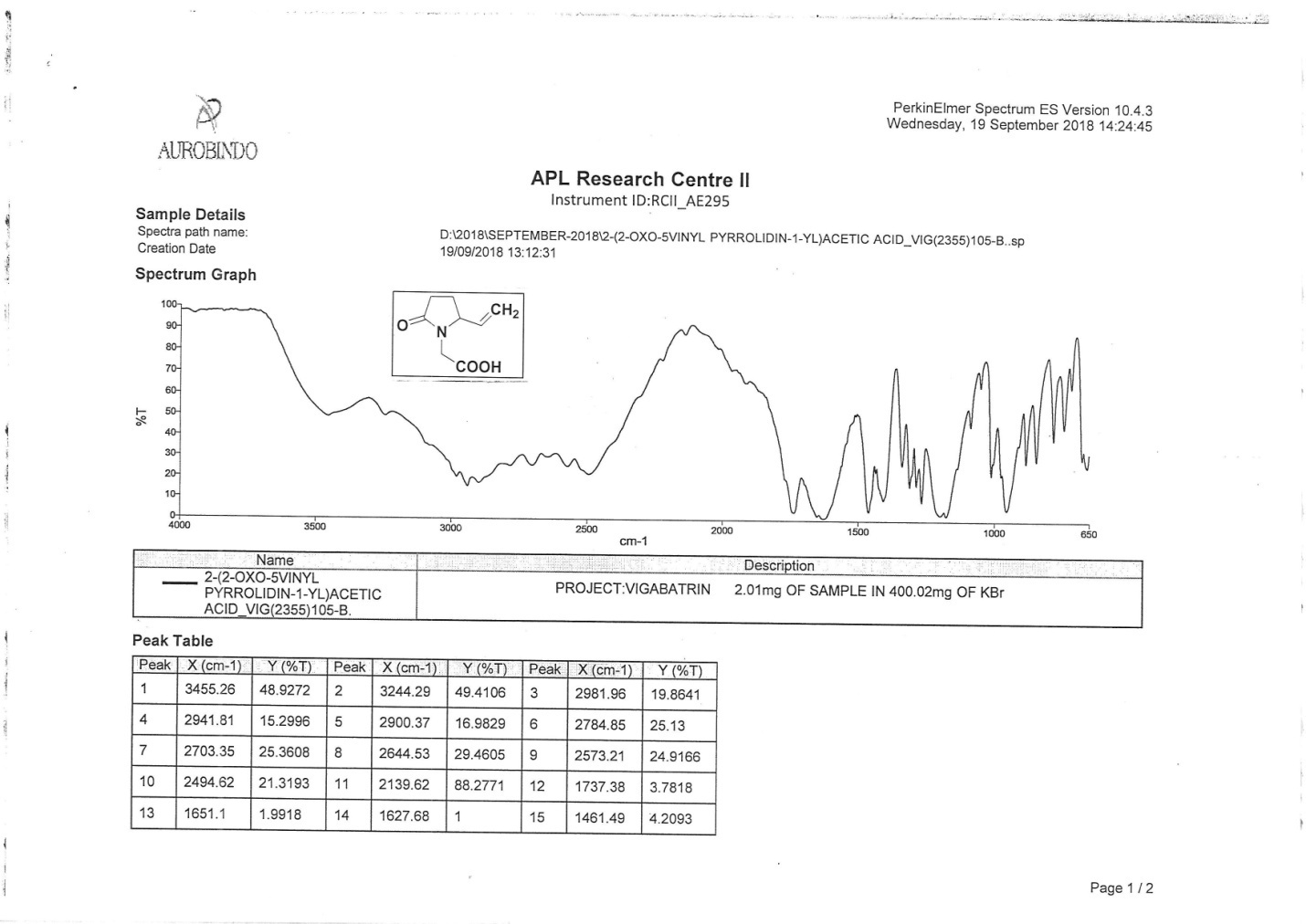
1H NMR spectrum of compound **3** in DMSO-*d6*

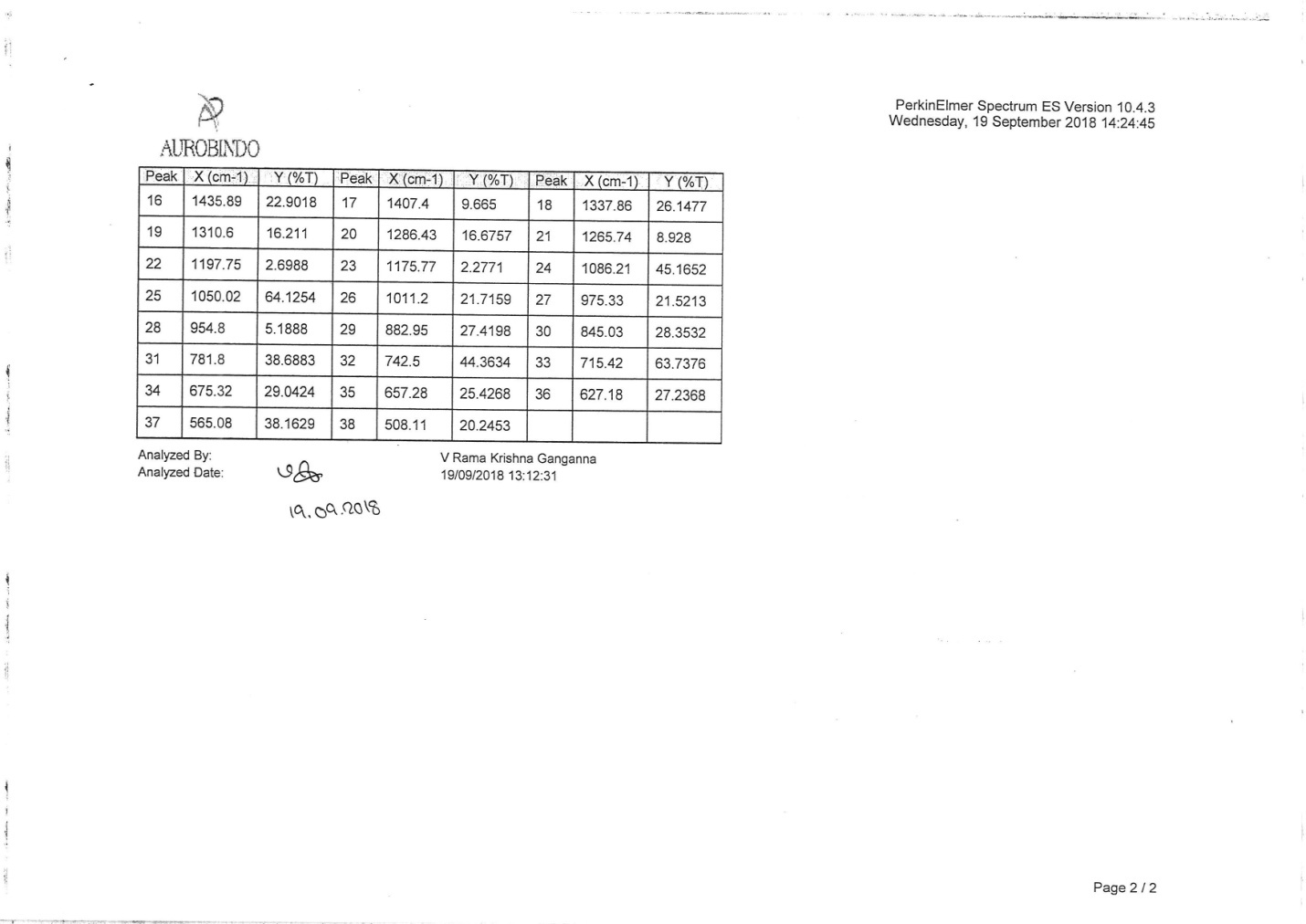


13C NMR spectrum of compound **3** in DMSO-*d6*

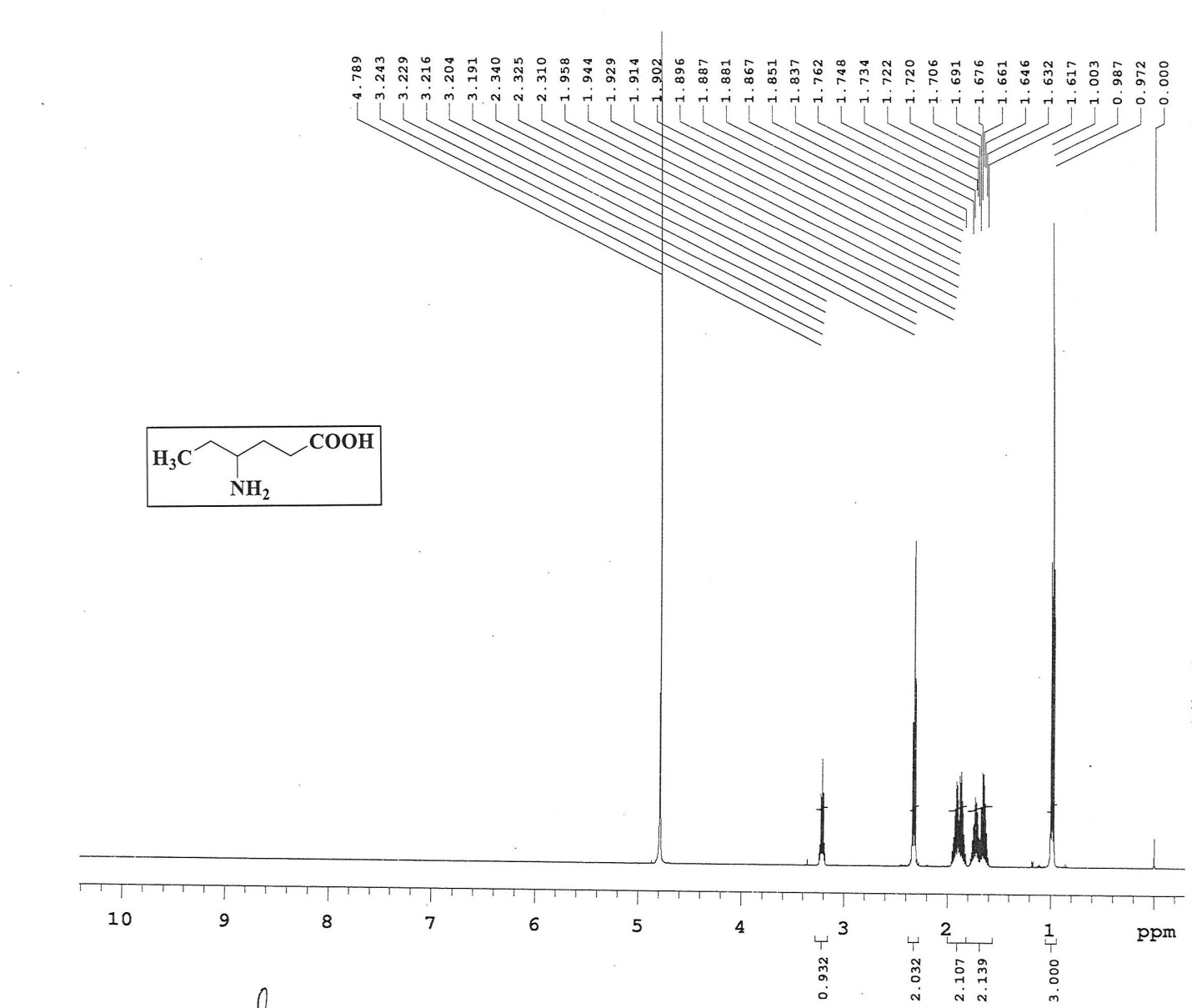


HRMS spectrum of compound **3**

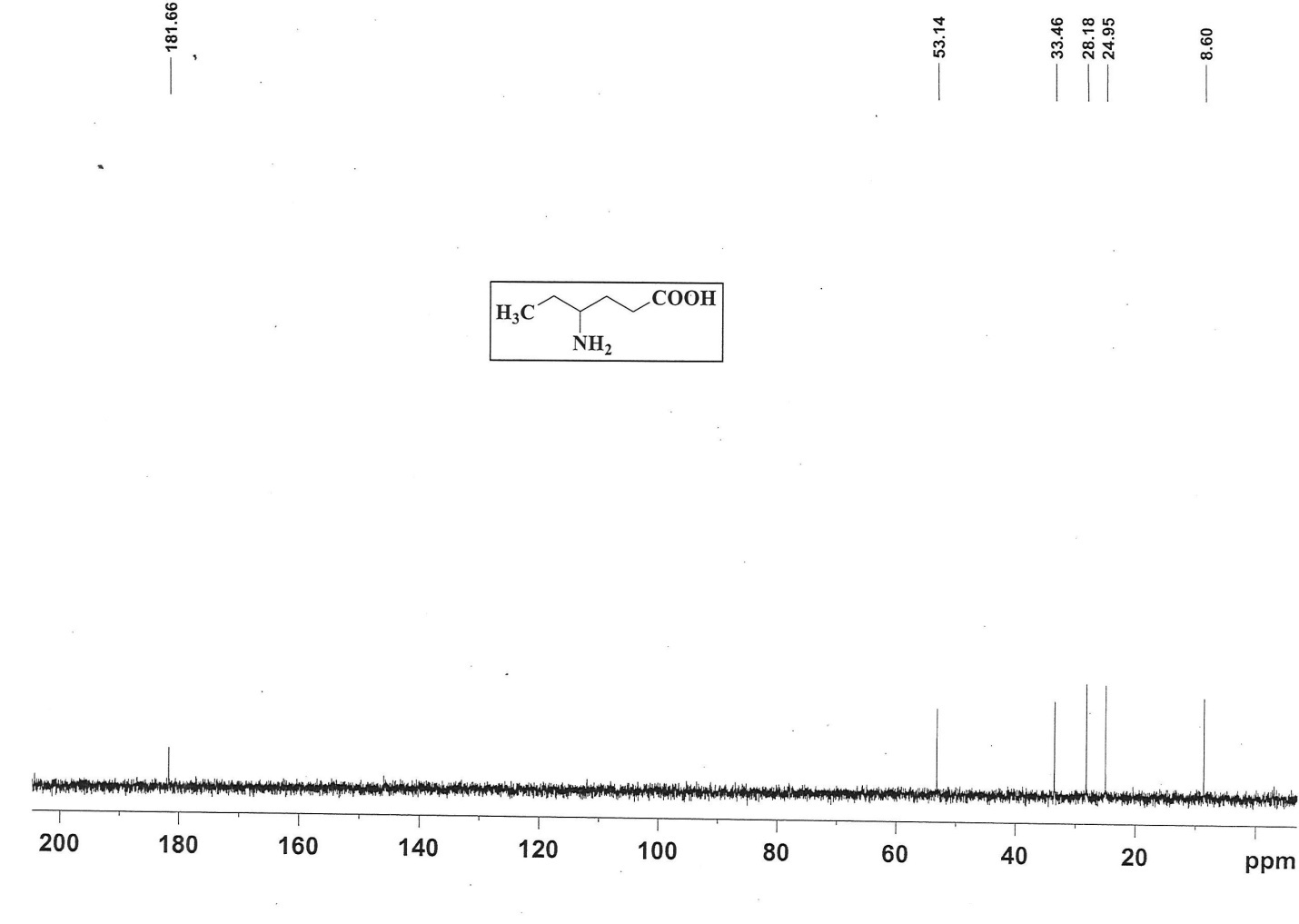




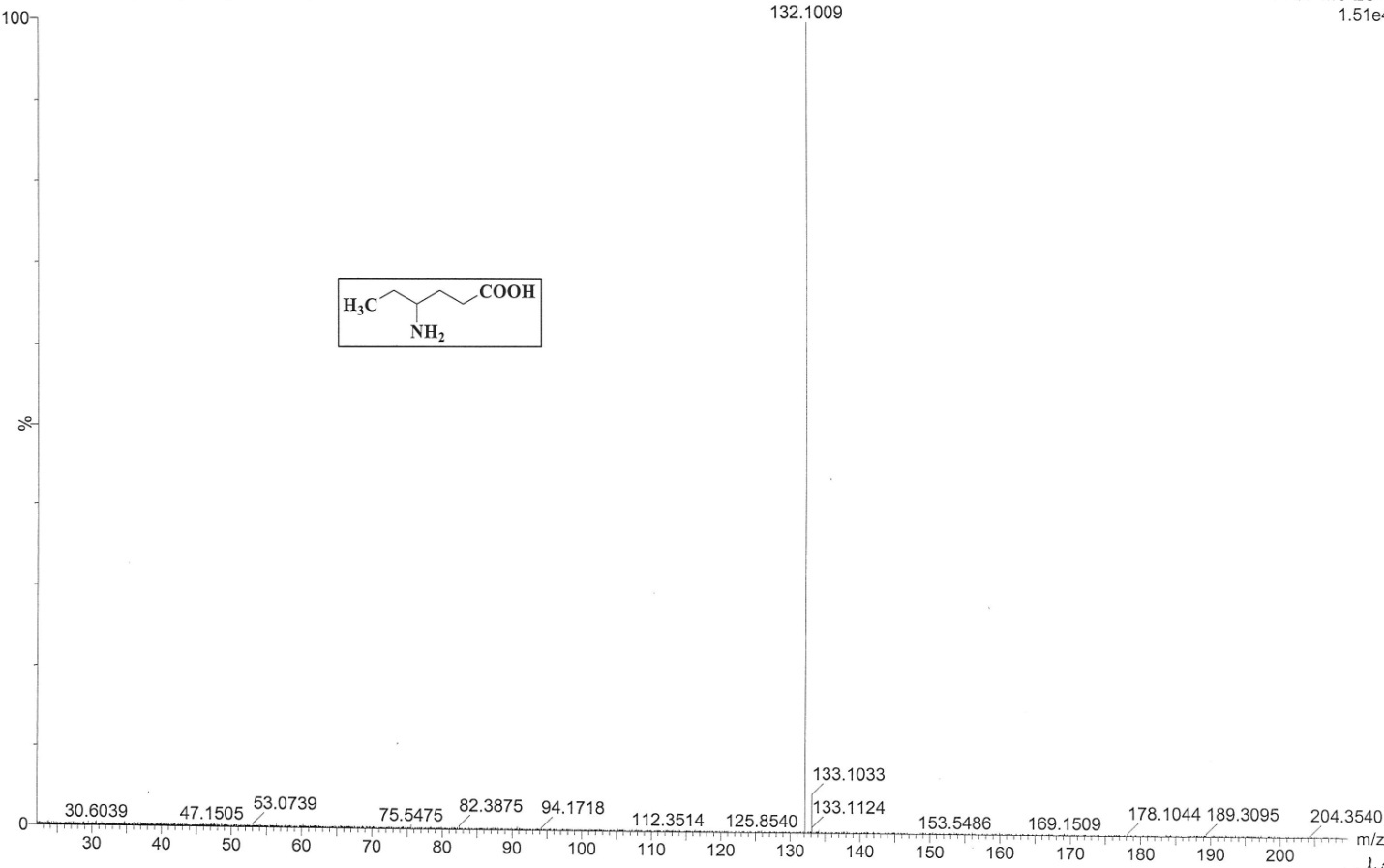
IR spectrum of compound **3**



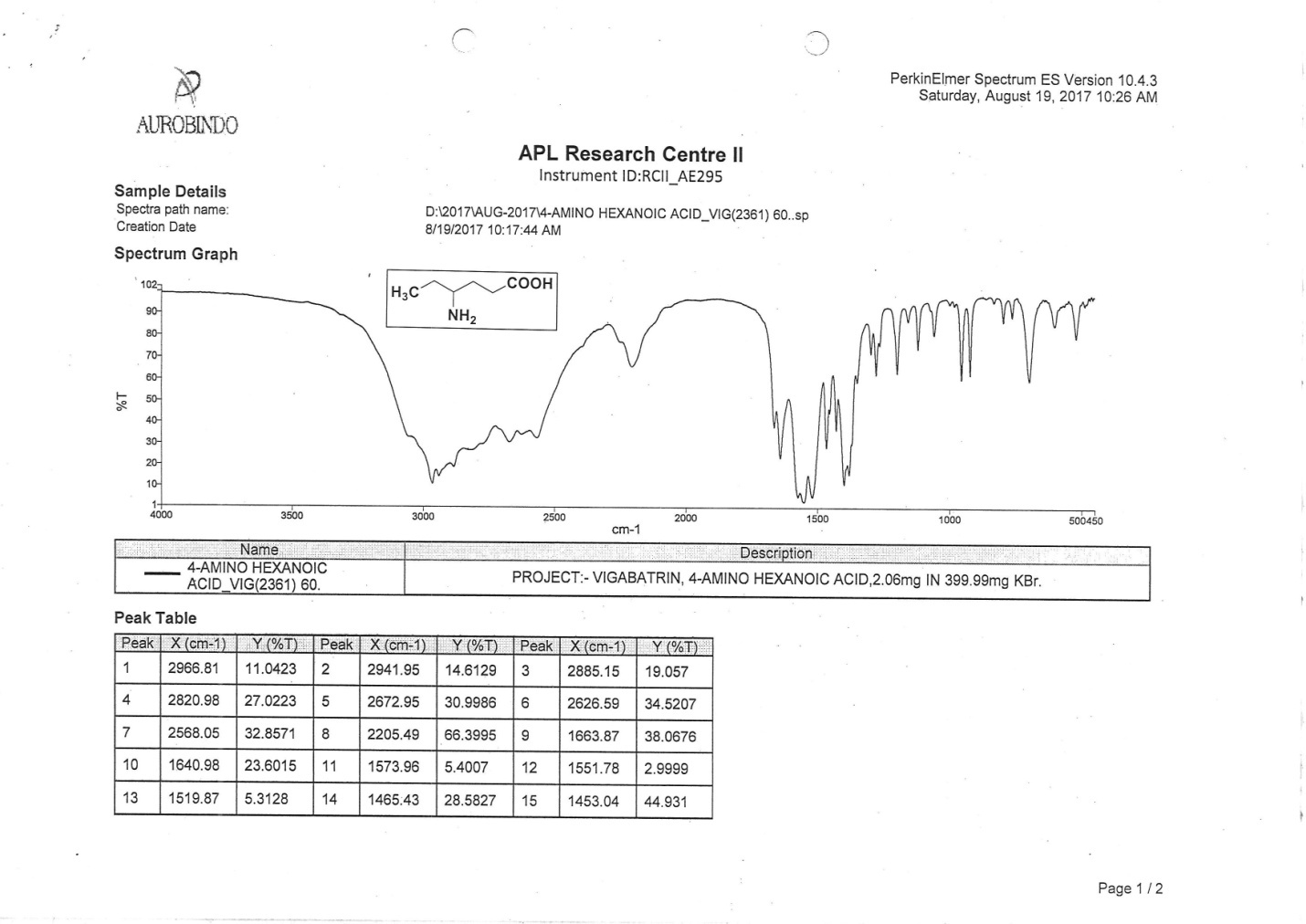
1H NMR spectrum of compound **4** in D2O

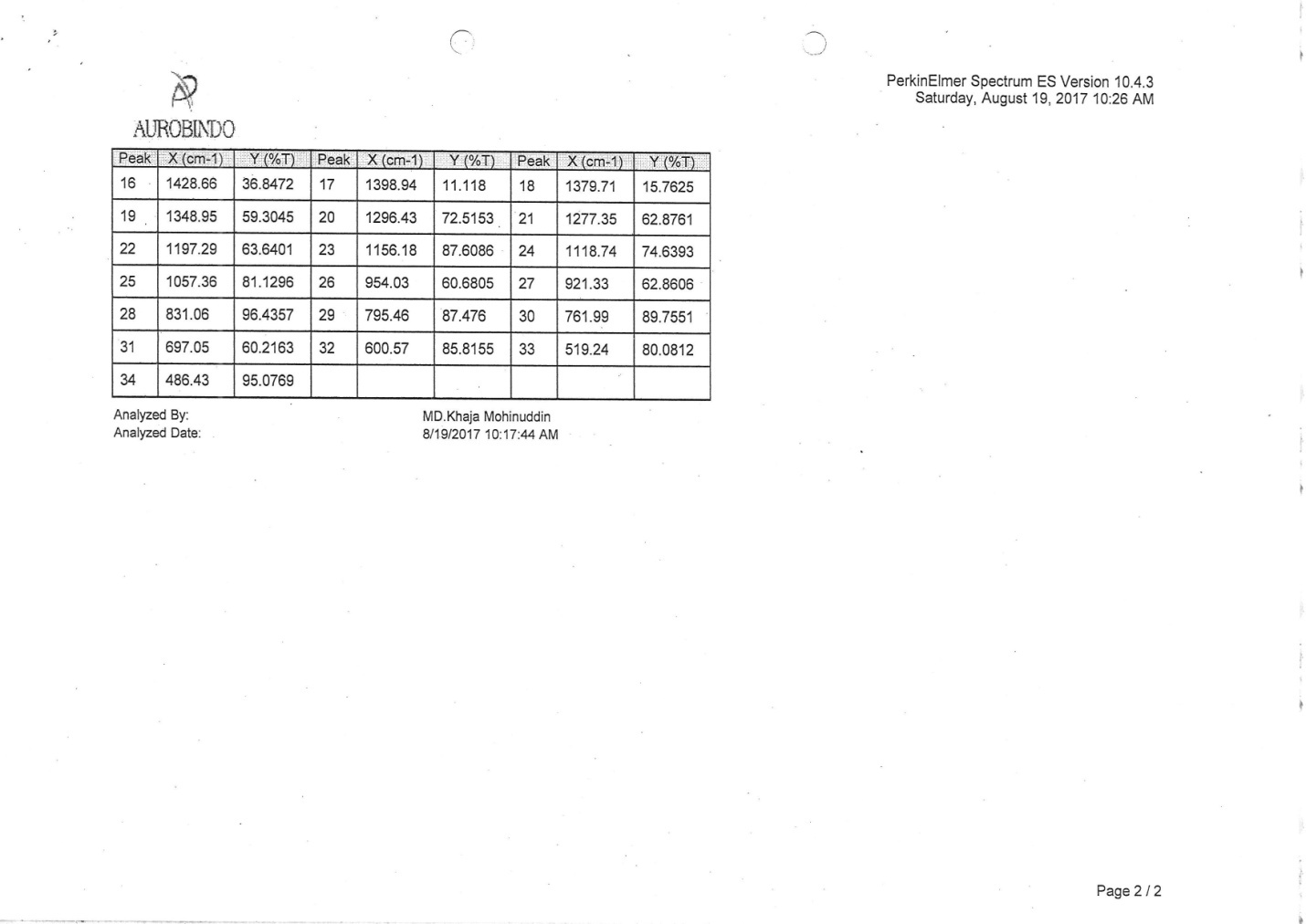


13C NMR spectrum of compound **4** in D2O

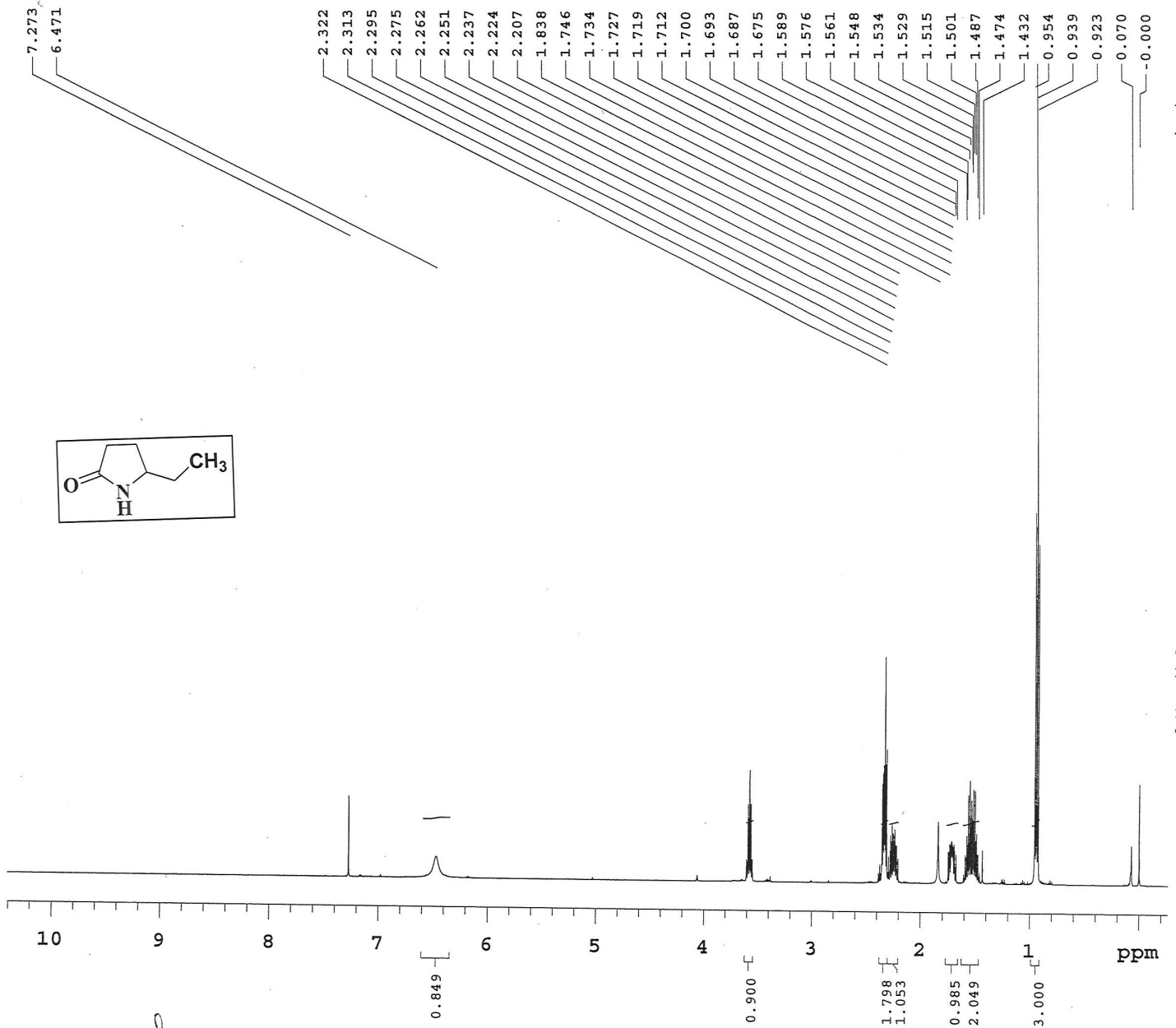


HRMS spectrum of compound **4**

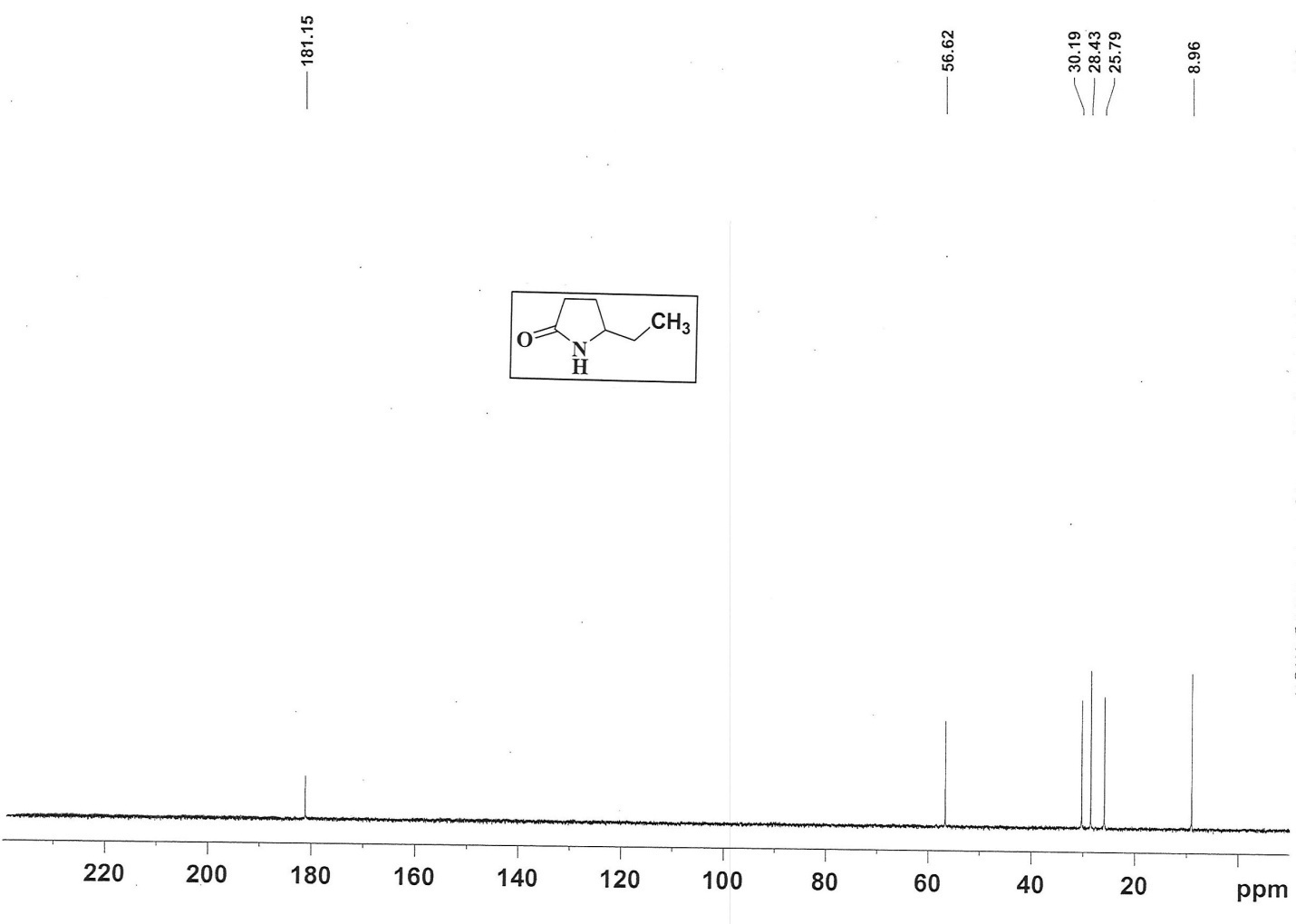




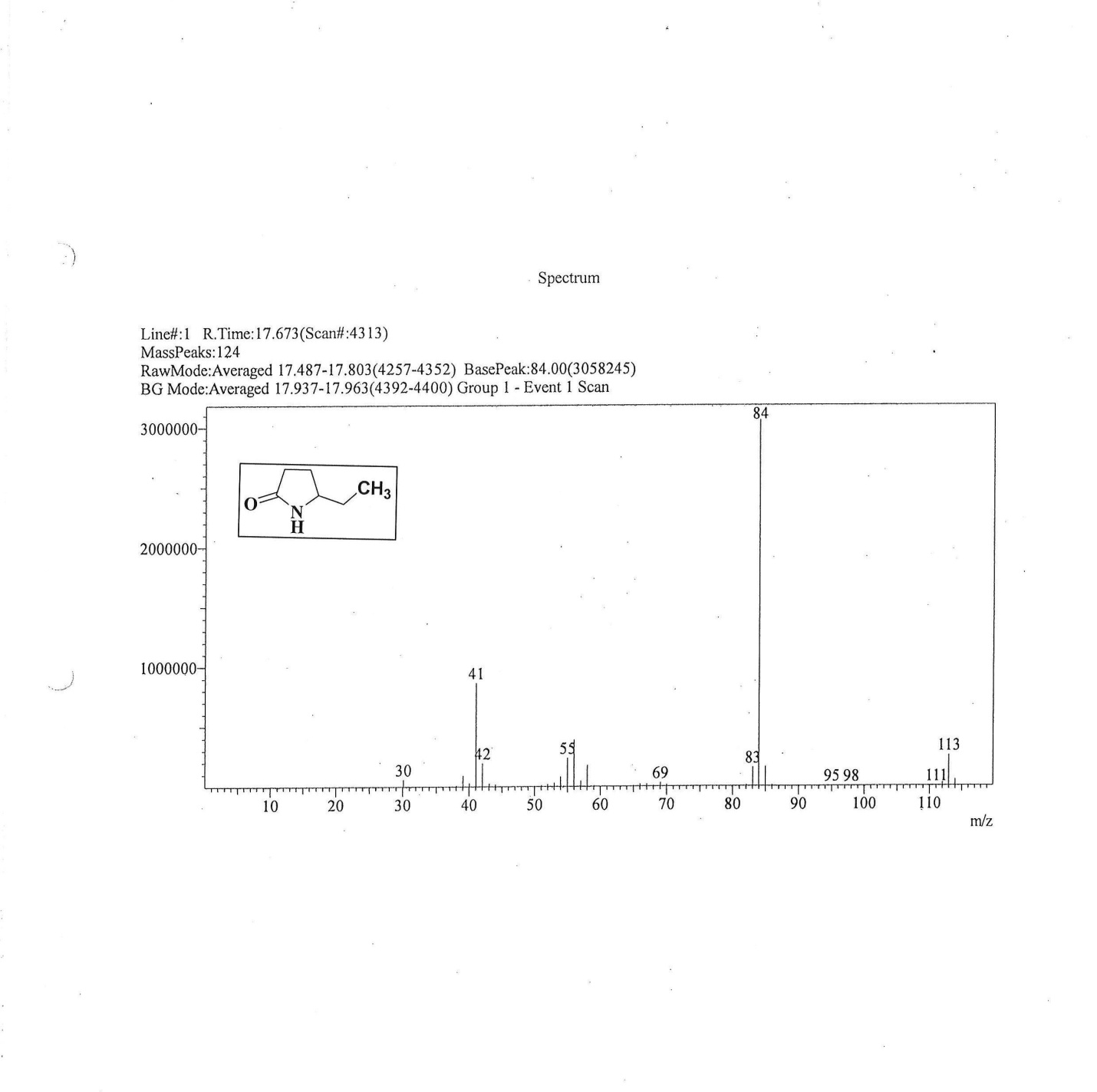
IR spectrum of compound **4**



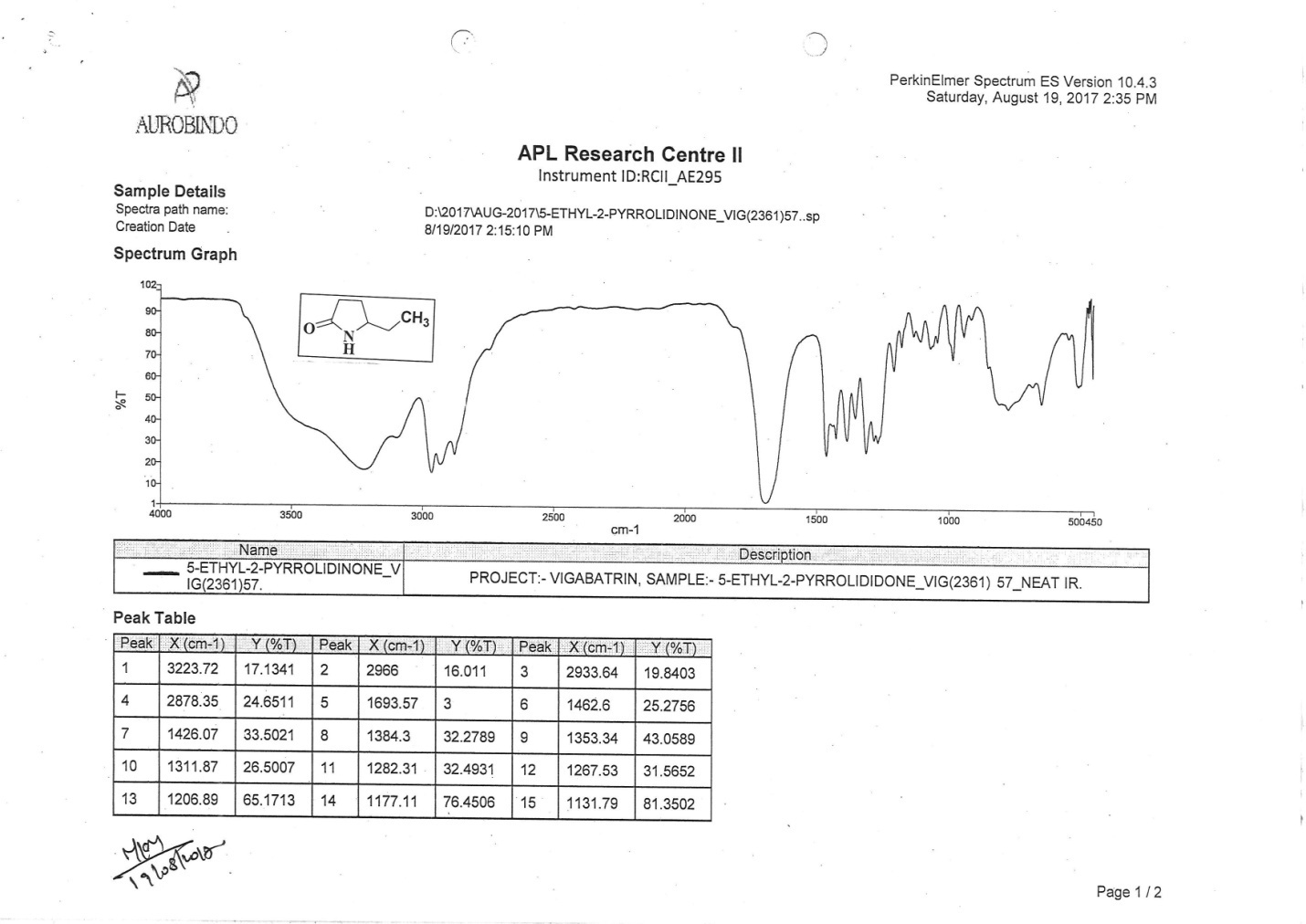
1H NMR spectrum of compound **18**

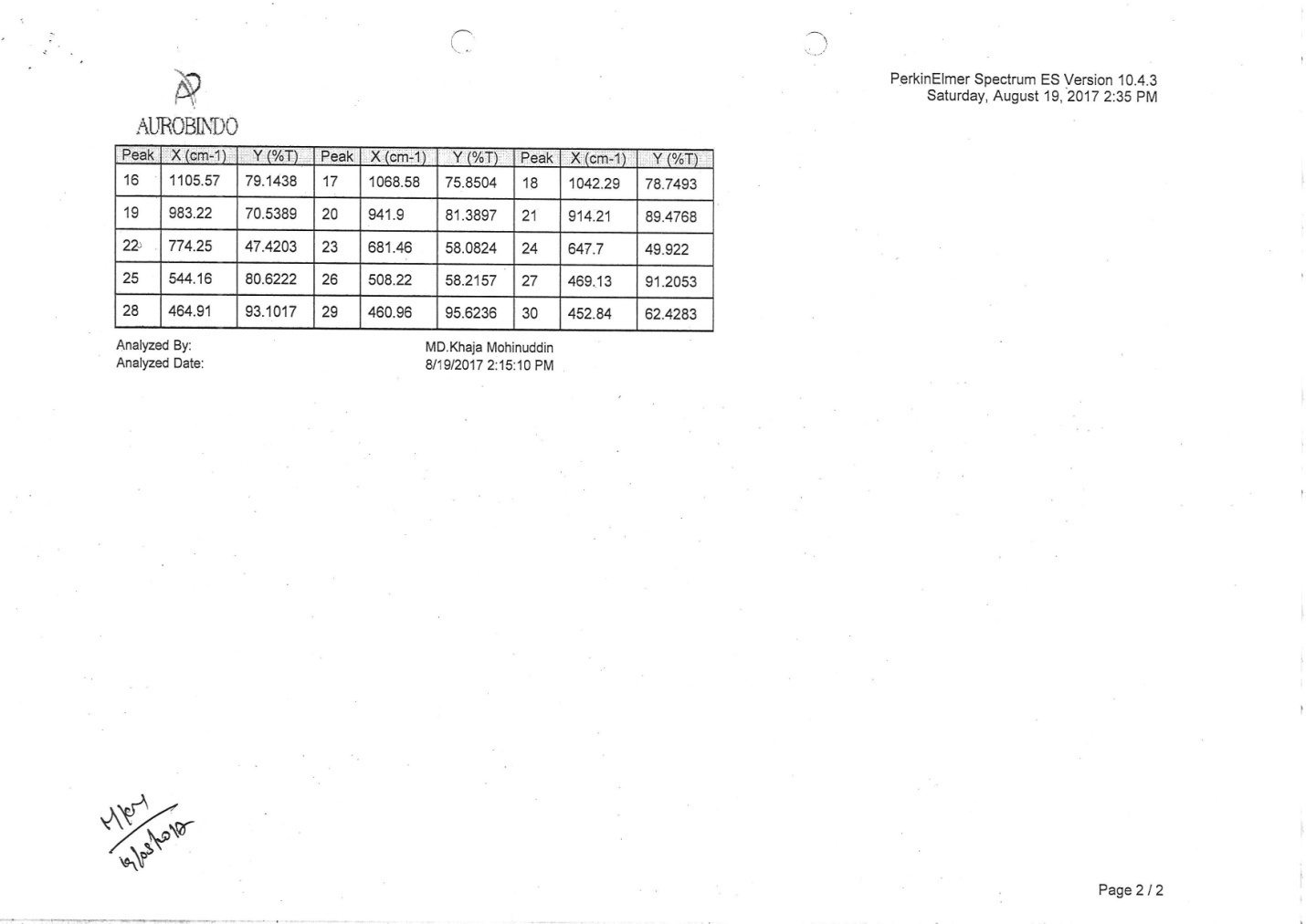


13C NMR spectrum of compound **18**

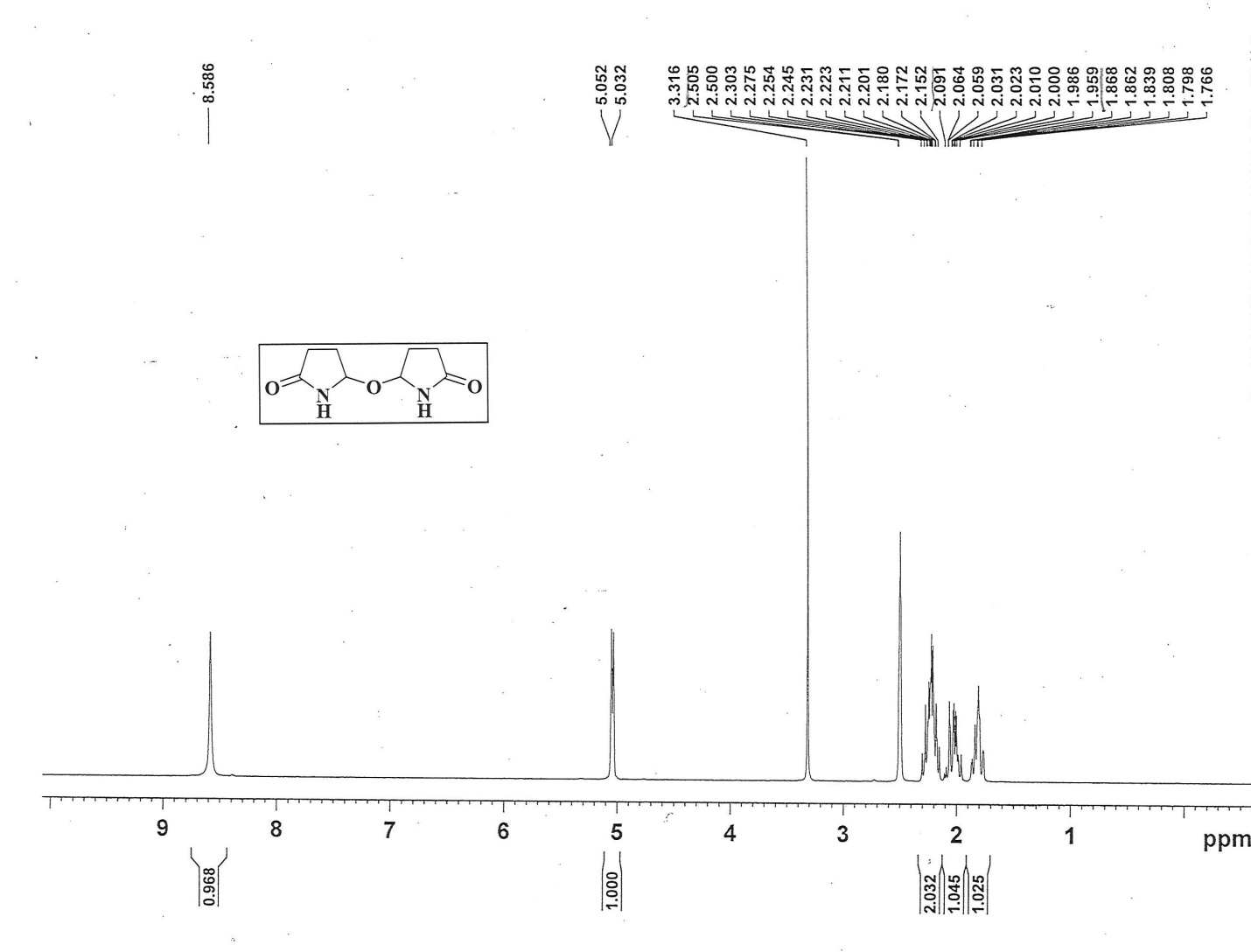


GCMS spectrum of compound **18**

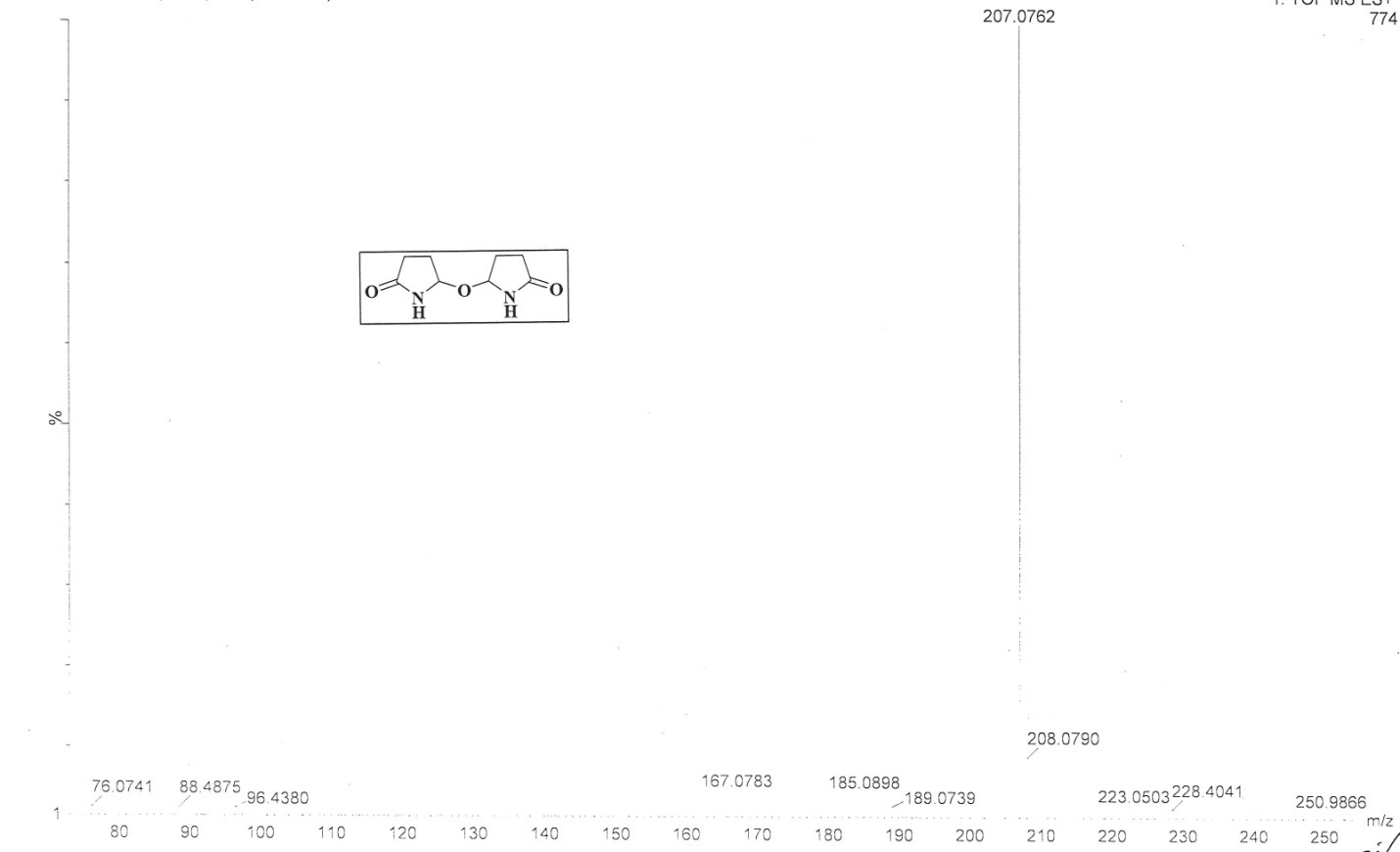




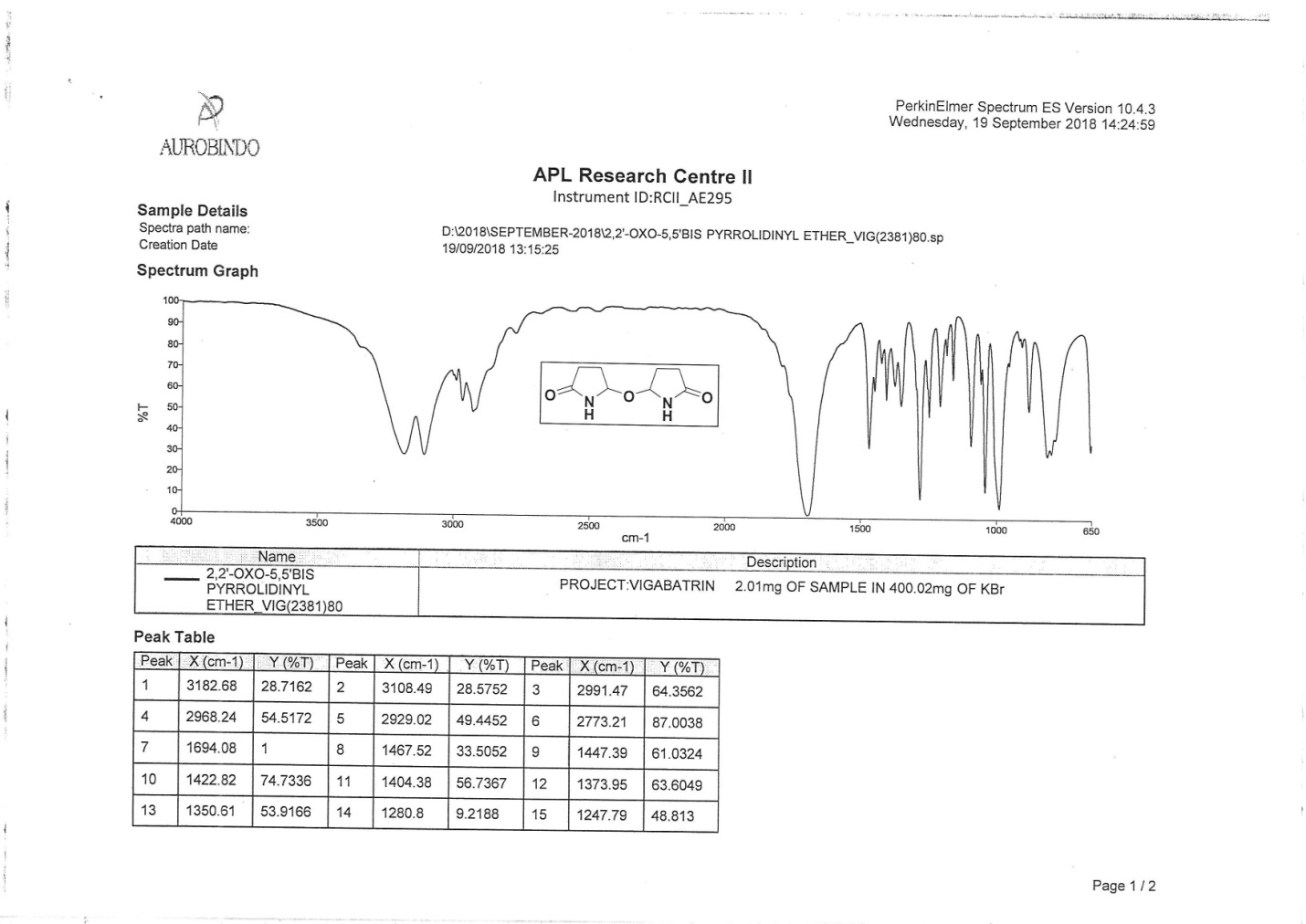
IR spectrum of compound **18**

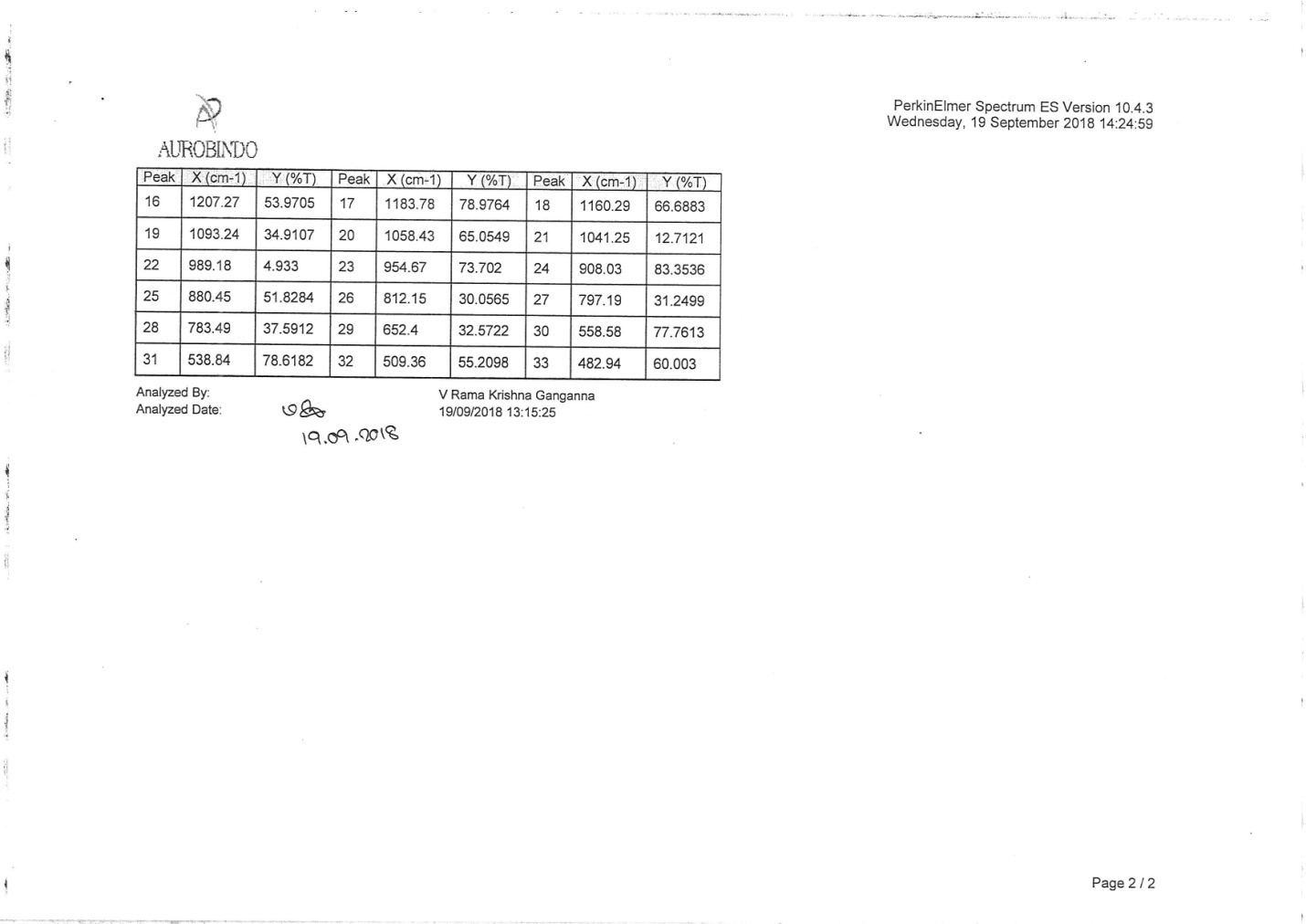


1H NMR spectrum of compound **5** in DMSO-*d6*



HRMS spectrum of compound **5**





IR spectrum of compound **5**