

## Supporting information

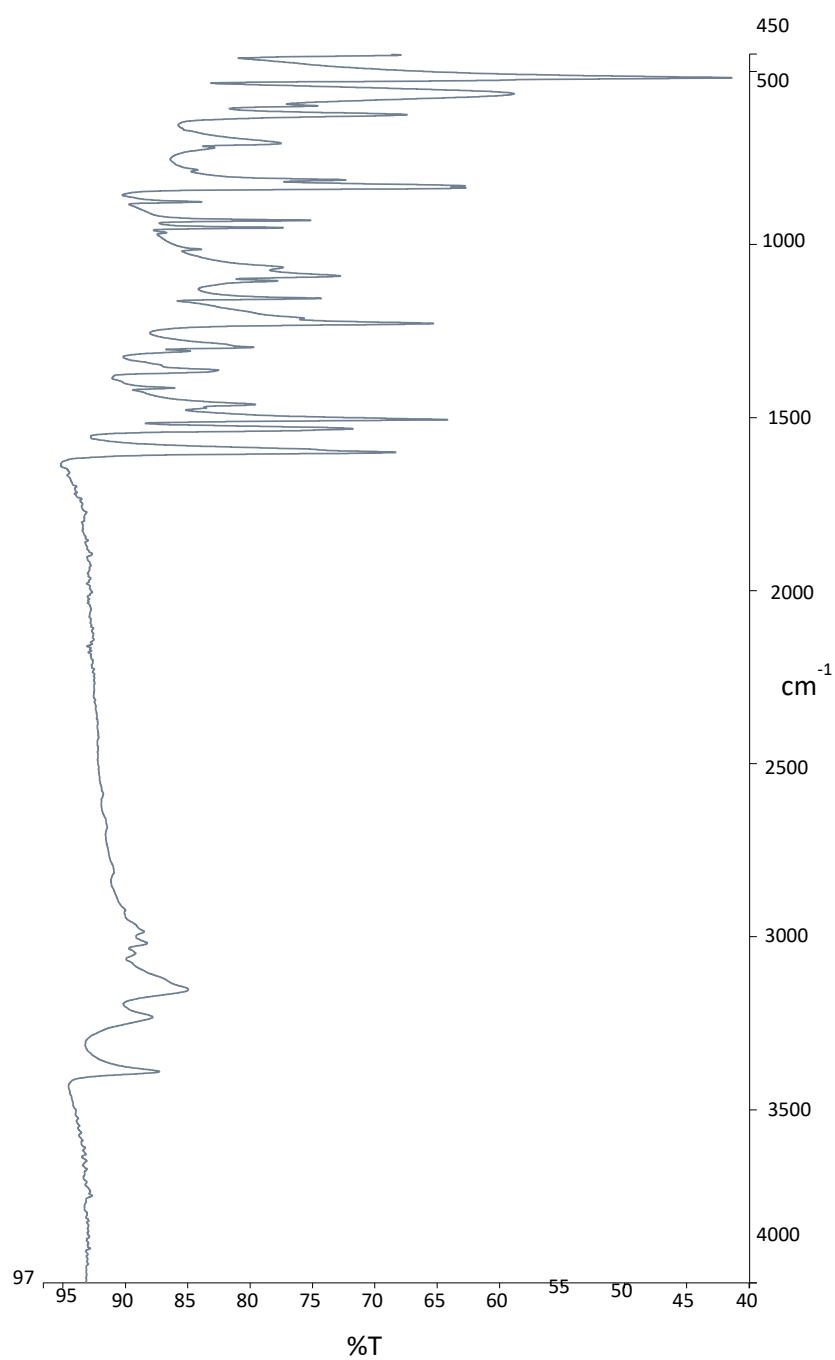
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### Waste to Wealth: Agro-waste catalyzed green method synthesis of 5-aryl-1,2,4-triazolidine-3-thiones and 1,2,4-triazospiro-3-thiones

Santosh Y. Khatavi and Kamanna Kantharaju\*

*Department of Chemistry, Peptide and Medicinal Chemistry Research Laboratory,  
Rani Channamma University, Belagavi, P-B, NH-4-591156, Karnataka, India*

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**Figure S1:** FT-IR Spectrum of 5-aryl-1,2,4-triazolidine-3-thiones (**3c**)

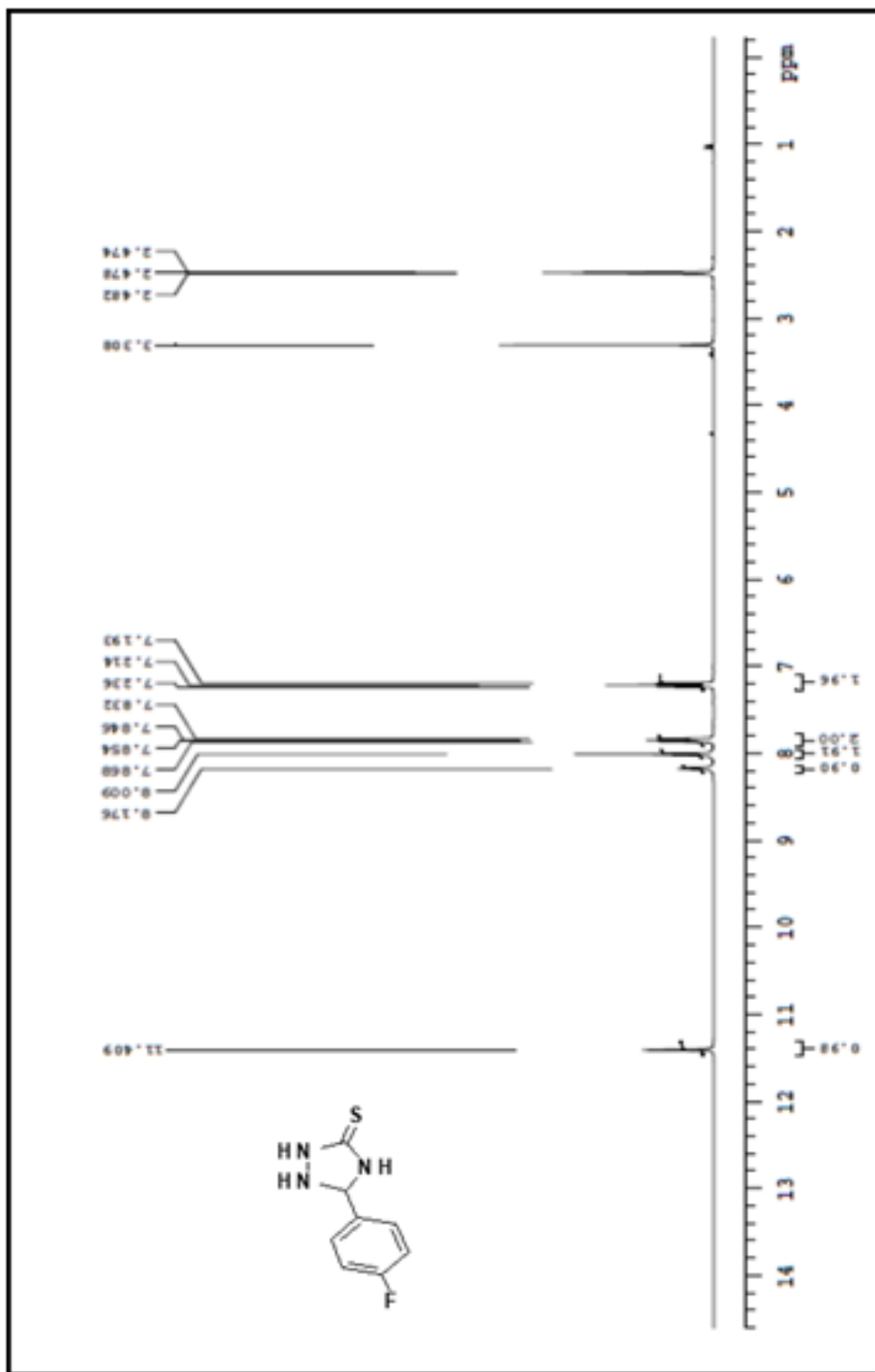
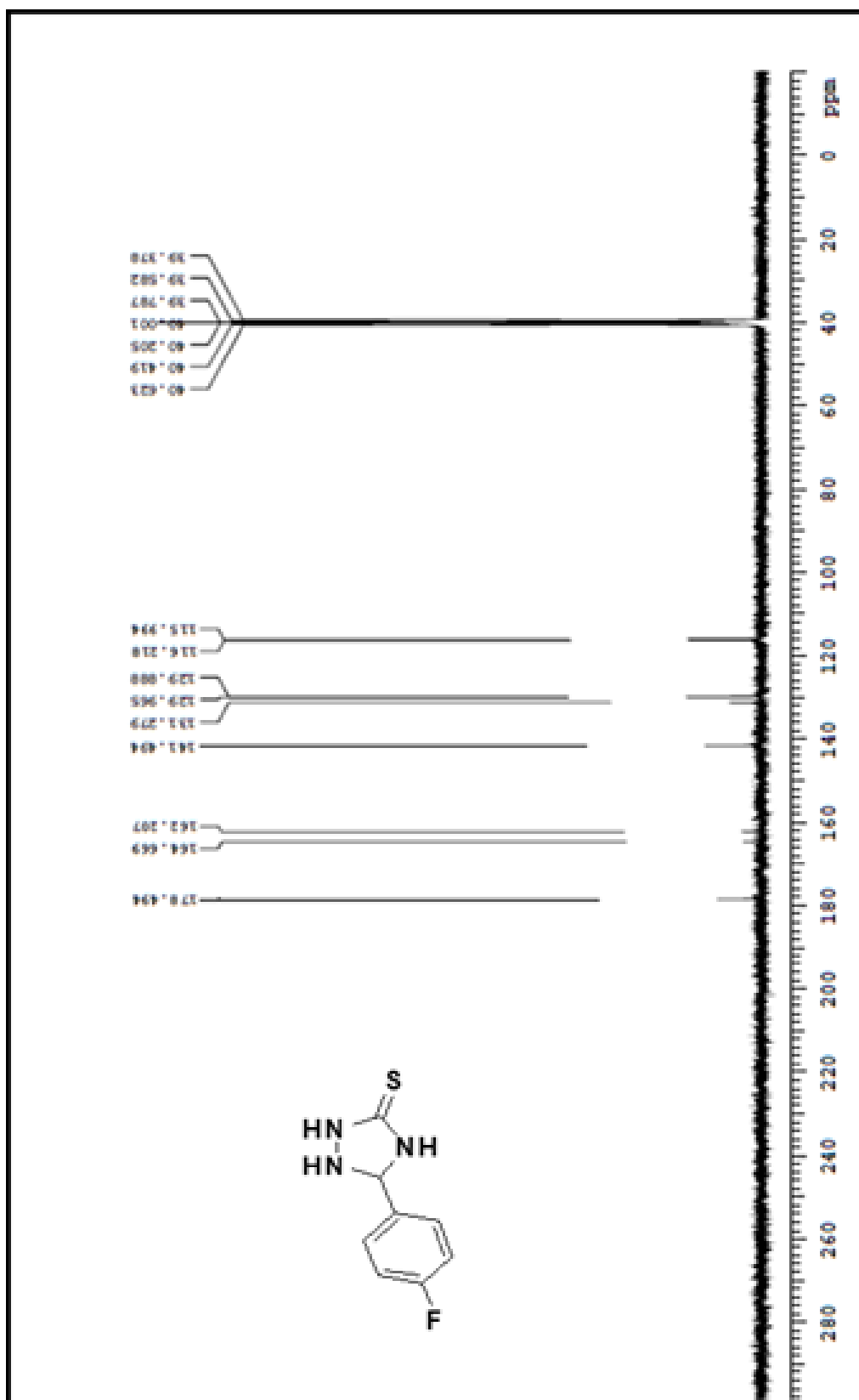
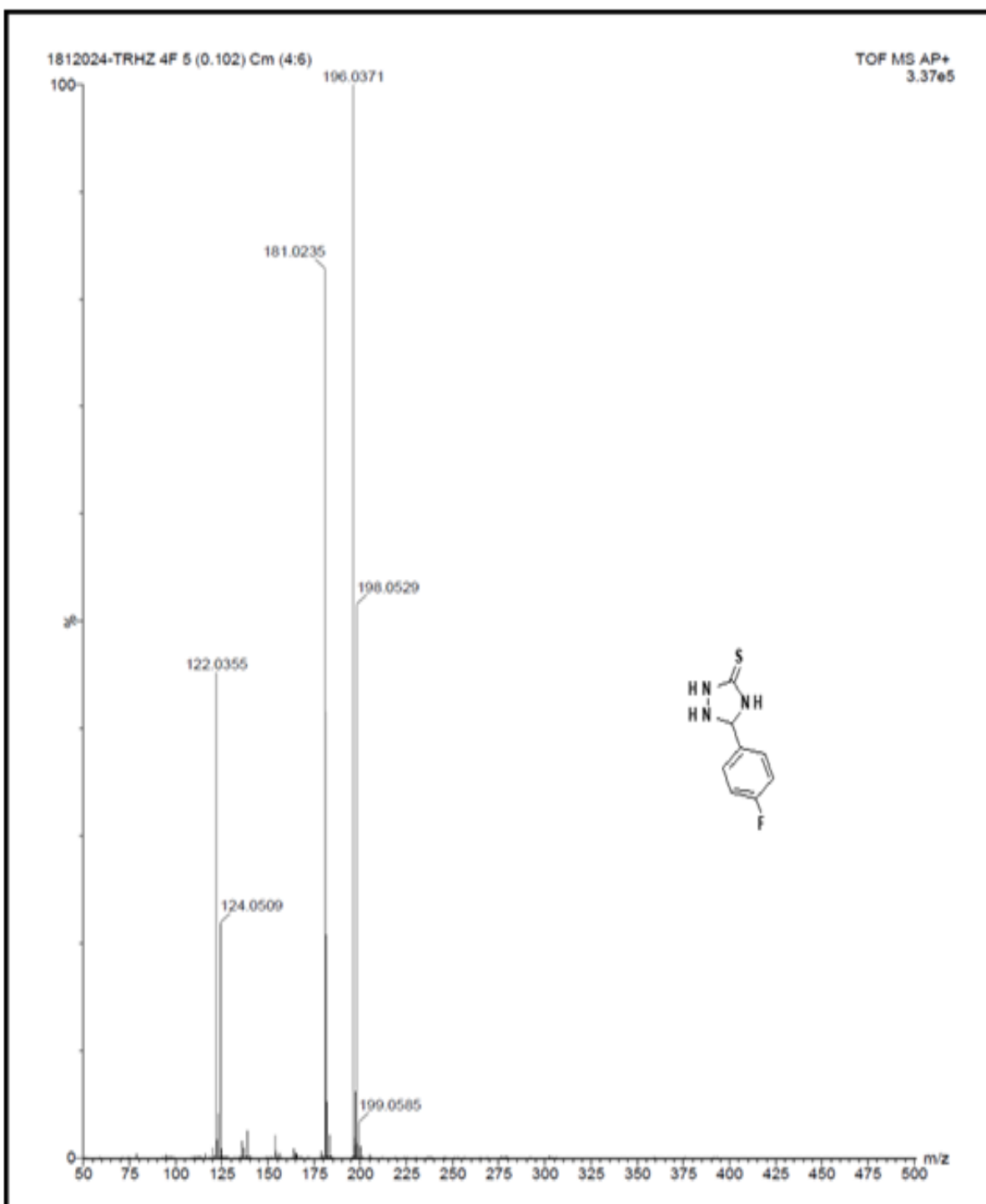


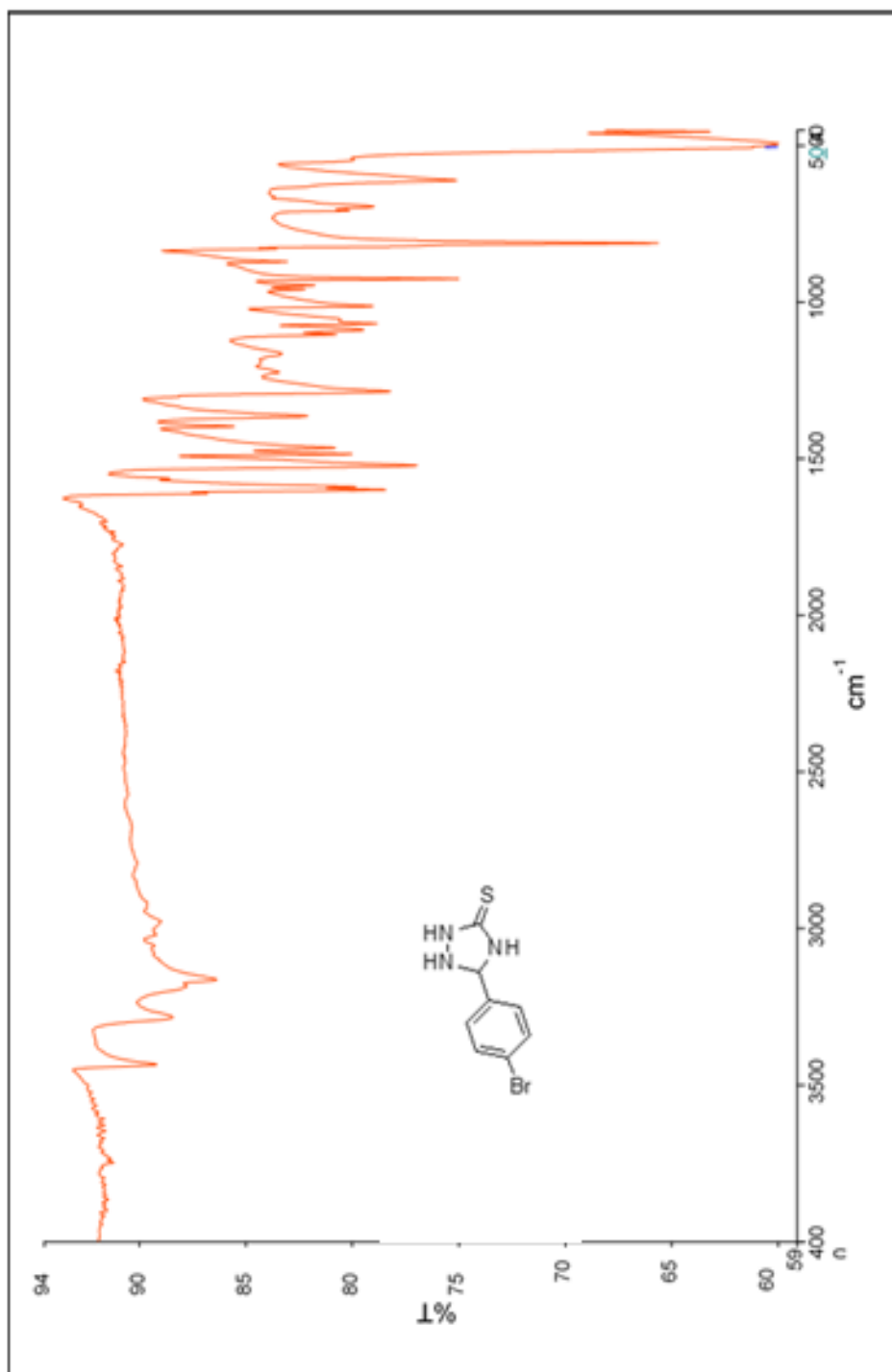
Figure S2:  $^1\text{H-NMR}$  spectrum of 5-aryl-1,2,4-triazolidine-3-thiones (3c)



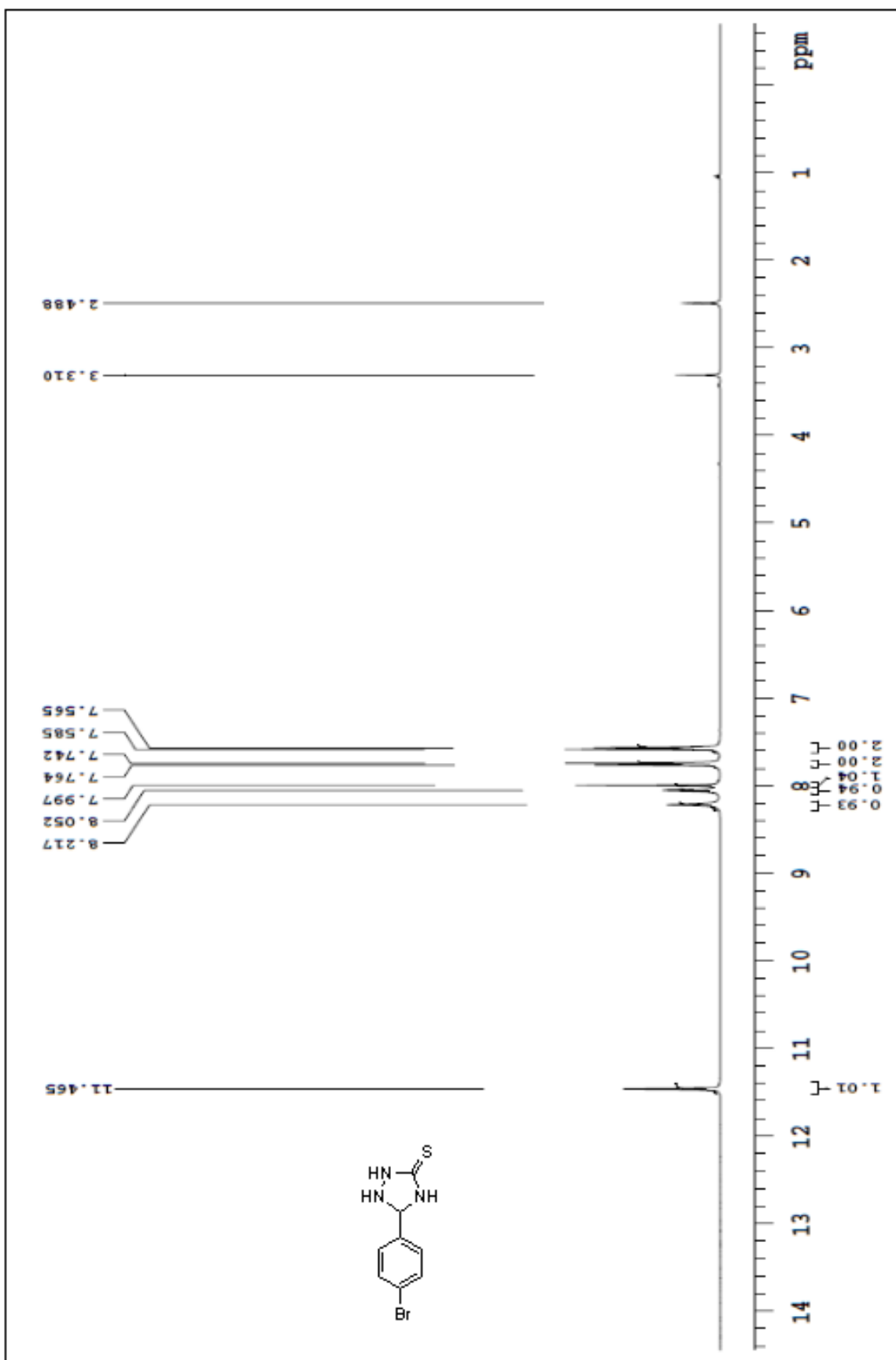
**Figure S3:** <sup>13</sup>C-NMR Spectrum of 5-aryl-1,2,4-triazolidine-3-thiones (3c)



**Figure S4:** HR-MS(ESI) Spectrum of 5-aryl-1,2,4-triazolidine-3-thiones (**3c**)

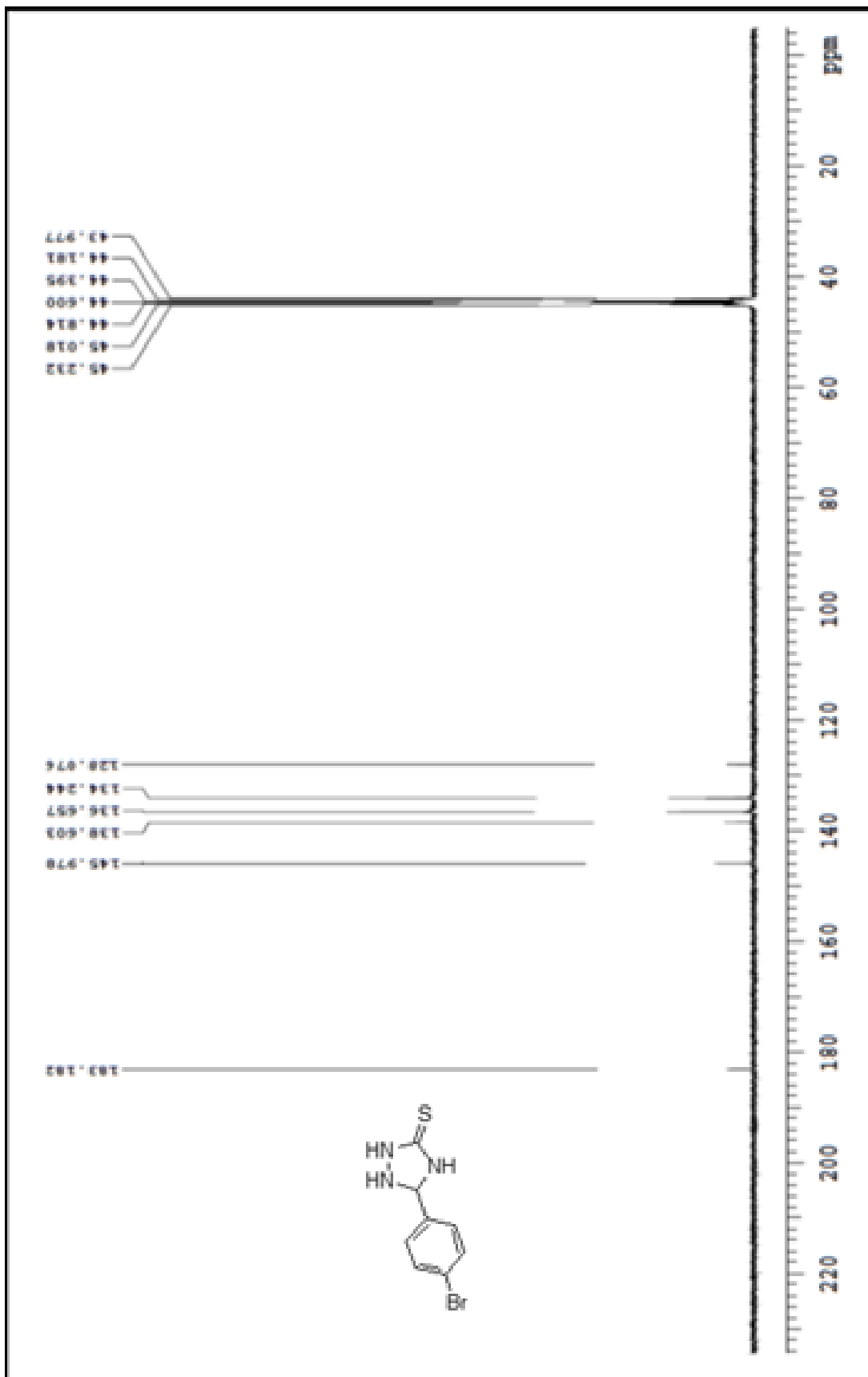


**Figure S5:** FT-IR Spectrum of 5-aryl-1,2,4-triazolidine-3-thiones (**3d**)

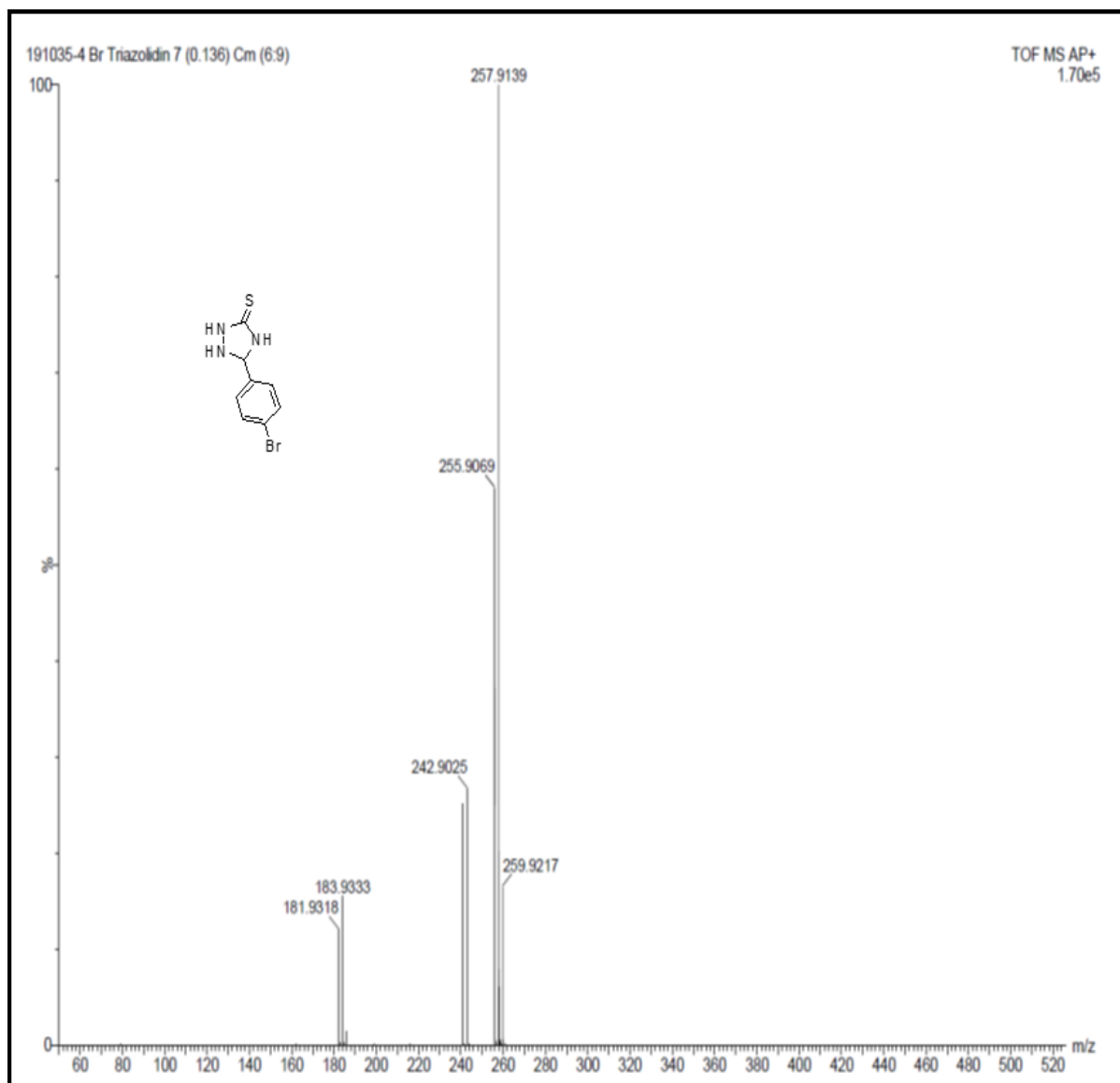


**Figure S6:**  $^1\text{H-NMR}$  Spectrum of *5-aryl-1,2,4-triazolidine-3-thiones (3d)*

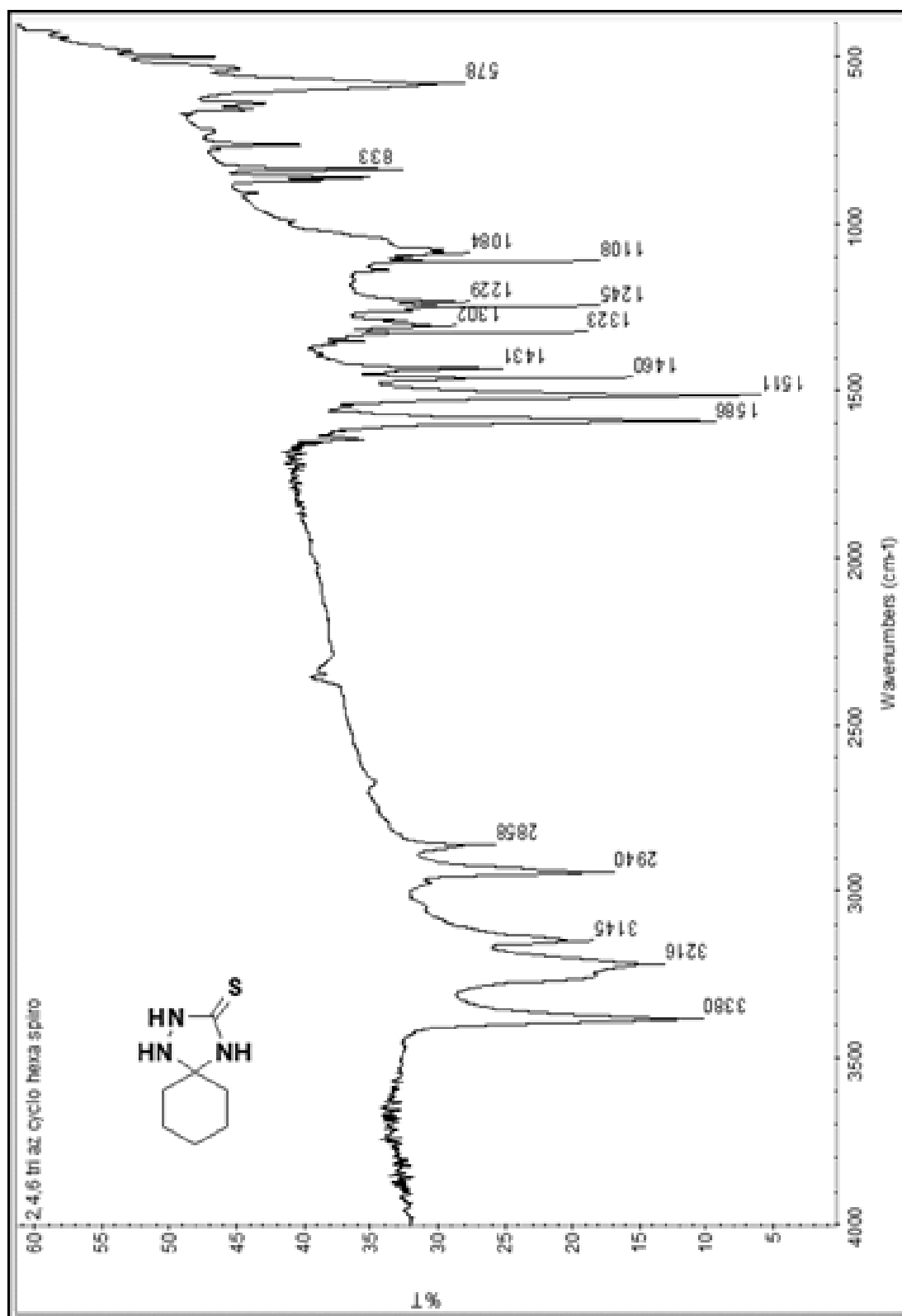




**Figure S7:**  $^{13}\text{C}$ -NMR Spectrum of 5-aryl-1,2,4-triazolidine-3-thiones (**3d**)

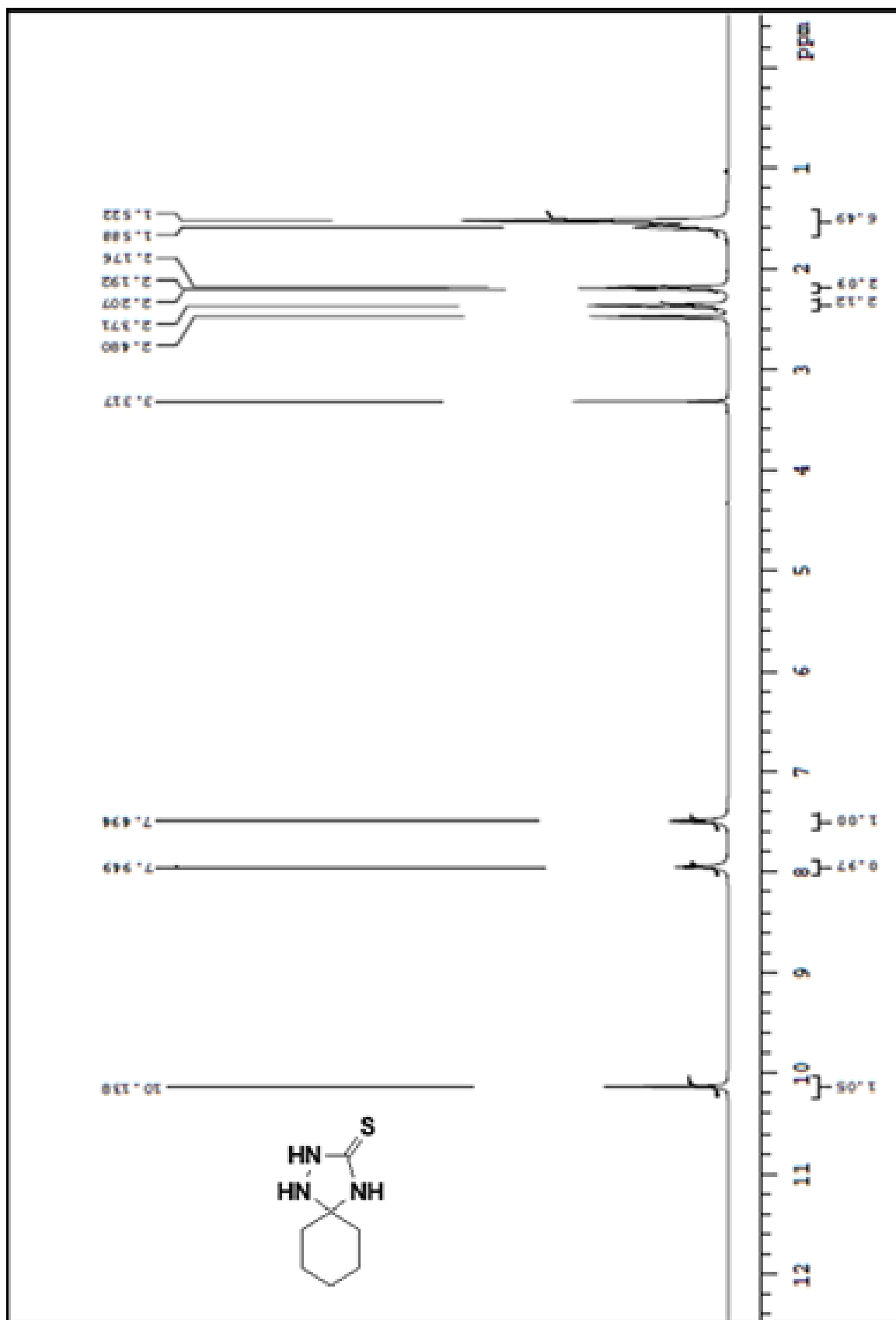


**Figure S8:** HR-MS(ESI) Spectrum of 5-aryl-1,2,4-triazolidine-3-thiones (**3d**)

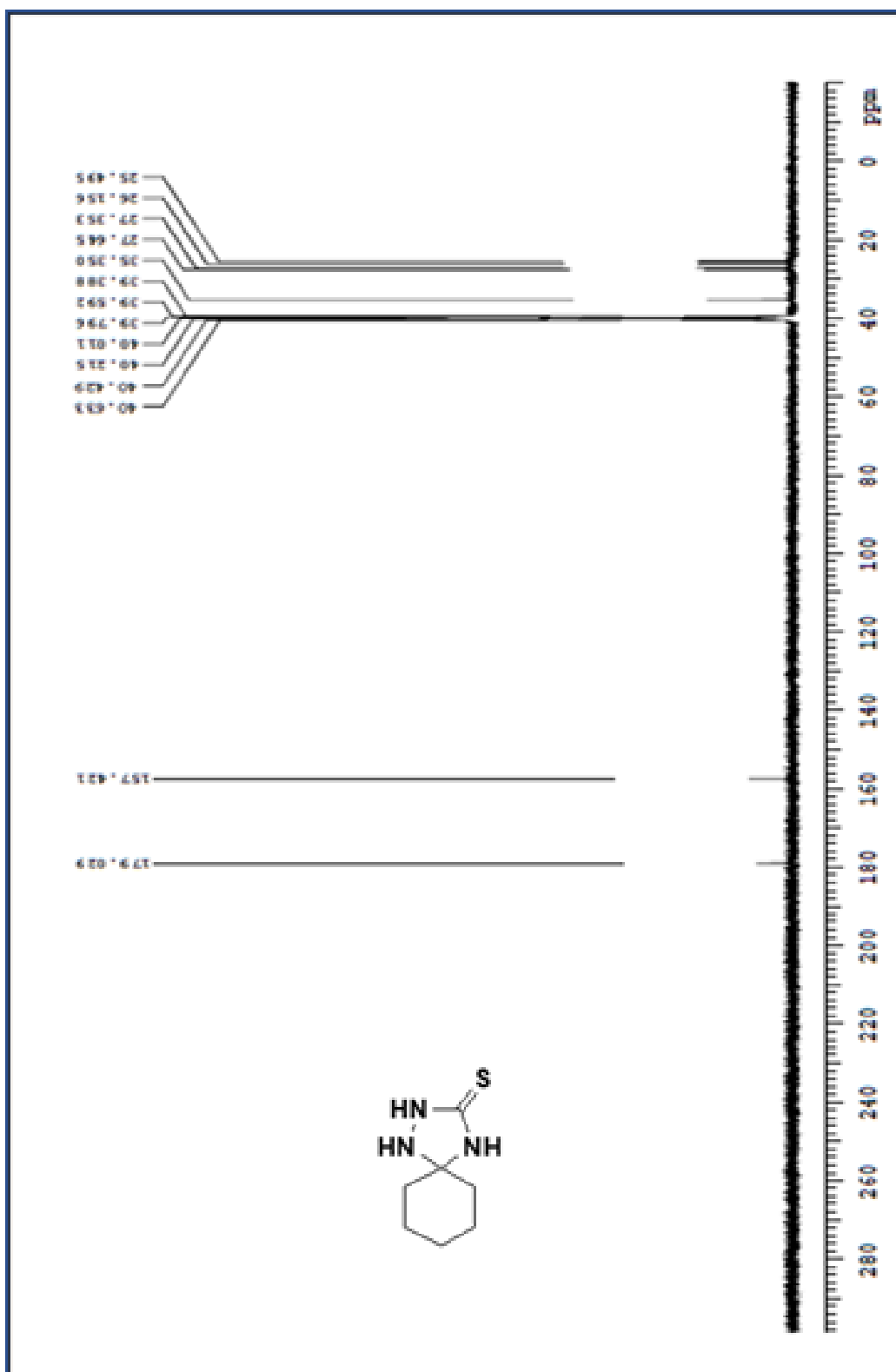


**Figure S9:** FT-IR Spectrum of 5-aryl-1,2,4-triazolidine-3-thiones (**5a**)

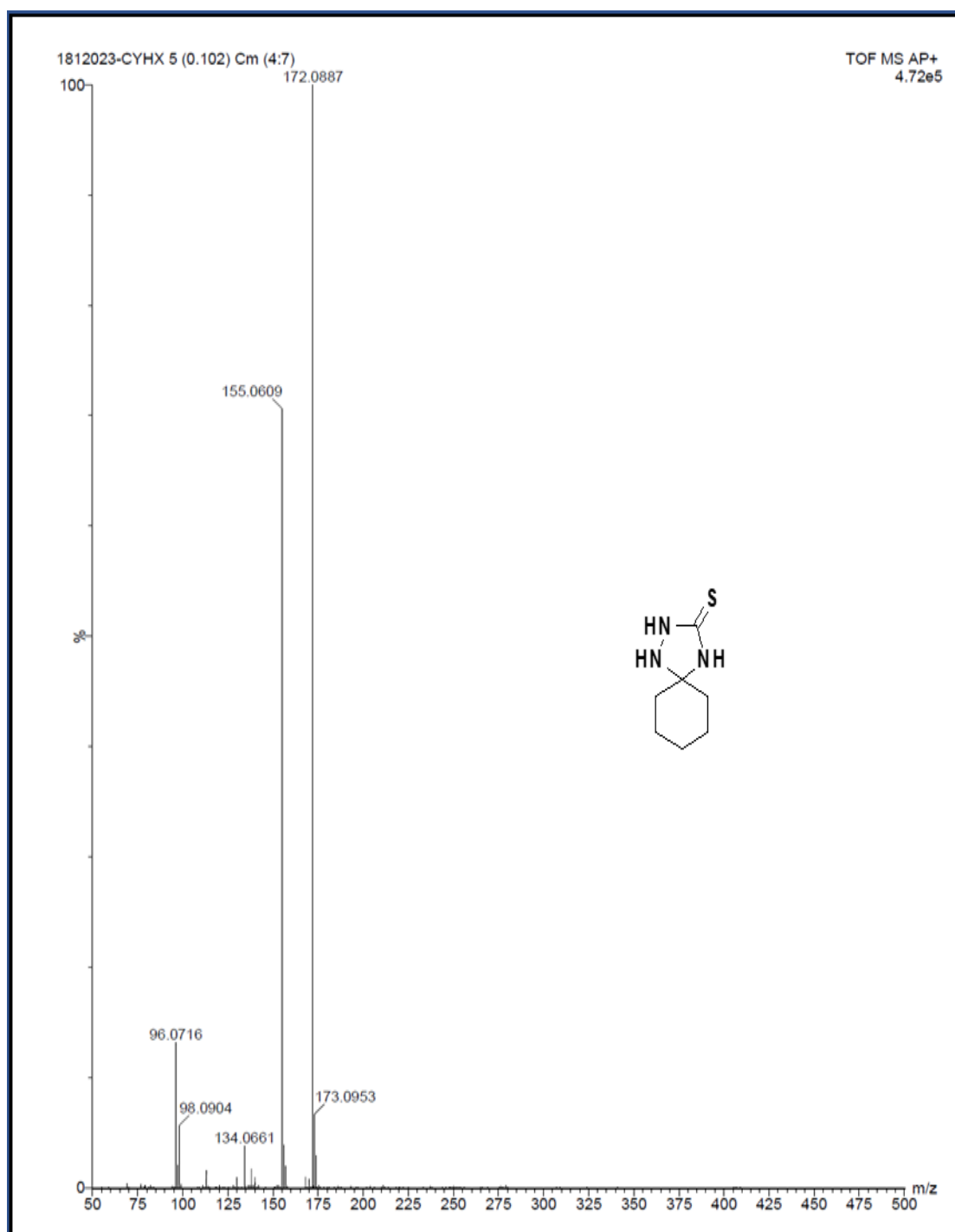




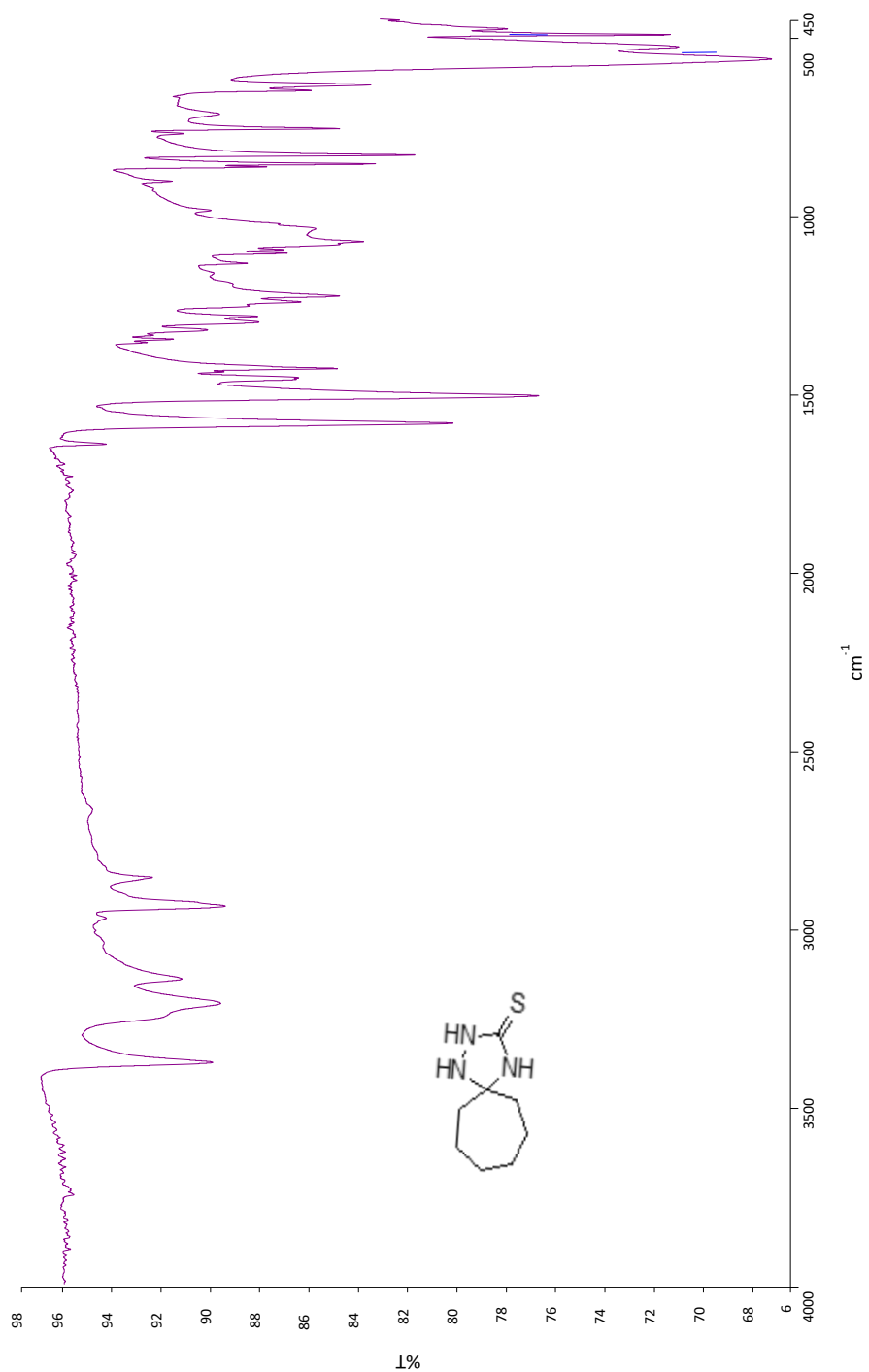
**Figure S10:** <sup>1</sup>H-NMR Spectrum of 5-aryl-1,2,4-triazolidine-3-thiones (5a)



**Figure S11:**  $^{13}\text{C}$ -NMR Spectrum of 5-aryl-1,2,4-triazolidine-3-thiones (5a)

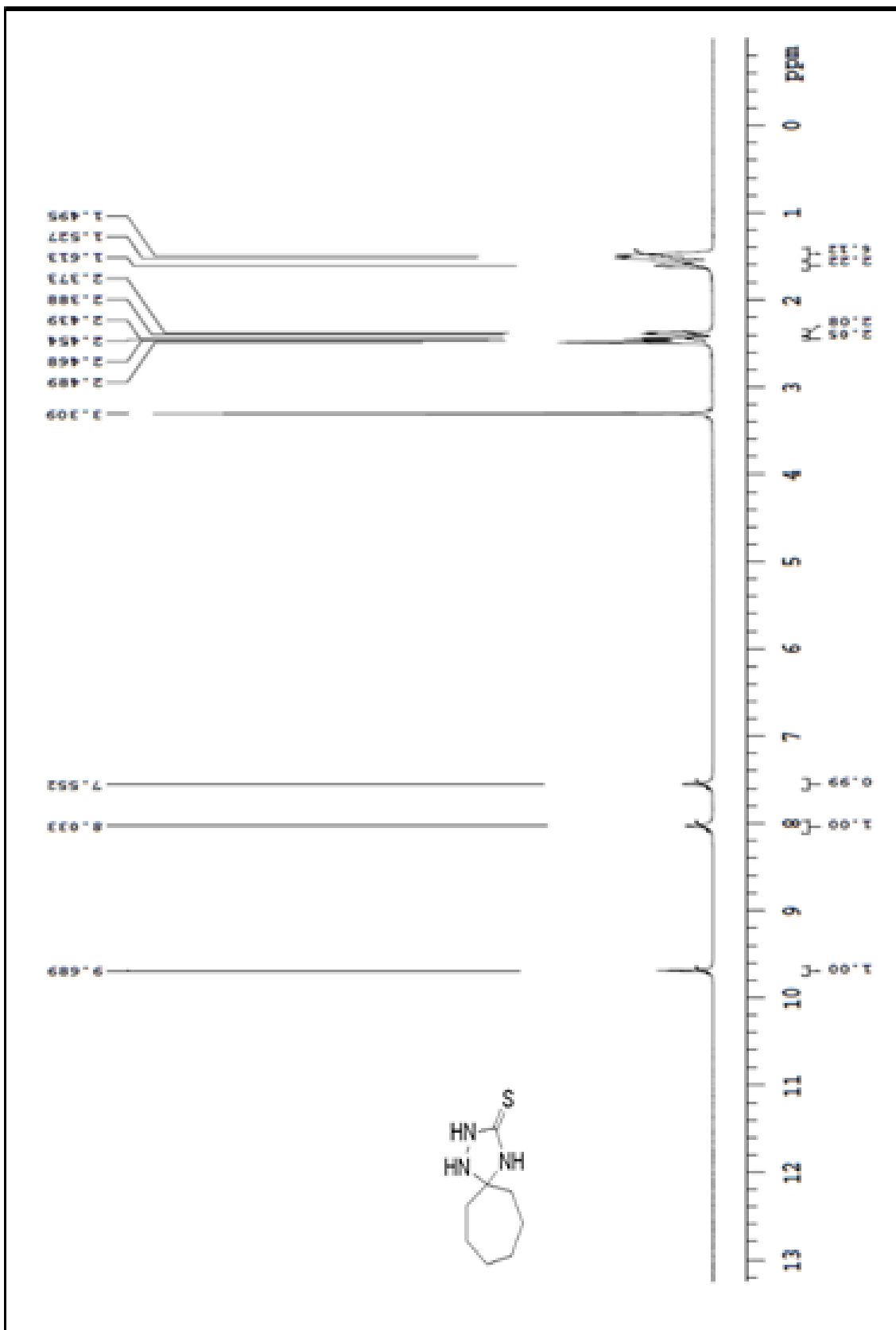


**Figure S12:** HR-MS Spectrum of 5-aryl-1,2,4-triazolidine-3-thiones (**5a**)

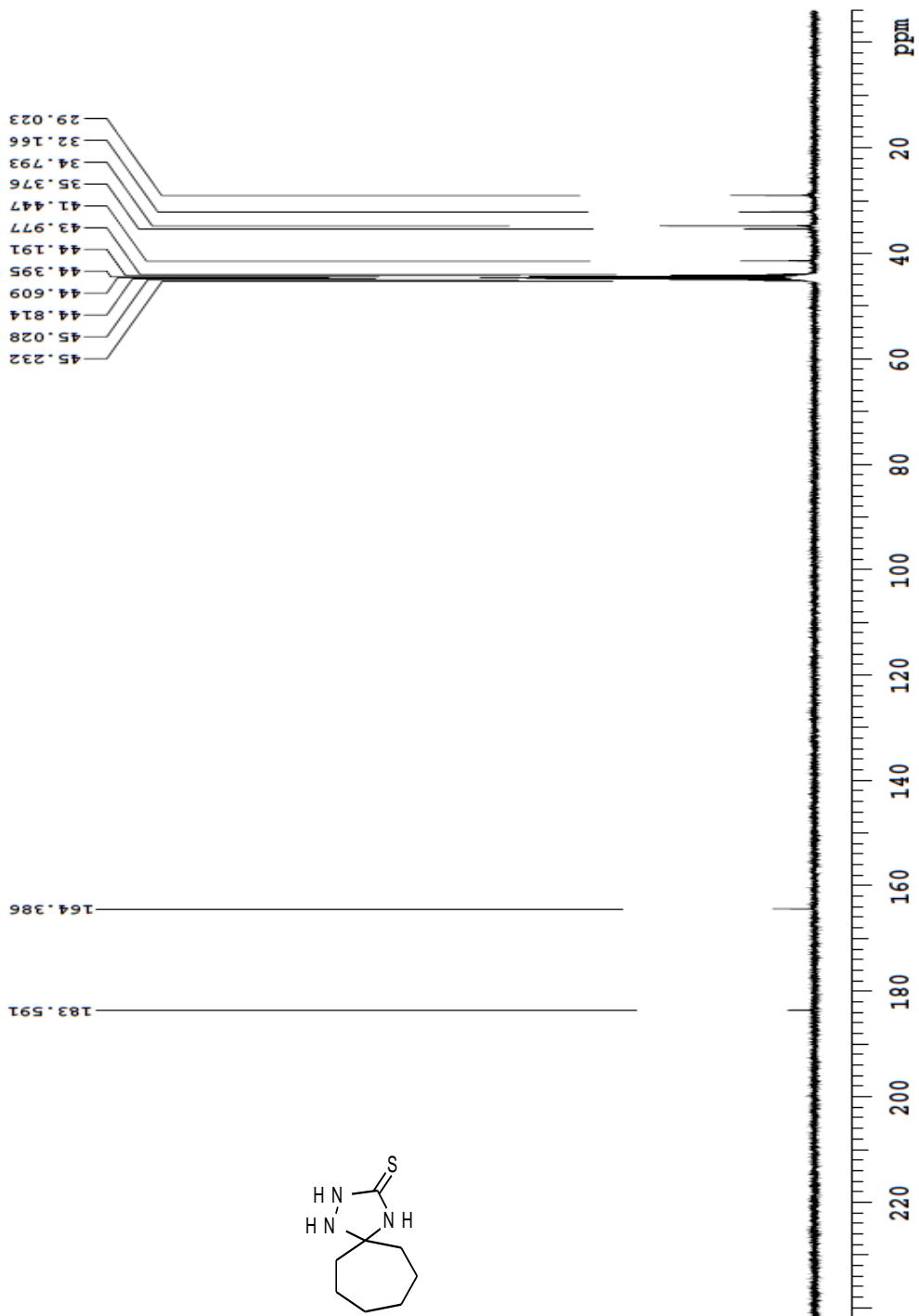


**Figure S13:** FT-IR Spectrum of *1,2,4-Triazospiroheptane-3-thione (5b)*

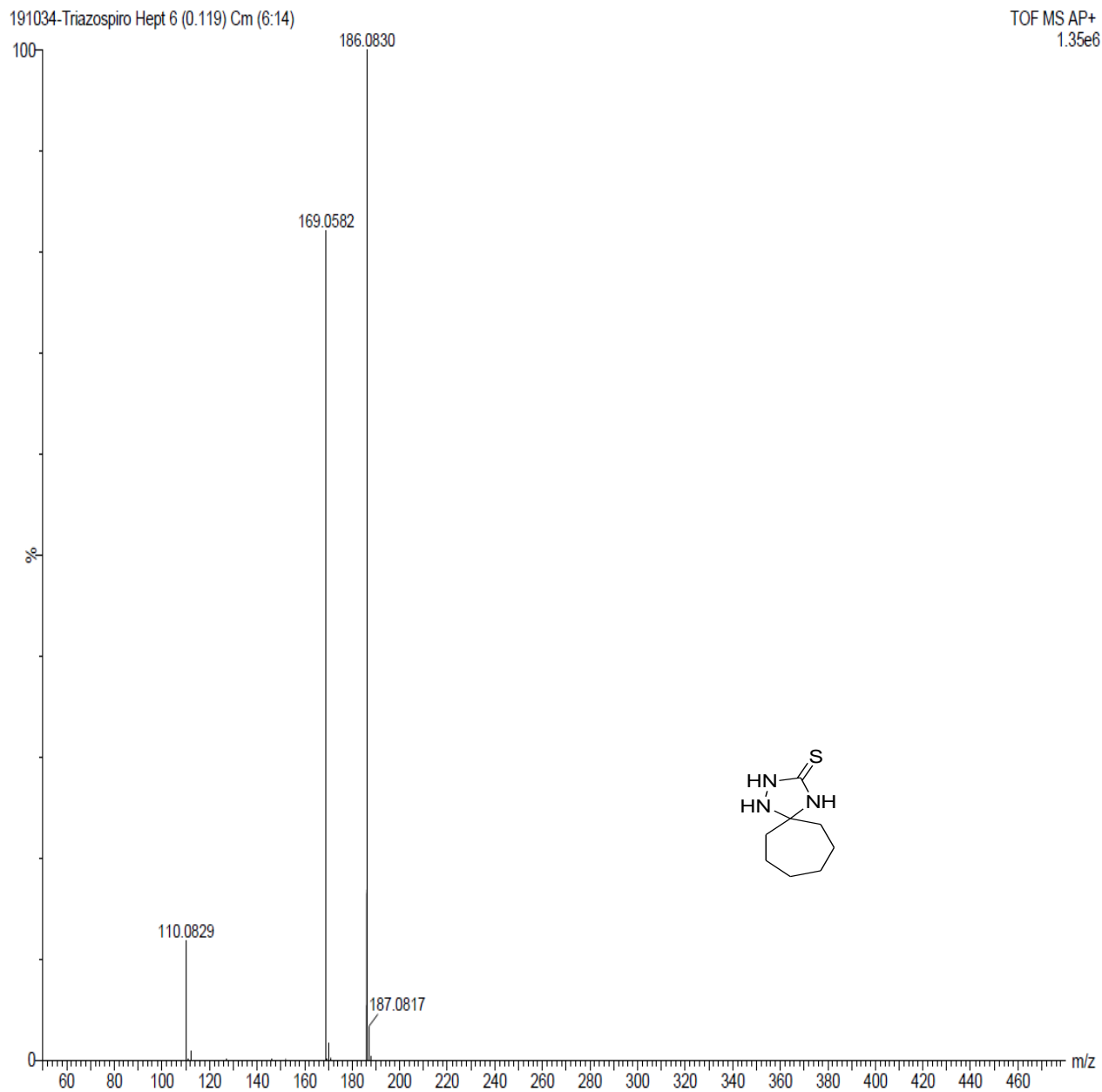




**Figure S14:** <sup>1</sup>H-NMR Spectrum of 1,2,4-Triazospiroheptane-3-thione (5b)



**Figure S15:**  $^{13}\text{C}$ -NMR Spectrum of 1,2,4-Triazospiroheptane-3-thione (5b)



**Figure S16:** HR-MS Spectrum of *1,2,4-Triazospiroheptane-3-thione (5b)*