

# **SPECTROSCOPIC ANALYSIS OF ORGANIC COMPOUNDS**

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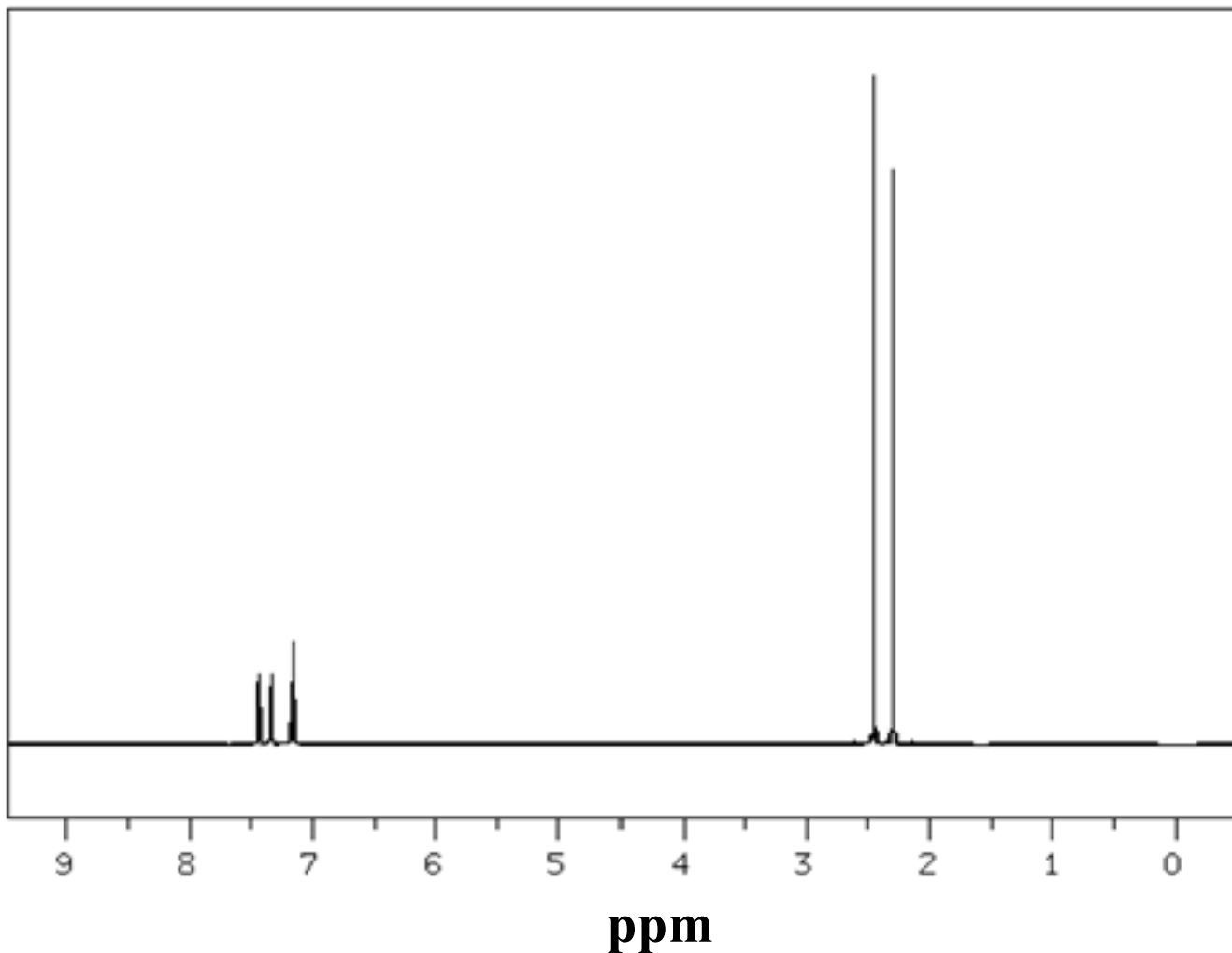
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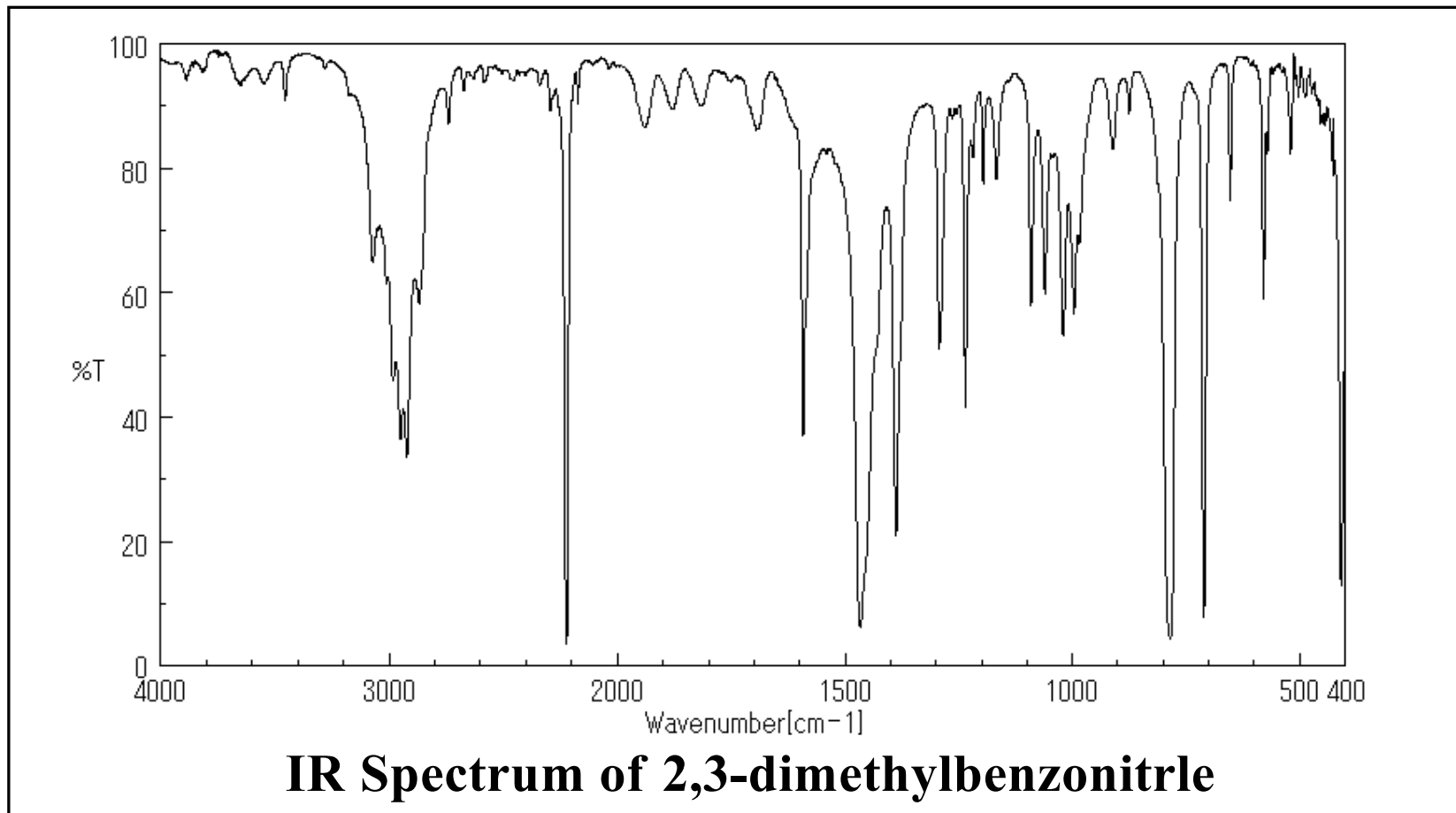
# $^1\text{H}$ NMR Spectrum of 2,3-Dimethylbenzonitrile

400 MHz,  $\text{CDCl}_3$ :  $\delta$  (in ppm): 7.44, 7.34, 7.17, 2.47 and 2.31.



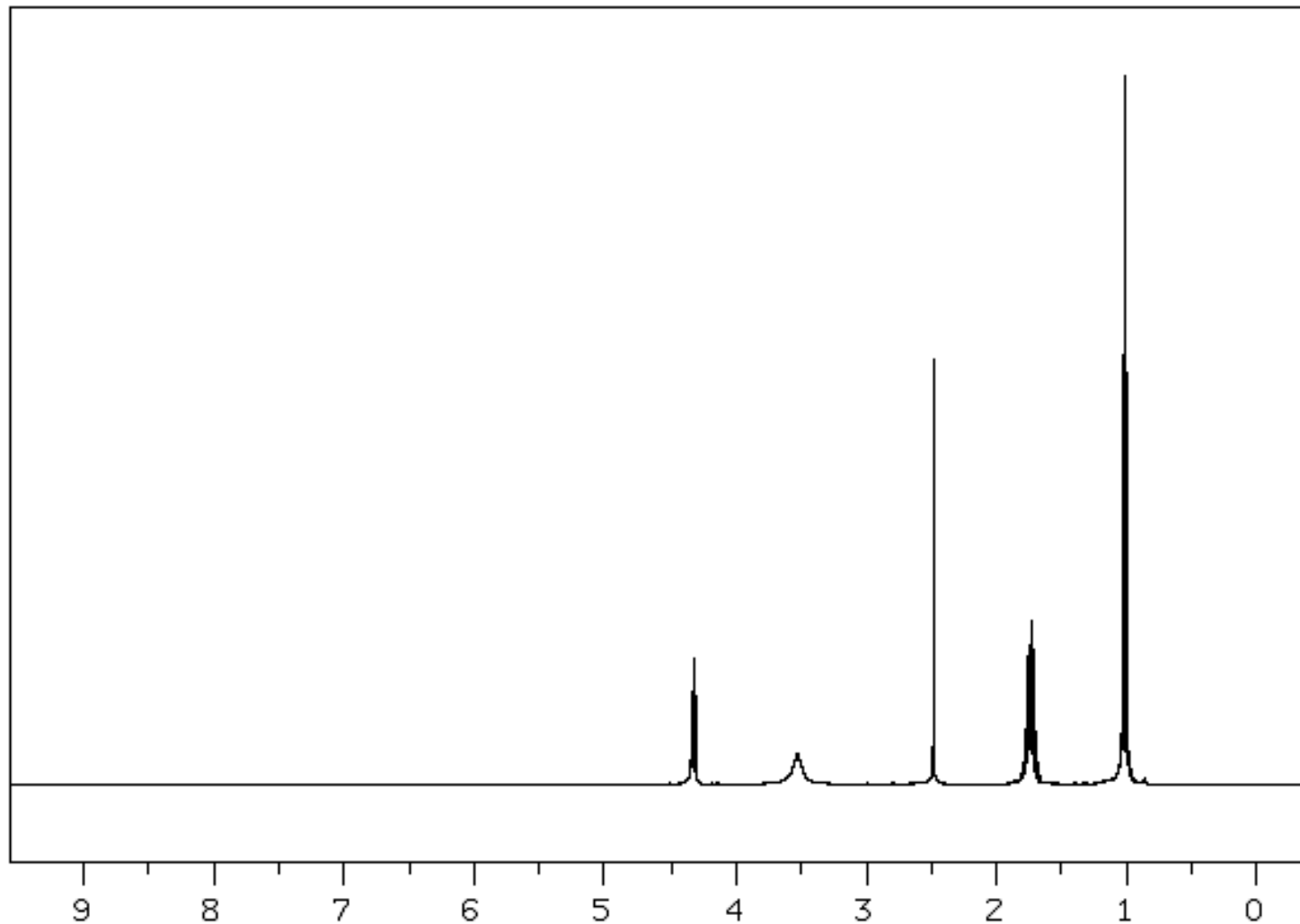
# IR Spectrum of 2,3-Dimethylbenzonitrile

IR: Liquid film; Wavenumbers ( $\text{cm}^{-1}$ ): 3072, 2960, 2868, 2222, 1592, 1467, 1388.



# **$^1\text{H}$ NMR Spectrum of Pent-1-yn-3-ol**

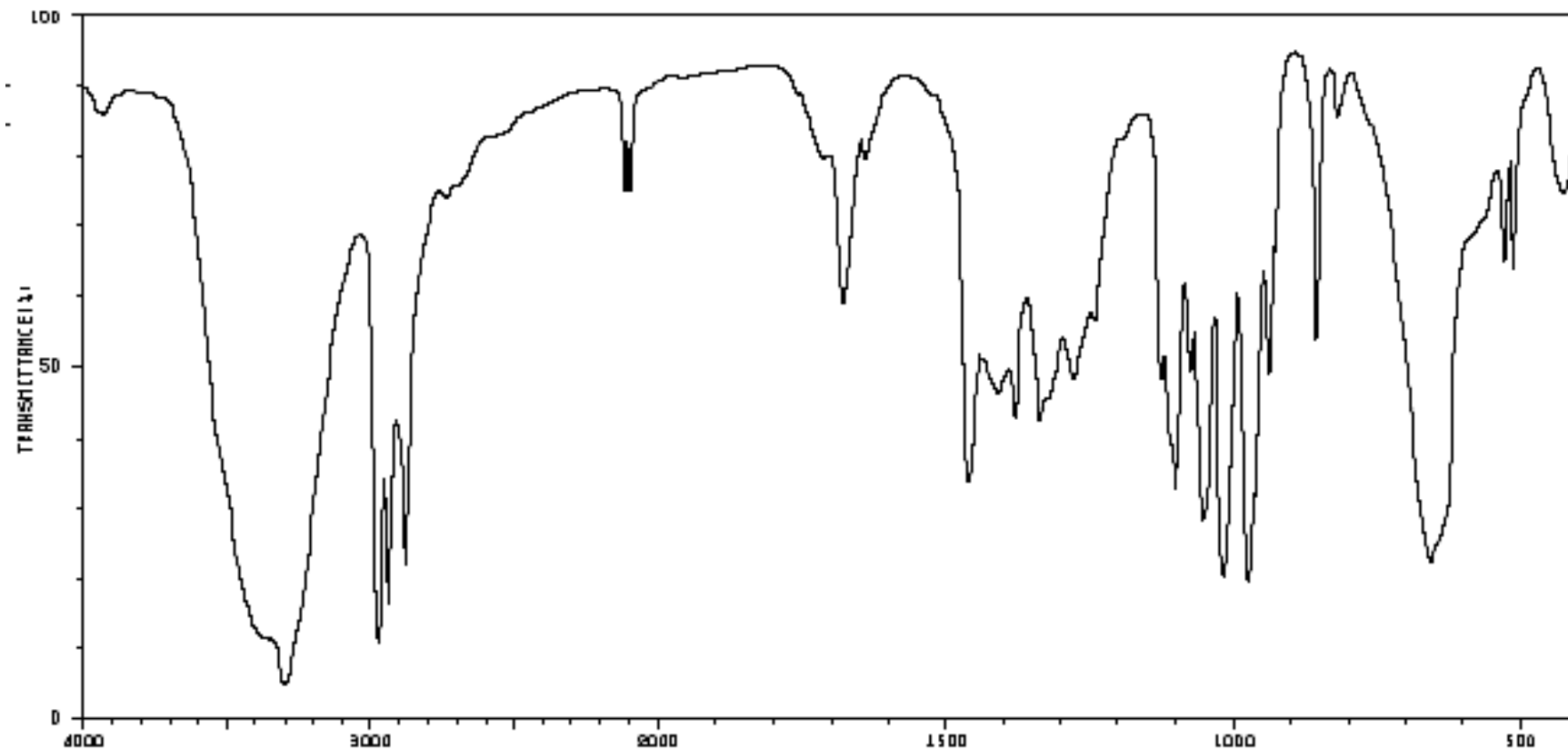
400 MHz,  $\text{CDCl}_3$ :  $\delta$  (in ppm): 4.33, 3.53, 2.48, 1.74 and 1.01.



**$^1\text{H}$  NMR spectrum of pent-1-yn-3-ol**

# IR Spectrum of Pent-1-yn-3-ol

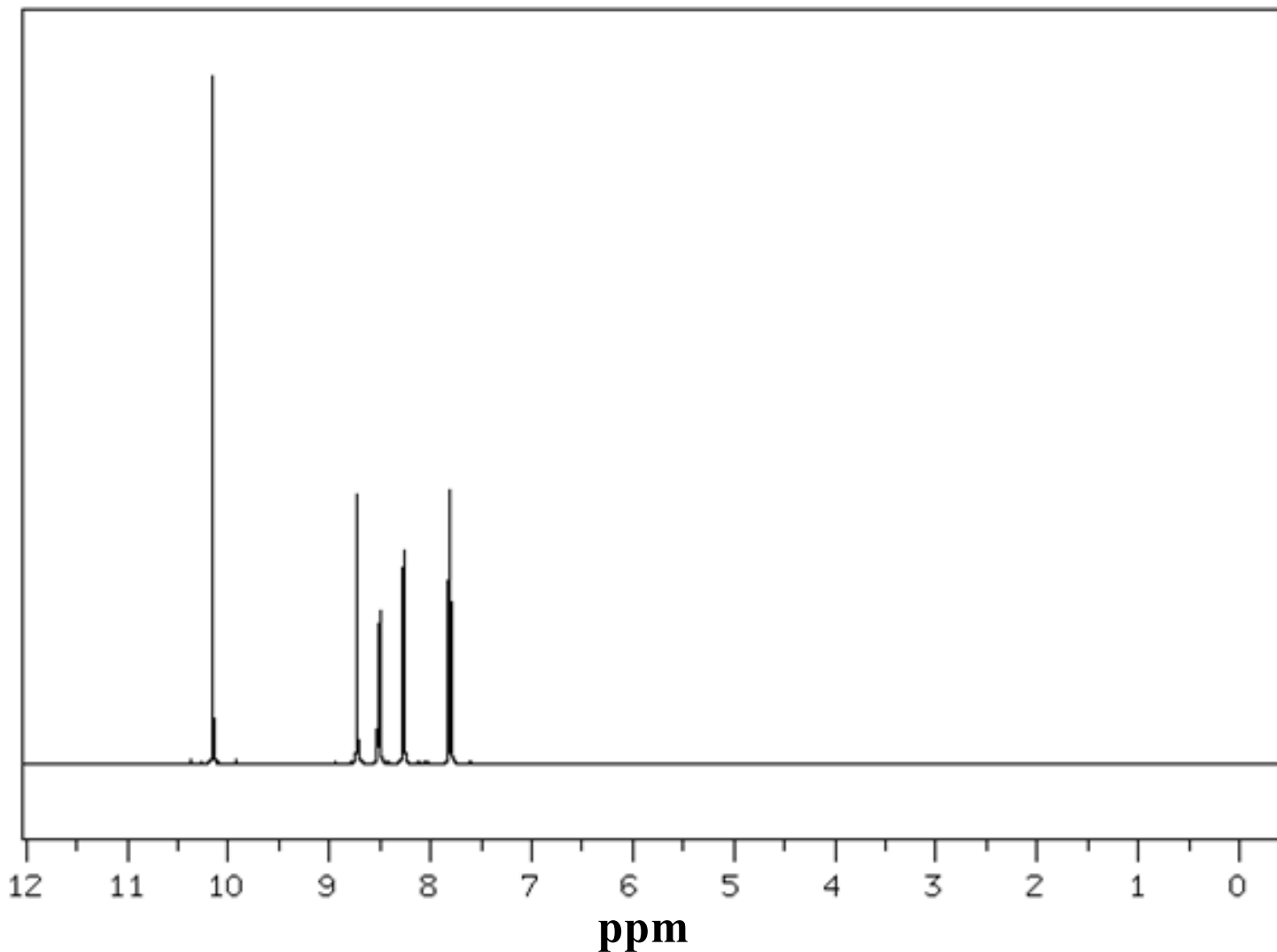
**FT-IR (Liquid film): Wavenumbers ( $\text{cm}^{-1}$ ): 3400-3100, 3300, 2971, 2939, 2881, 2116, 1462, 1382 and 1101.**



wavenumbers ( $\text{cm}^{-1}$ )

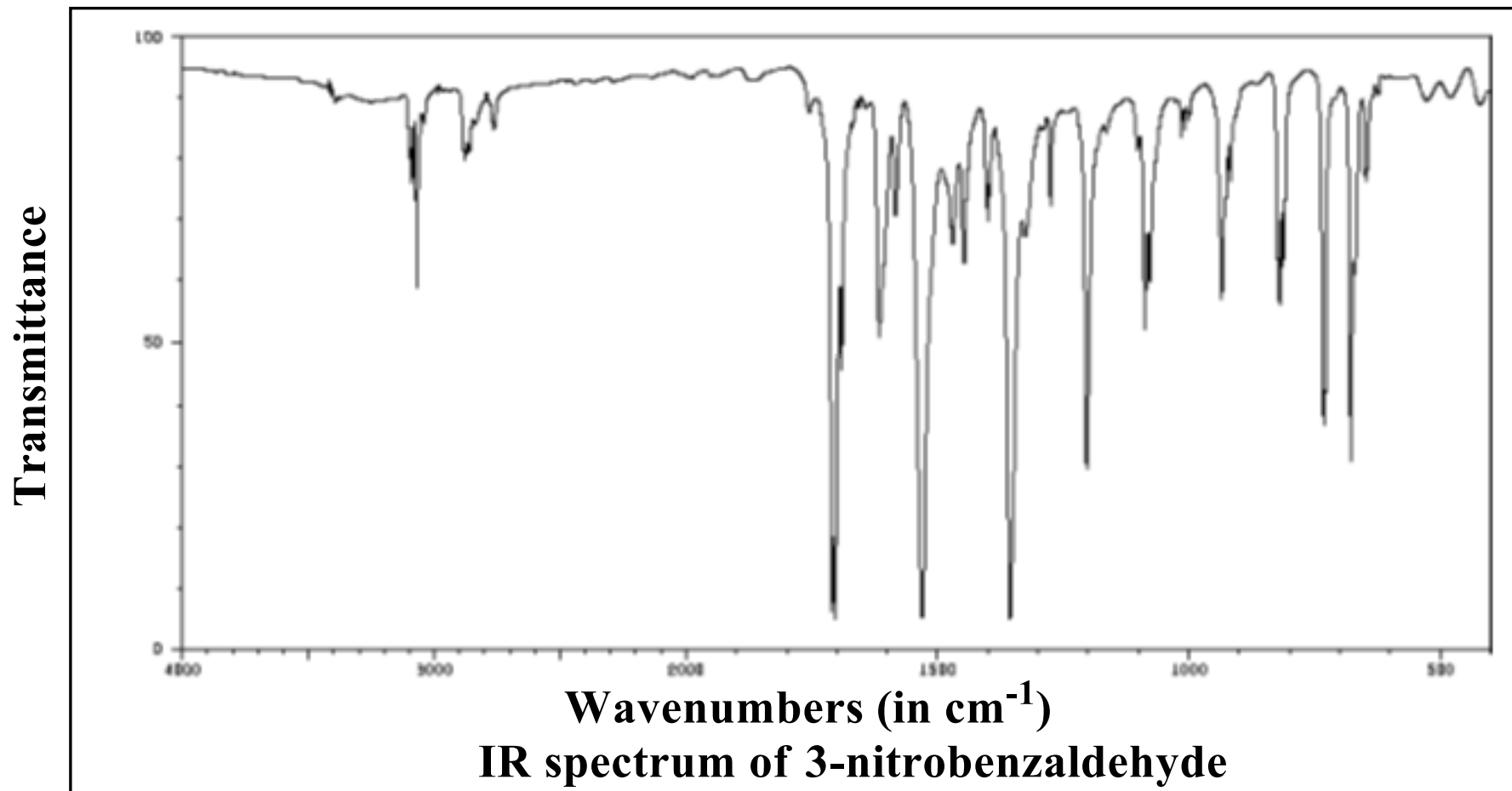
# $^1\text{H}$ NMR Spectrum of 3-Nitrobenzaldehyde

100 MHz,  $\text{CDCl}_3$ :  $\delta$  (in ppm): 10.15, 8.73, 8.51, 8.27 and 7.81.



# IR Spectrum of 3-Nitrobenzaldehyde

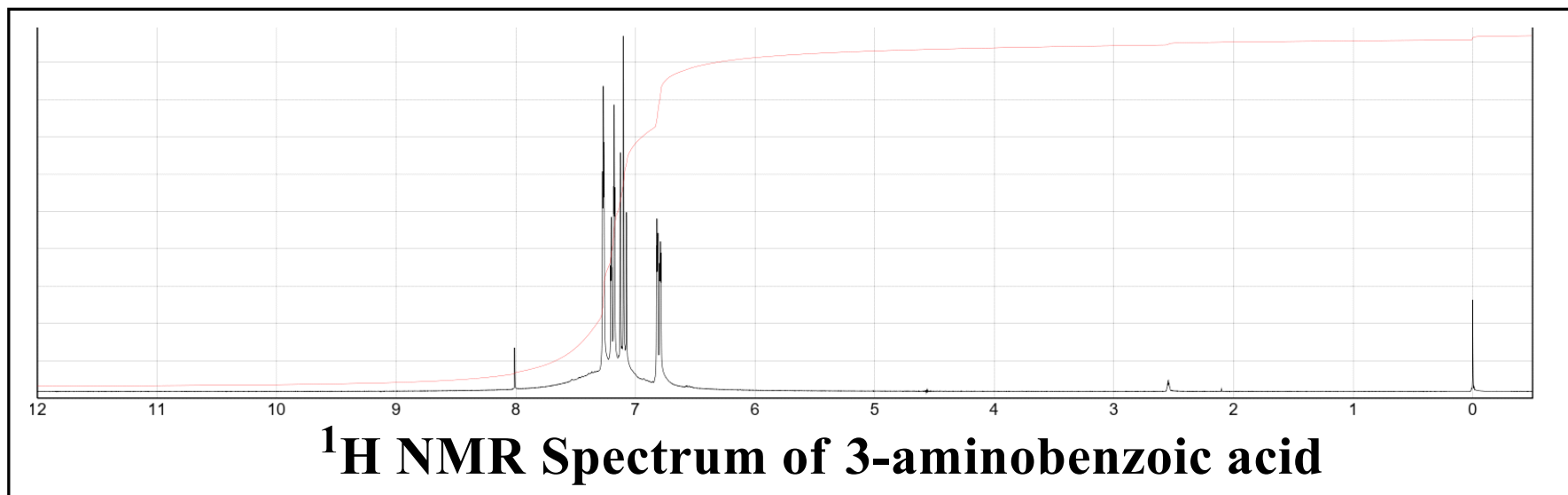
IR: KBr; Wavenumbers ( $\text{cm}^{-1}$ ): 3089, 3070, 2878, 2764, 1703, 1616, 1584, 1531, 1357 and 918.





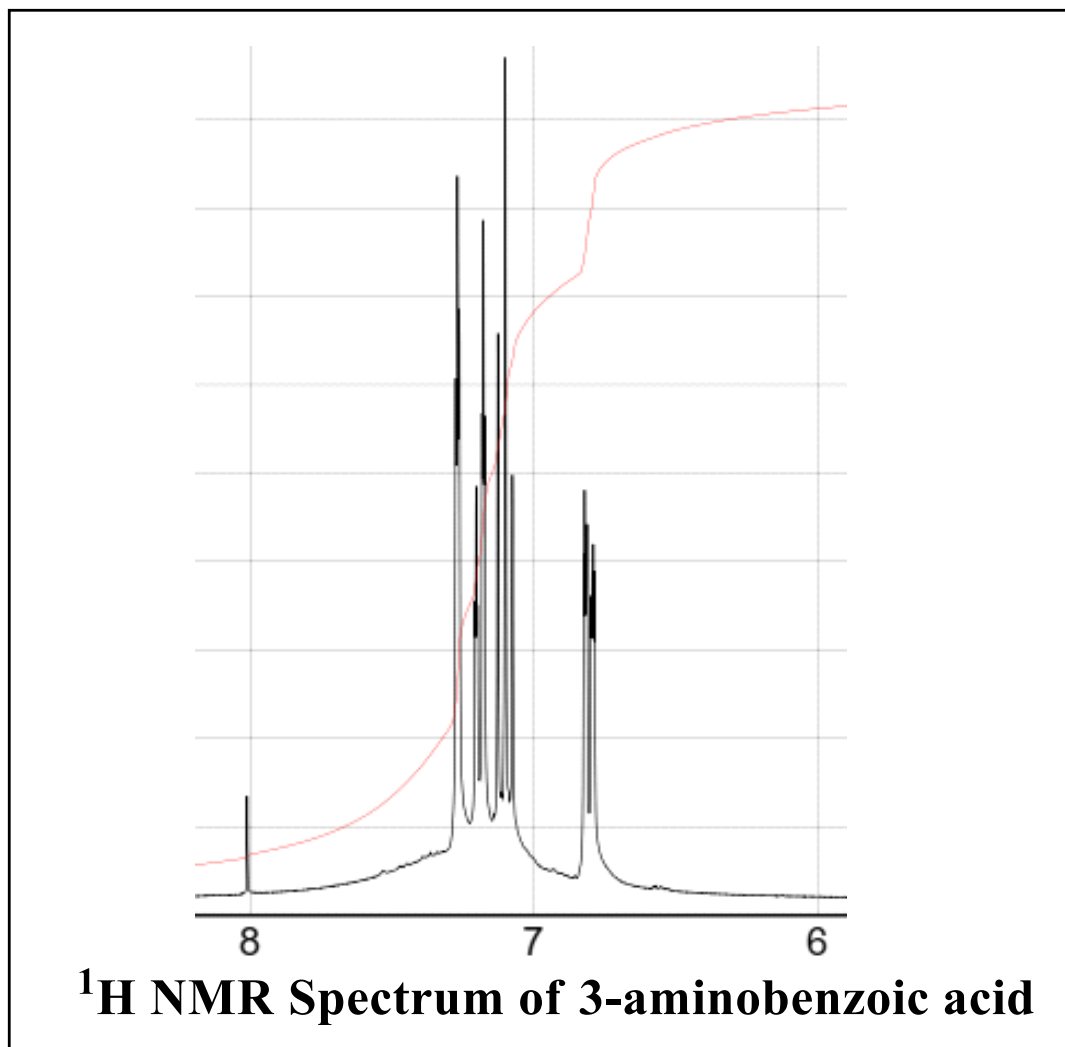
# $^1\text{H}$ NMR Spectrum of 3-Aminobenzoic acid

300 MHz,  $\text{CDCl}_3 + \text{DMSO-d}_6$ :  $\delta$  (in ppm): 8.05, 7.26, 7.18, 7.10, 6.81, and 2.50.



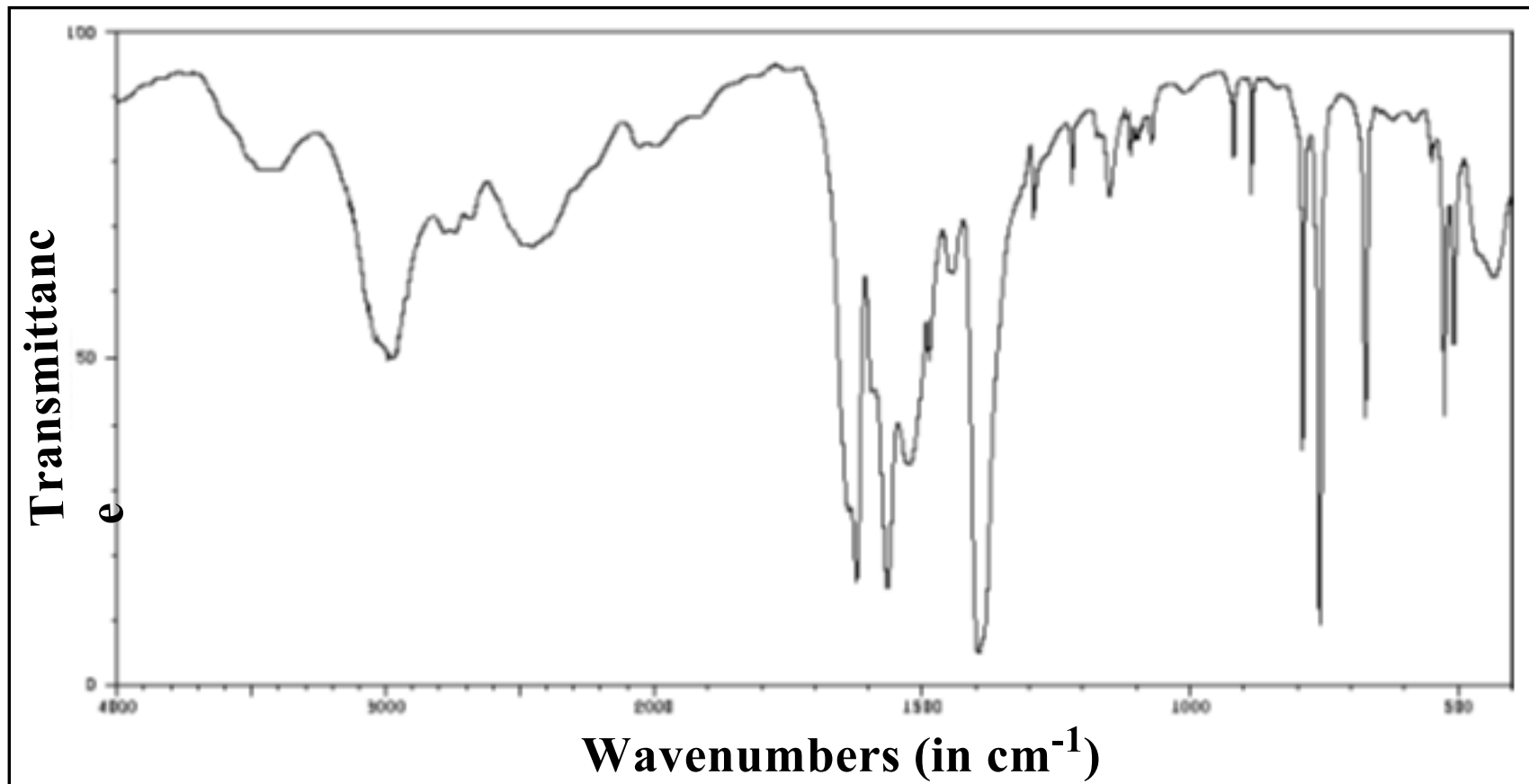
# **$^1\text{H}$ NMR Spectrum of 3-Aminobenzoic acid**

## *Expanded Form*



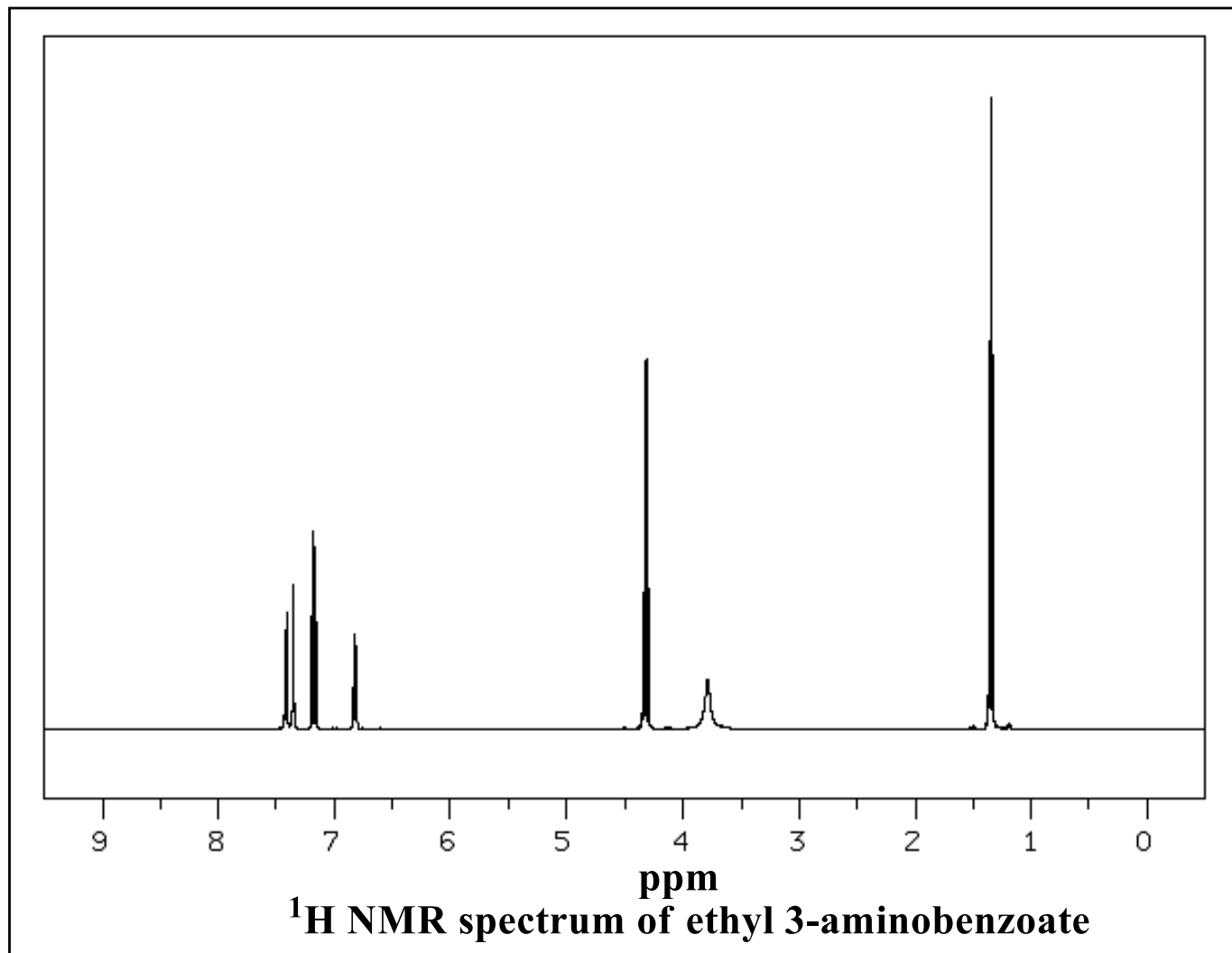
# IR Spectrum of 3-Aminobenzoic acid

**FT-IR (KBr): Wavenumbers ( $\text{cm}^{-1}$ ): 3500-3300, 3200-2800, 2996, 1636, 1566, 1526, 1461, 1396, and 1293.**



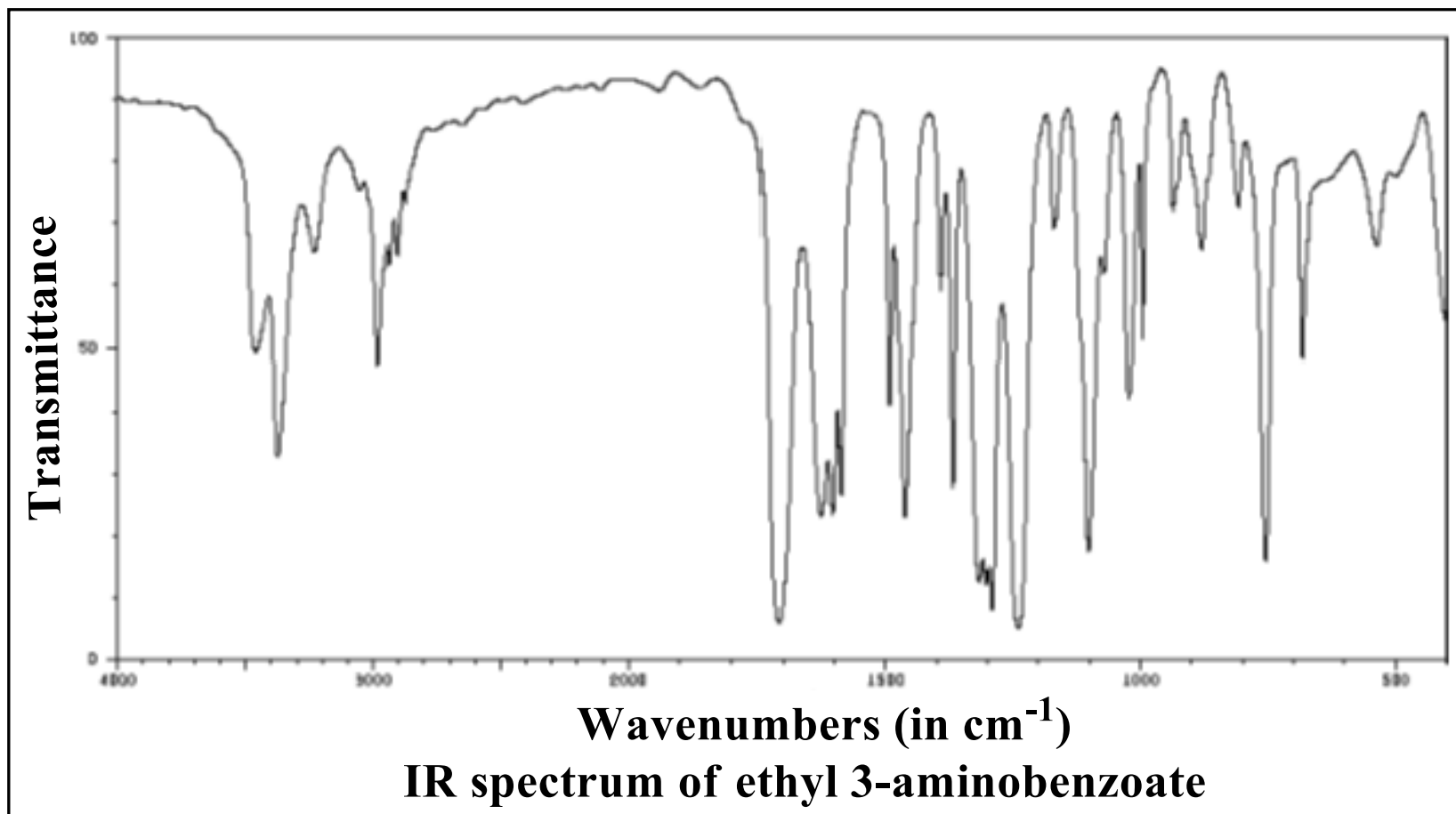
# $^1\text{H}$ NMR Spectrum of Ethyl 3-aminobenzoate

400 MHz,  $\text{CDCl}_3$ :  $\delta$  (in ppm): 7.41, 7.35, 7.17, 6.82, 4.33, 3.79 and 1.35.



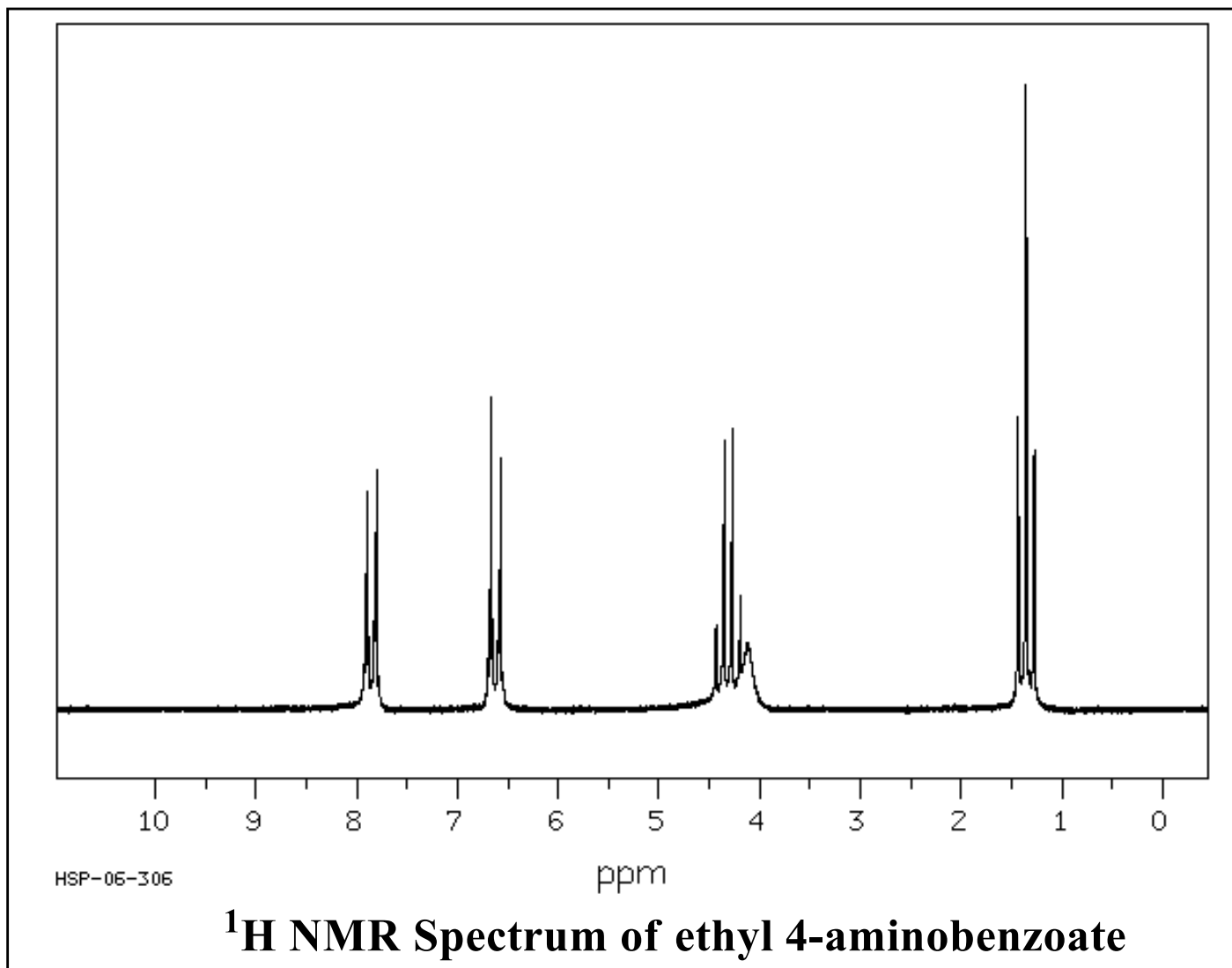
# IR Spectrum of Ethyl 3-aminobenzoate

**IR: Liquid film; Wavenumbers ( $\text{cm}^{-1}$ ): 3461, 3374, 3226, 3069, 2982, 2936, 2873, 1708, 1604, 1588, 1493, 1462, 1368, and 1292.**



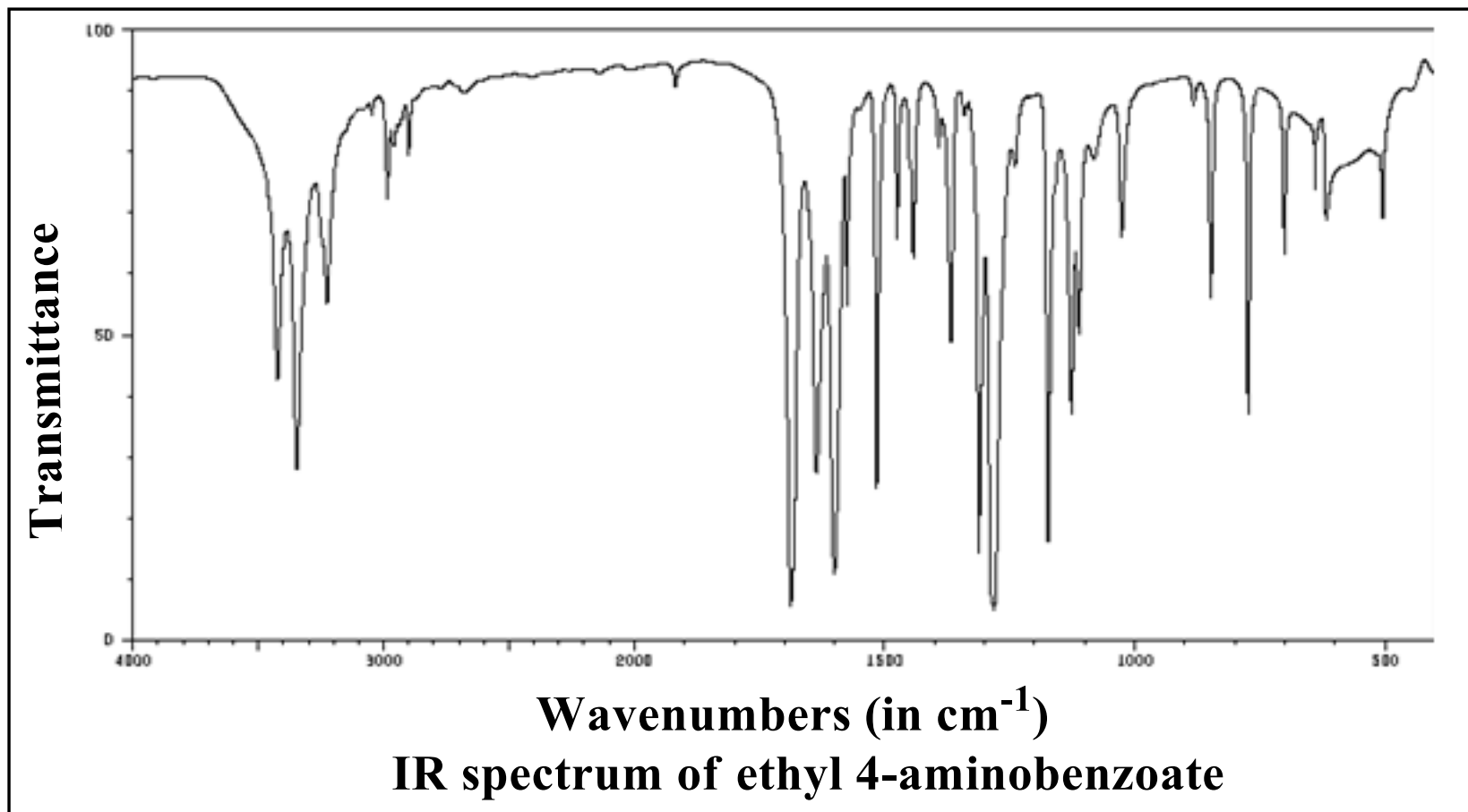
# $^1\text{H}$ NMR Spectrum of Ethyl 4-aminobenzoate

90 MHz,  $\text{CDCl}_3$ :  $\delta$  (in ppm): 7.85, 6.63, 4.31, 4.10 and 1.36.



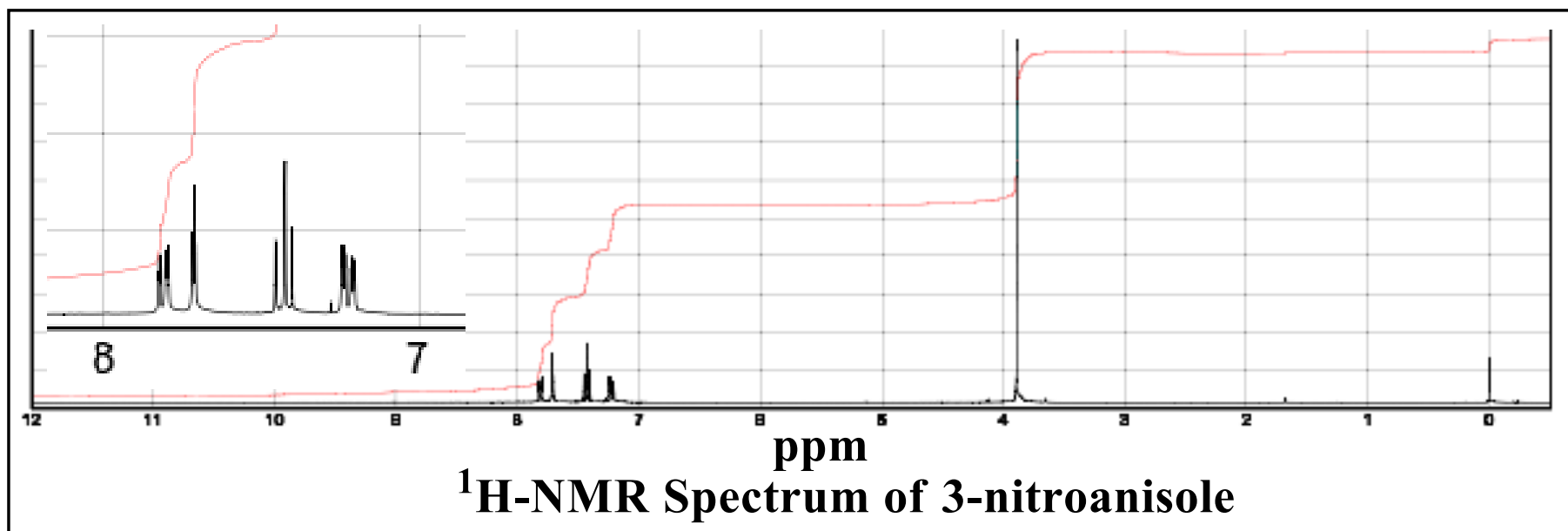
# IR Spectrum of Ethyl 4-aminobenzoate

**FT-IR (KBr): Wavenumbers ( $\text{cm}^{-1}$ ): 3424, 3346, 3225, 3047, 2986, 2956, 2900, 1687, 1601, 1575, 1518, 1476, 1460, 1367 and 1282.**



# $^1\text{H}$ NMR Spectrum of 3-Nitroanisole

300 MHz,  $\text{CDCl}_3$ :  $\delta$  (in ppm): 7.82, 7.71, 7.43, 7.24 and 3.79.





# IR Spectrum of 3-Nitroanisole

IR: KBr; Wavenumbers ( $\text{cm}^{-1}$ ): 3101, 3081, 2977, 2843, 1614, 1581, 1529, 1465, 1366, 1251, and 1043.

