## **Characteristic Infrared Absorption Frequencies**

Structural Unit	Wavenumber, cm <sup>-1</sup>	Special Features
- <del>(</del> 0-H)	3200-3600 (s, br)	
$\begin{array}{c} \begin{array}{c} & & \\ N - H \end{array} \\ \begin{array}{c} & \\ \end{array} \end{array}  \end{array} \begin{array}{c} & \\ H \end{array}$	3300-3500 (m)	R <sub>2</sub> N-H = one IR stretch RNH <sub>2</sub> = two IR stretches
=С-Н;	~3300 (s)	
	2850-2960 (m)	Look for $C_{sp3}$ —H stretches just below 3000 cm <sup>-1</sup> H-C-H bending just above 1400 cm <sup>-1</sup> -CH <sub>3</sub> bending just below ~1400 cm <sup>-1</sup>
\ ¦С-Н¦ ///	3000-3100 (m)	Look for $C_{sp2}$ -H stretches just above 3000 cm <sup>-1</sup>
-(C=N)	2200-2300 (s)	
	~2150 (v)	
Carbonyl Groups	1650-1850 (s)	Variable depending on the carbonyl functionality (see below)
CI >= 0	1750-1850	
RO )=0	1700-1750	Also look for strong Csp <sup>2</sup> —0 stretch between 1200 and 1300 cm <sup>-1</sup>
H )=0	1720-1740	Also look for aldehyde C—H stretches at ~2720 and ~2820 cm <sup>-1</sup>
>⊨o	1680-1750	Generally around 1720 cm <sup>-1</sup> ; Decreased when in conjugation
H <sub>2</sub> N >=0	1650-1700	
; C = C ; ; \	1600-1700 (v)	
	1450-1600 (v)	Look for 2 or 3 peaks in this region generally at $\sim$ 1600, $\sim$ 1500, and $<$ 1500 cm <sup>-1</sup>
	Csp <sup>3</sup> —0: 1000-1100 (m) Csp <sup>2</sup> —0: 1200-1300 (s)	

Absorption strength abbreviations: s = strong, m = medium, w = weak, v = variable