

3600 3400 3200 3000 2800 2600 2400 cm ⁻¹														
									s					—CH ₃ >CH ₂
									w					>C—H
							w							
											w			—CHO
									m					—OCH ₃
										m				—O—CH ₂ —O—
										m				>N—CH ₃
				s										—C≡C—H
					m									>C=C< ^H _H
						m								>C=C< ^H
							w							aryl—H
Free OH														—O—H
														—NH ₂ =NH
														—CONH ₂ in solution
														—CONH ₂ solid state
														—CONH— in solution
														—CONH— solid state
														—NH ₃ ⁺
														>NH ₂ ⁺ >NH ⁺ =NH ⁺ —
														S—H
														P—H
														P ^{O—H} _{≤O}

Valence vibrations of hydrogen, $\nu(\text{H-Y})$; intensity: s, strong; m, medium; w, weak; and v, variable.

2400	2300	2200	2100	2000	1900	cm ⁻¹	
			w				—C≡CH
		v					—C≡C—
		v					—C≡N
	s						—N ⁺ ≡N
		s					—S—C≡N
s							O=C=O
	s						—N=C=O
		s					—N=N=N
		s					—N=C=N—
		s					>C=C=O
			s				—N=C=S
			s				>C=N=N
				1			>C=C=N—
					m		>C=C=C<

Valence vibrations of triple bonds and cumulated double bonds;
intensity: s, strong; m, medium; w, weak; and v, variable.

1800	1700	1600	1500	1400	cm ⁻¹	
		m				—NH ₂ (amide: s)
			w			>NH (amide: s)
		s	s			—NH ₃ ⁺
		m-w				>C=C<
		m				>C=C< (conj. to aryl)
	1 s	2 s				diene (1), triene (2)
←1870	cf. Fig. 2.13	1500→	s			>C=O
		s				C=C—C=O
	v					>C=N<
	v					C=C—C=N<
			v			>C=N— (conj. cyclic)
		v				>N=N<
		v				O>N ⁺ =N<
			s			—HN>N ⁺ =N<
	s					>C=C<—N—>C=C<—O—
One or two bands		m	m			arenes, pyridines
			s			C—NO ₂
	s					O—NO ₂
		s				N—NO ₂
			s			C—N=O
Two bands	s					O—N=O
				s		N—N=O

1900	1800	1700	1600	1500 cm^{-1}	
					aldehyde (saturated)
					aldehyde (α,β -unsaturated; aryl-)
					ketone (saturated, open chain)
	4-membered	5-membered			ketone (cyclic; 4- and 5-membered ring)
					ketone (α,β -unsaturated; aryl-)
					ketone (α - and α,α' -halogenated)
					ketone (α,β -, α,β' -unsaturated; quinone)
					ketone, aldehyde or ester with H-bridge
					1,2-diketone
					ester (saturated, open chain)
4-membered		5-membered			ester (4- and 5-membered lactone)
					ester (α,β -unsaturated; aryl-)
					ester (α,β -unsaturated five-ring lactone)
					ester (β,γ -unsaturated five-ring lactone)
					ester (vinylester -CO-O-C=C)
					ester (α -halogen- and α -keto-ester)
					thioester R-CO-S-R'
					carboxylic acid (saturated)
					carboxylic acid (α,β -unsaturated; aryl-)
					carboxylic acid chloride
					carboxylic acid anhydride
					carboxylic acid (α -halogenated)
					carboxylate ion
					peroxo carboxylic acid (R-CO-OO-H)
					amide (primary, in solution)
			two bands		amide (primary, solid state)
					amide (N-monosubstituted, in solution)
				only open chained	amide (N-monosubstituted, solid state)
					amide (N,N-disubstituted)
	4-membered	5-membered			amide (4- and 5-membered lactam)
		two bands			imide
					urethane

Carbonyl valence vibrations $\nu(\text{C=O})$; all bands are strong



Characteristic absorptions in the fingerprint range; intensity: s, strong; m, medium; and w, weak.