SOME CHARACTERISTIC IR ABSORPTION FREQUENCIES

BOND	COMPOUND TYPE	FREQUENCY RANGE, cm^{-1}
C-H	Alkanes	2850-2960 & 1350-1470
	Alkenes	3020-3080 (m) &
	RCH=CH2	910-920, 990-1000
	R2C=CH2	880-900
	Cis-RCH=CHR	675-730 (v)
	Trans-RCH=CHR	965-975
	Aromatic rings	3000-3100 &
	mono substituted	690-710, 730-770
	ortho disubstituted	735-770
	meta disubstituted	690-710, 750-810 (m)
	para disubstituted	810-840 (m)
	Alkynes	3300
	Aldehydes	2720
O-H	Alcohols or phenols	3200-3640 (b)
	Carboxylic acids	2500-3000 (b) & 1400, 920 (b)
N-H	Amides	3050-3550
	1° amines	3200-3500 (often 2 bands) & 650-900 (b)
	2° amines	3200-3500
C=C	Alkenes	1640-1680 (v)
	Aromatic rings	1500 & 1600 (v)
C-O	Acids	1250
	1° alcohols	1050 (b)
	2° alcohols	1100 (b)
	3° alcohols	1150 (b)
	ArOH	1230 (b)
	Alkyl ether	1060-1150
	Aryl ether	1200-1275 (b) & 1020-1075 (m)
	Esters	1050-1300 (2 bands)
C-N	Aliphatic amines	1030-1230 (w) (3°:usually a doublet)
	Aromatic amines	1180-1360 (2 bands)
C=O	Acids	1680-1725
	Aldehydes	1700-1725
	Ketones	1690-1710
	Esters	1740-1770
	Amides	1650-1690

bands strong unless marked: m,moderate; w,weak; v,variable; b,broad.

Characteristic Proton Chemical Shifts

Type of Proton		Chemical Shift, ppm
primary	RCH_3	0.9
secondary	R_2CH_2	1.3
tertiary	R_3CH	1.5
vinylic	C=C-H	4.6-5.9
Aromatic	Ar-H	6-8.5
Benzylic	Ar-C-H	2.2-3
allylic	$C=C-CH_3$	1.7
Halides	HC-X	2-4.5
alcohols	HC-O	3.4-4
ethers	HC-OR	3.3-4
esters	$HC-CO_2R$	2-2.2
esters	$HC-O_2CR$	3.7-4.1
acids	$HC-CO_2$	2-2.6
carbonyl	HC-C=O	2-2.7
aldehydic	RCHO	9-10
hydroxlic	ROH	1-5.5
phenolic	ArOH	4-12
carboxlic	RCO_2H	10.5-12
amino	RNH_2	1-5