NMR Chemical Shift Data

^{1}H NMR (δ)		**^{13}C NMR δ**	
Primary alkyl C**H$_3$**	0.9 ppm	Aldehyde/Ketone Carbonyl **C**=O	220 - 190 ppm
Secondary alkyl C**H$_2$**	1.3 ppm	Acid/Ester/Amide Carbonyl **C**=O	180 - 150 ppm
Tertiary alkyl C**H**	1.5 ppm	Alkene **C=C**	150 - 100 ppm
Alkene =C**H**	4.6 - 5.9 ppm	Aromatic **C=C**	140 - 110 ppm
Alkyne ≡C**H**	2 - 3 ppm	Alkyne **C≡C**	100 - 75 ppm
Aromatic Ar-**H**	6 - 8.5 ppm	Alcohol **C**-O	95 - 35 ppm
Benzylic ArC**H$_3$**	2 - 2.3 ppm	Ester **C-**OC(O)	95 - 35 ppm
Allylic =C-C**H$_3$**	1.7 ppm	Amine/Amide **C**-N	95 - 35 ppm
Alkyl Fluoride R-C**H$_2$**-F	4 - 4.5 ppm	Alkyl R-**C**-R	60 - 0 ppm
Alkyl Chloride R-C**H$_2$**-Cl	3 - 4 ppm	**Splitting patterns in spin 1/2 nuclei (^{1}H, ^{13}C, ^{19}F ^{31}P etc)**	
Alkyl Bromide R-C**H$_2$**-Br	2.5 - 4 ppm	singlet (s)	none
Alkyl Iodide R-C**H$_2$**-I	2 - 4 ppm	1:1 doublet (d)	one
Hydroxyl RO**H**	1 - 6 ppm	1:2:1 triplet (t)	two identical
Alcohol R-C**H$_2$**-OH	3.4 - 4 ppm	1:3:3:1 quartet (q)	three identical
Ether R-C**H$_2$**-OR	3.3 - 4 ppm	1:4:6:4:1 quintet	four identical
Ester R-C**H$_2$**-OC(O)R	3.7 - 4.1 ppm	septet	six identical
Ester ROC(O)C**H$_2$**-R	2 - 2.2 ppm	1:1:1:1 doublet of doublets (dd)	two different
Aldehyde RC**H**O	9 - 10 ppm	doublet of doublet of doublets (ddd)	three different
Aldehyde R-C**H$_2$**-CHO	2 - 2.7 ppm	**Unsaturation Number, U.N. = # of rings and/or double bonds**	
Ketone R-C**H$_2$**-C(O)-R	2 - 2.7 ppm	U.N. = {[#C - 1/2 (#H)] + 1/2(#N)} + 0(#O) +1	
Phenol ArO**H**	4 - 12 ppm	#C = number of Carbon atoms #H = number of Hydrogen atoms (and Halogens) #N = number of Nitrogen atoms #O = number of Oxygen atoms	
Carboxyl R-C**O$_2$H**	10 - 12 ppm		
Amino R-N**H$_2$**	1 - 5 ppm		