

## Representative $^{13}\text{C}$ Chemical Shifts

$^{13}\text{C}$ NMR Chemical Shift Correlations	
<u>Type of carbon</u>	<u>Chemical Shift (<math>\delta</math>) ppm</u>
1° alkyl, $\text{RCH}_3$	0-40
2° alkyl, $\text{RCH}_2\text{R}$	10-50
3° alkyl, $\text{RCHR}_2$	15-50
4° alkyl, $\text{R}_4\text{C}$	15-50
$\text{R}_3\text{CBr}$ , $\text{R}_3\text{CCl}$ , $\text{R}_3\text{C-N-R}_2$	10-65
$\text{R}_3\text{-C-O-H}$ , $\text{R}_3\text{-C-O-R}$	50-90
$\text{RC}\equiv\text{CR}$	60-90
$\text{RC}=\text{CR}$	100-170
Aromatic	100-170
$\text{R-C}\equiv\text{N}$	120-130
Amide carbonyl ( $\text{C}=\text{O}$ )	150-180
Carboxylic acid carbonyl ( $\text{C}=\text{O}$ )	160-185
Aldehyde or ketone carbonyl ( $\text{C}=\text{O}$ )	182-215
Ester carbonyl ( $\text{C}=\text{O}$ )	160-185