

Phys. Org. Study Guide

Bond Dissociation Energies (kcal/mol)			Bond Lengths (Å)				
C-H	99	C-C	83	C=C	146	C-C	1.54
C≡C	200	O-H	111	C-O	86	C=C	1.31
C=O	179					C≡C	1.18
						C-H	1.1

pKa's

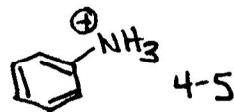
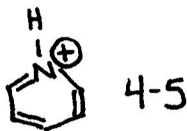
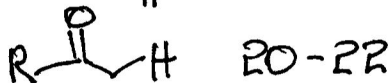
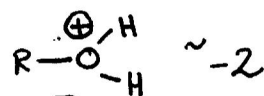
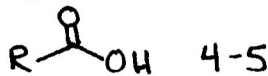
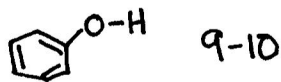
R-OH 15-18

R-NH₂ 35-40

R-NH₃⁺ 9-10

R-H 45-50

R-SH 10-12



R-C≡C-H 25

Equilibrium/Thermodynamics

~1.4 kcal/mol in $\Delta G^\circ \approx$ one order of magnitude ($\times 10$) in K

$$K_{eq} = e^{-\Delta G^\circ/RT}$$

$$\Delta G^\circ = \Delta H^\circ - T\Delta S^\circ$$