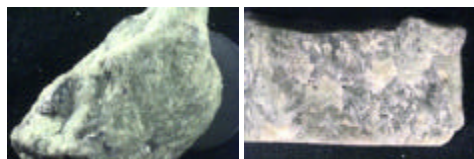


BOWEN'S REACTION SERIES

AND THE IGNEOUS ROCK FORMING MINERALS

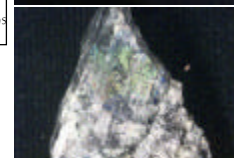


Ferro-Magnesium (Mafic) Minerals

Olivine isolated SiO_4
 light green, glassy, often as small grains

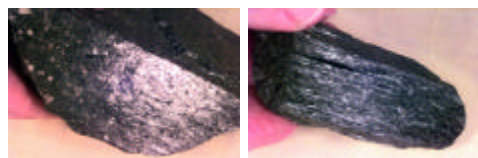
Non-Ferro-Magnesium (Feldspar) Minerals

Ca Plagioclase
 dark, almost black to light gray; 90° cleavage; striations and/or iridescence



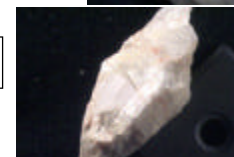
Pyroxene single chain
 dark green/black; dull blocky; 90° cleavage

Ca/Na
 white; 90° cleavage; striations sometimes; appears translucent



Amphibole double chain
 black, shiny, elongate, crystals; 60-120° cleavage

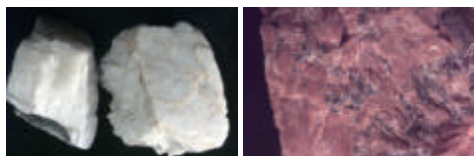
Na Plagioclase
 white; 90° cleavage; striations sometimes; appears translucent



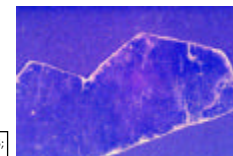
Biotite sheet
 black, very shiny, in thin very smooth sheets

Orthoclase

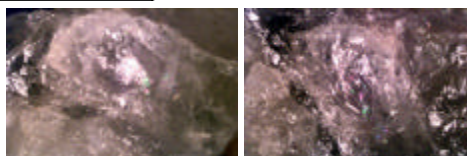
pink, white, greenish; two cleavages 90°; opaque



Muscovite
 white to brassy thin sheets; clear; very smooth



Quartz
 glassy, clear, often appears gray in rocks; no cleavage



Framework silicates

