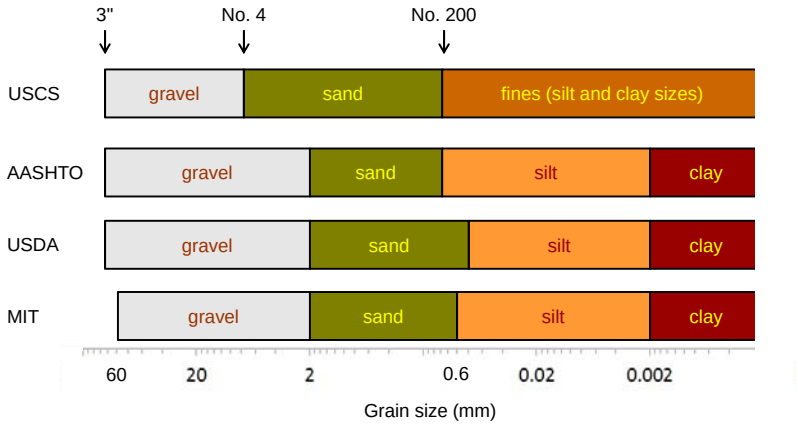
Soil Particle Size

Chapter 2.11

Soil Particle Size



Clay Mineralogy

Chapter 2.12

Products of Weathering

Granite		**Basalt**
Coarse-grained		Fine-grained
Na-Feldspar $Na(AlSi_3O_8)$	Easily Weathered Minerals	Ca-Feldspar $Ca(Al_2Si_2O_8)$
K-Feldspar $K(AlSi_3O_8)$		Na-Feldspar $Na(AlSi_3O_8)$
Quartz SiO_2		Olivine $(Mg,Fe)_2SiO_4$

Products of Weathering

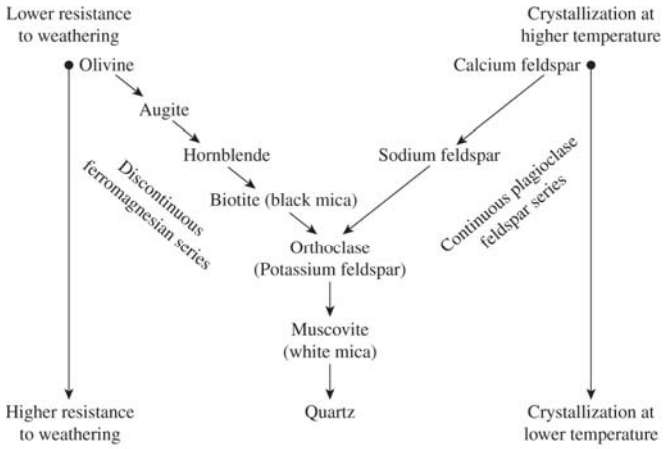
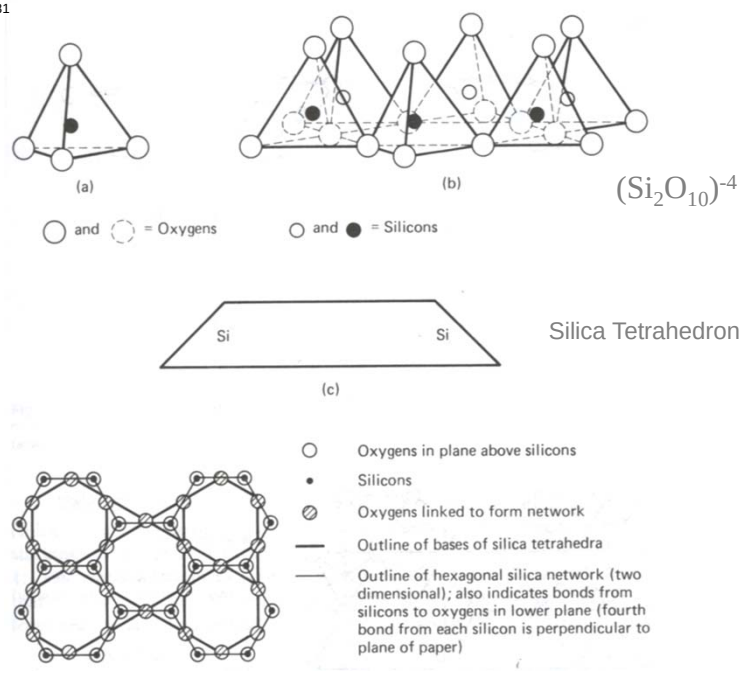


Figure 2.2 Bowen's Reaction Series

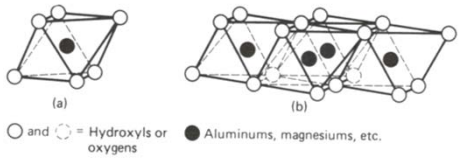
Holtz & Kovacs, 1981



$(Si_2O_{10})^{-4}$

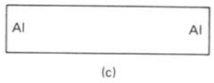
Silica Tetrahedron

Holtz & Kovacs, 1981



Gibbsite

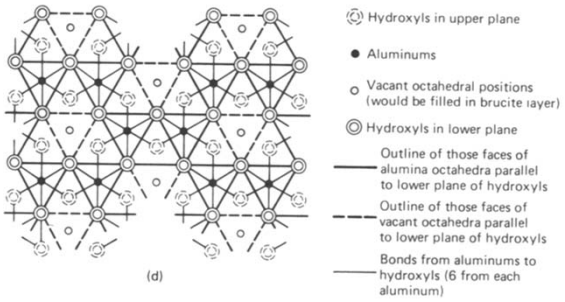
$Al_3(OH)_6$



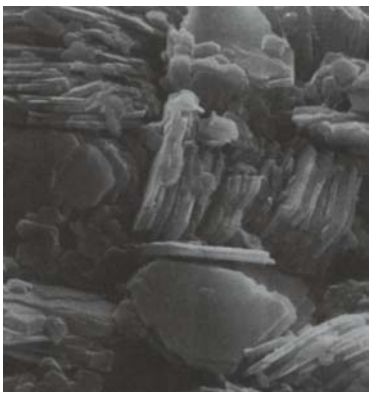
Aluminum Octahedron

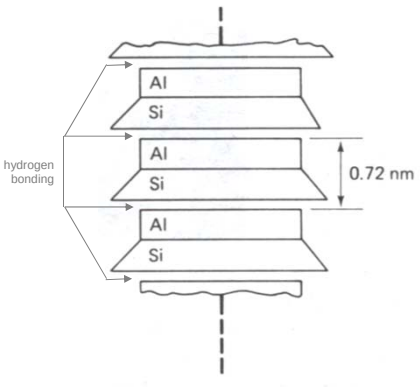
Brucite

$Mg_3(OH)_6$



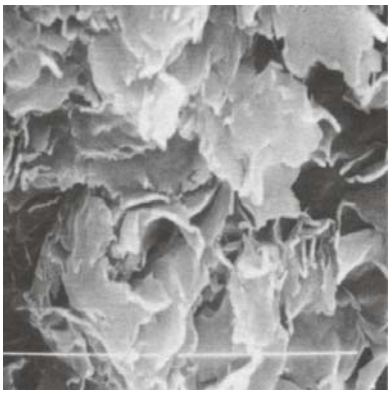
Kaolinite

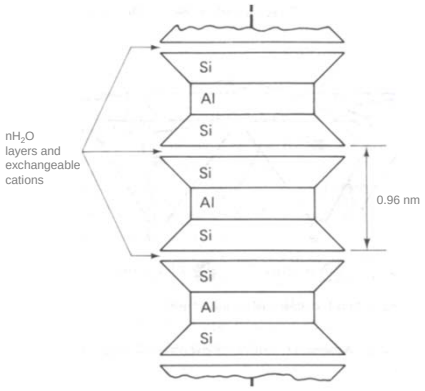




Specific surface = 15 m^2/g

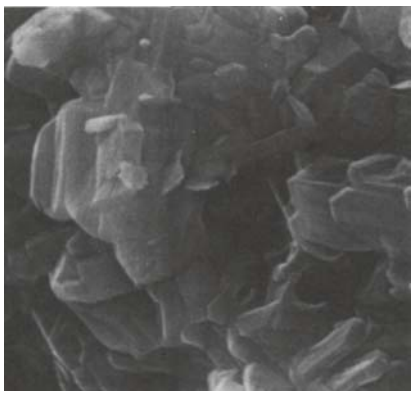
Montmorillonite

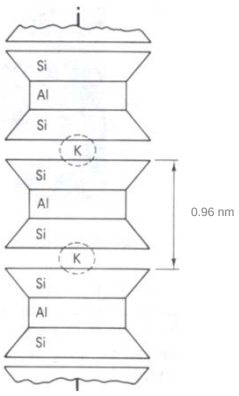




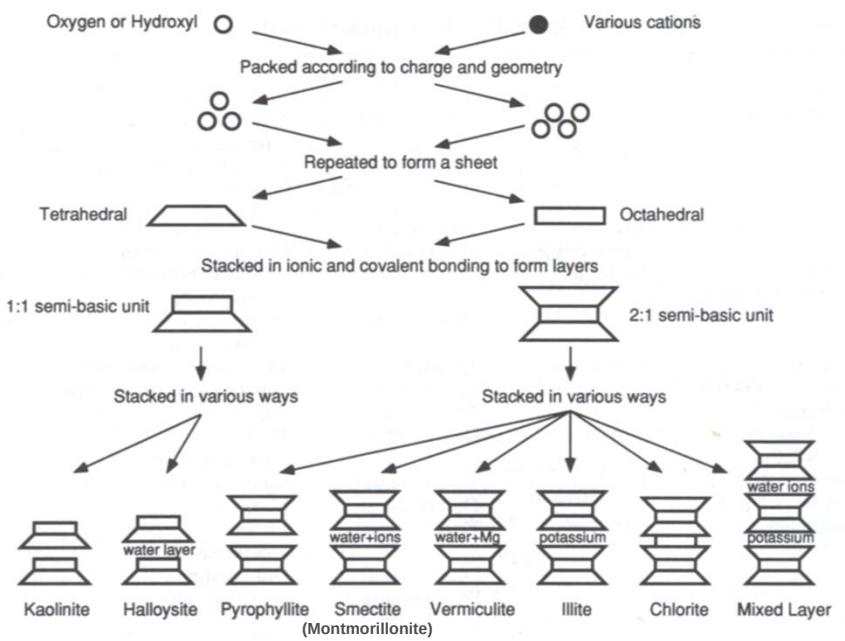
Specific surface = 800 m^2/g

Illite





Specific surface = 80 m^2/g



Mitchell, 1993

Clay Water

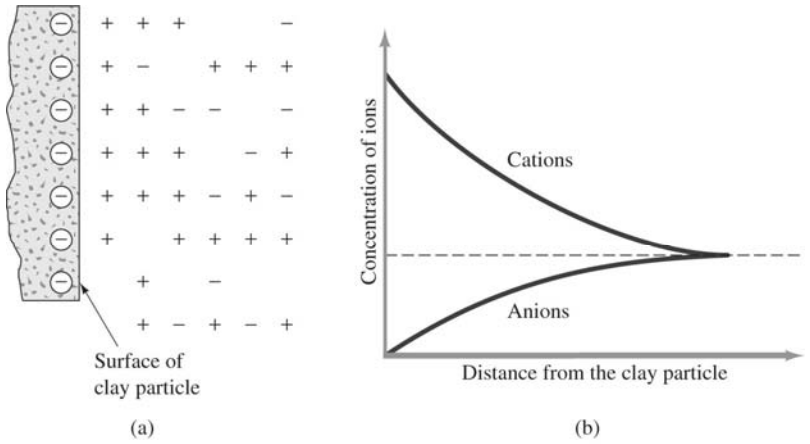


Figure 2.13 Diffuse double layer