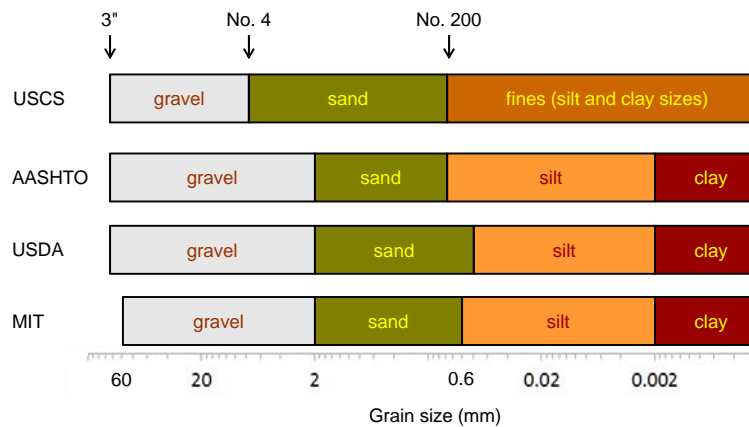


Soil Particle Size

Chapter 2.11

Soil Particle Size



Clay Mineralogy

Chapter 2.12

Products of Weathering

Granite

Coarse-grained

Na-Feldspar
 $\text{Na}(\text{AlSi}_3\text{O}_8)$

K-Feldspar
 $\text{K}(\text{AlSi}_3\text{O}_8)$

Quartz
 SiO_2

Easily
Weathered
Minerals

Basalt

Fine-grained

Ca-Feldspar
 $\text{Ca}(\text{Al}_2\text{Si}_2\text{O}_8)$

Na-Feldspar
 $\text{Na}(\text{AlSi}_3\text{O}_8)$

Olivine
 $(\text{Mg,Fe})_2\text{SiO}_4$

Products of Weathering

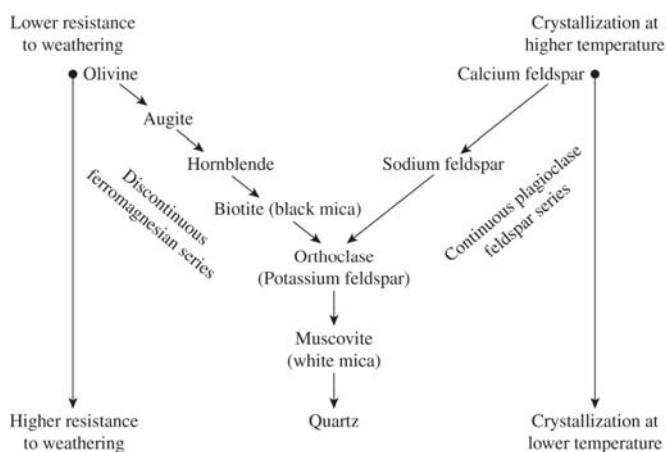
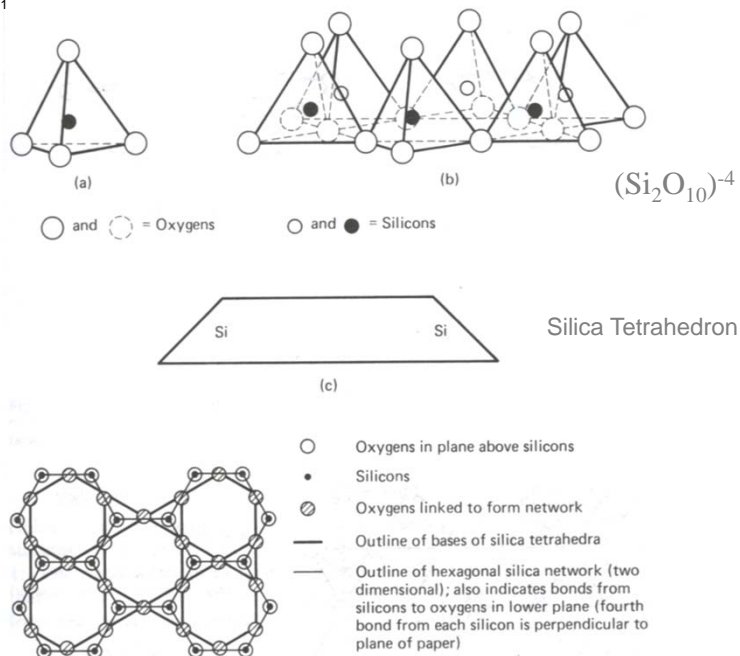
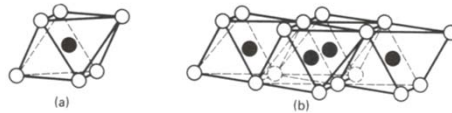


Figure 2.2 Bowen's Reaction Series

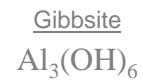
Holtz & Kovacs, 1981



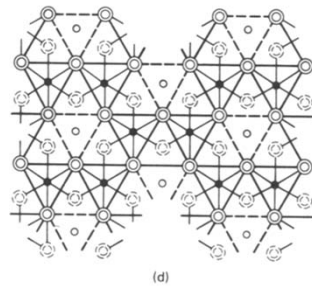
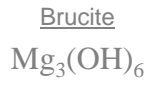
Holtz & Kovacs, 1981



○ and ○ = Hydroxyls or oxygens ● Aluminums, magnesiums, etc.

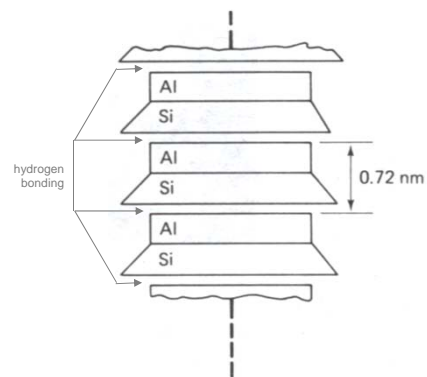
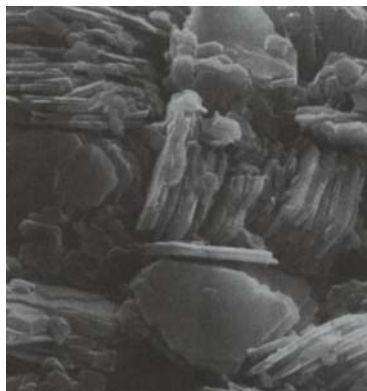


Aluminum Octahedron



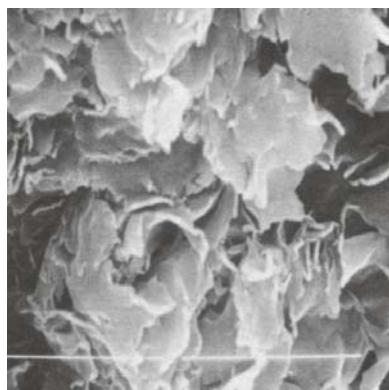
○ Hydroxyls in upper plane
 ● Aluminums
 ○ Vacant octahedral positions (would be filled in brucite layer)
 ⊙ Hydroxyls in lower plane
 — Outline of those faces of alumina octahedra parallel to lower plane of hydroxyls
 - - - Outline of those faces of vacant octahedra parallel to lower plane of hydroxyls
 — Bonds from aluminums to hydroxyls (6 from each aluminum)

Kaolinite

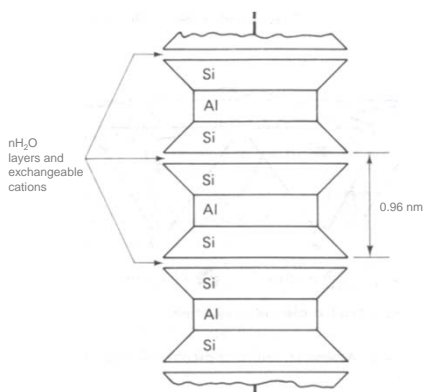


Specific surface = 15 m²/g

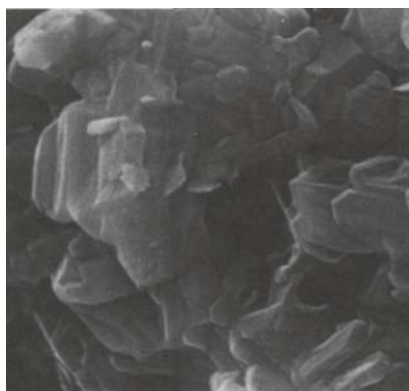
Montmorillonite



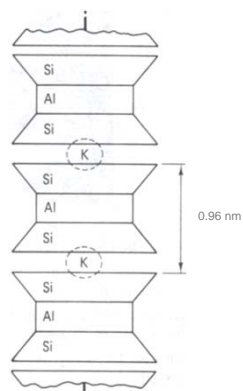
Specific surface = $800 \text{ m}^2/\text{g}$

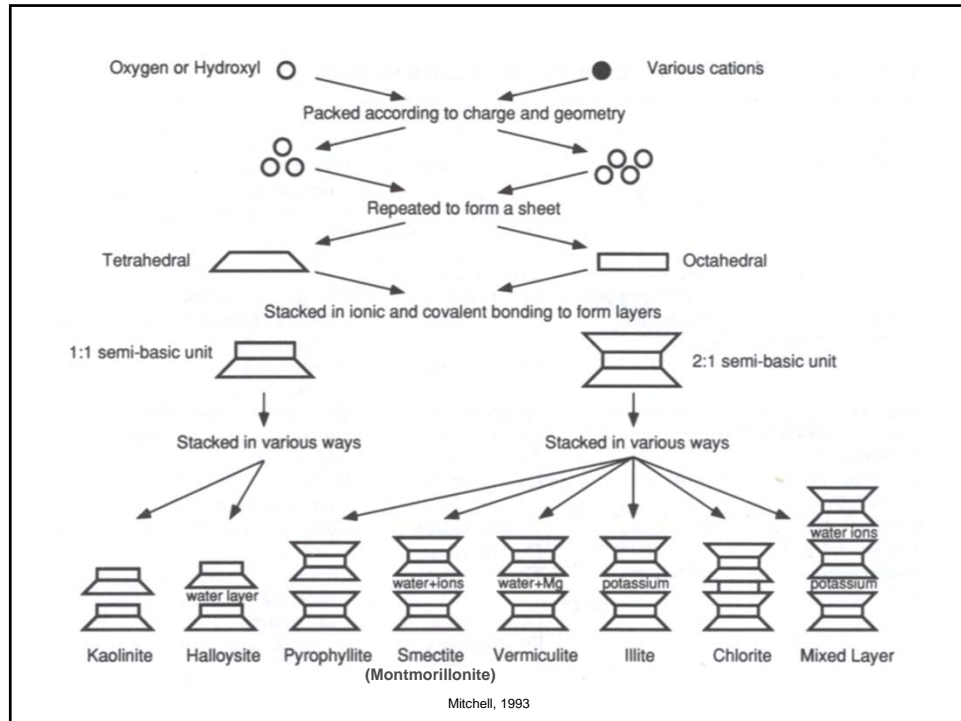


Illite



Specific surface = $80 \text{ m}^2/\text{g}$





Clay Water

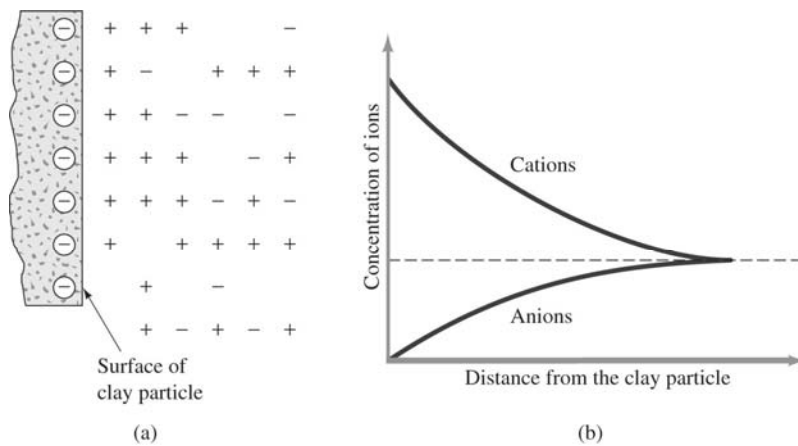


Figure 2.13 Diffuse double layer