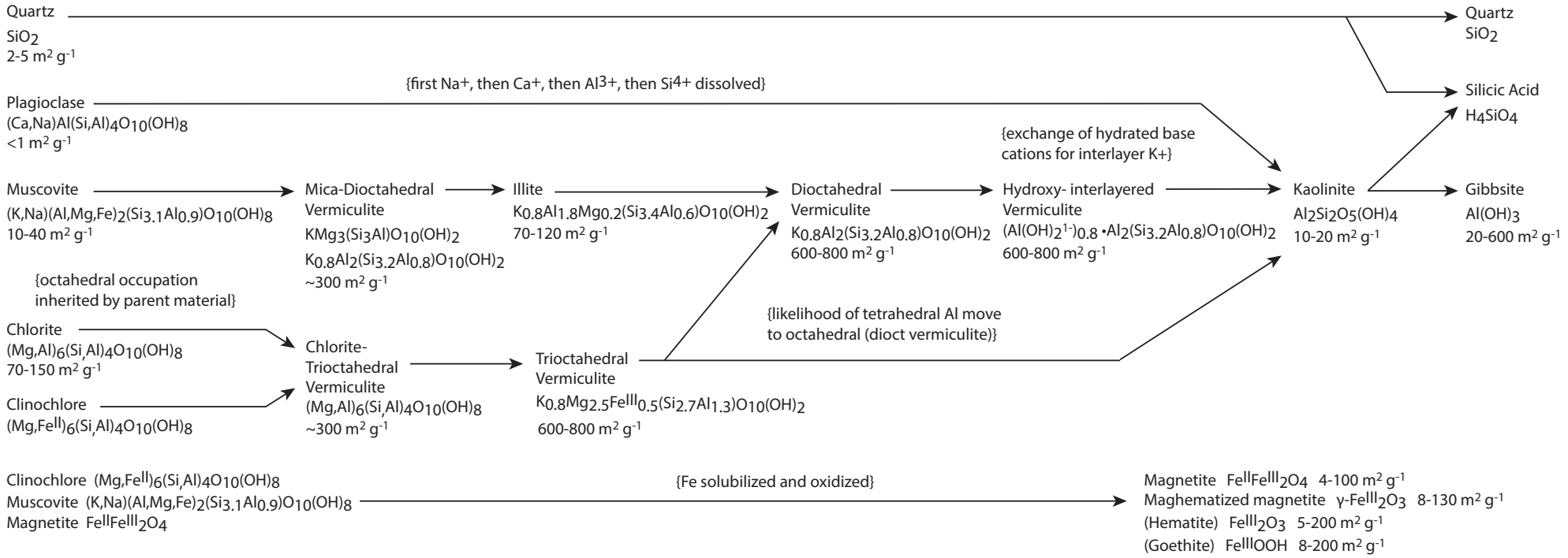
Quartz
SiO_2
2-5 $m^2 g^{-1}$
Quartz
SiO_2
Silicic Acid
H_4SiO_4
{first Na^+, then Ca^+, then Al^{3+}, then Si^{4+} dissolved}
Plagioclase
$(Ca,Na)Al(Si,Al)_4O_{10}(OH)_8$
<1 $m^2 g^{-1}$
{exchange of hydrated base cations for interlayer K+}
Muscovite
$(K,Na)(Al,Mg,Fe)_2(Si_{3.1}Al_{0.9})O_{10}(OH)_8$
10-40 $m^2 g^{-1}$
Mica-Dioctahedral Vermiculite
$KMg_3(Si_3Al)O_{10}(OH)_2$
$K_{0.8}Al_2(Si_{3.2}Al_{0.8})O_{10}(OH)_2$
~300 $m^2 g^{-1}$
Illite
$K_{0.8}Al_{1.8}Mg_{0.2}(Si_{3.4}Al_{0.6})O_{10}(OH)_2$
70-120 $m^2 g^{-1}$
Dioctahedral Vermiculite
$K_{0.8}Al_2(Si_{3.2}Al_{0.8})O_{10}(OH)_2$
600-800 $m^2 g^{-1}$
Hydroxy- interlayered Vermiculite
$(Al(OH)_2^{1-})_{0.8} \cdot Al_2(Si_{3.2}Al_{0.8})O_{10}(OH)_2$
600-800 $m^2 g^{-1}$
Kaolinite
$Al_2Si_2O_5(OH)_4$
10-20 $m^2 g^{-1}$
Gibbsite
$Al(OH)_3$
20-600 $m^2 g^{-1}$
{octahedral occupation inherited by parent material}
Chlorite
$(Mg,Al)_6(Si,Al)_4O_{10}(OH)_8$
70-150 $m^2 g^{-1}$
Clinochlore
$(Mg,Fe^{II})_6(Si,Al)_4O_{10}(OH)_8$
Chlorite-Trioctahedral Vermiculite
$(Mg,Al)_6(Si,Al)_4O_{10}(OH)_8$
~300 $m^2 g^{-1}$
Trioctahedral Vermiculite
$K_{0.8}Mg_{2.5}Fe^{III}_{0.5}(Si_{2.7}Al_{1.3})O_{10}(OH)_2$
600-800 $m^2 g^{-1}$
{likelihood of tetrahedral Al move to octahedral (dioct vermiculite)}
Clinochlore $(Mg,Fe^{II})_6(Si,Al)_4O_{10}(OH)_8$
Muscovite $(K,Na)(Al,Mg,Fe)_2(Si_{3.1}Al_{0.9})O_{10}(OH)_8$
Magnetite $Fe^{II}Fe^{III}_2O_4$
{Fe solubilized and oxidized}
Magnetite $Fe^{II}Fe^{III}_2O_4$ 4-100 $m^2 g^{-1}$
Maghematized magnetite γ-$Fe^{III}_2O_3$ 8-130 $m^2 g^{-1}$
(Hematite) $Fe^{III}_2O_3$ 5-200 $m^2 g^{-1}$
(Goethite) $Fe^{III}OOH$ 8-200 $m^2 g^{-1}$