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# Transformations of Micas in the Process of Kaolinitization of Granites and Gneisses

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**Abstract:** Micas are described from the kaolin type Tertiary weathering crusts formed on granites and gneisses of Lower Silesia, Poland. In the weathering crust, large scale processes of transformation of micas (muscovite, biotite) take place. Weathering of micas is a gradual transformation of their structures by removal of the mobile cations  $Mg^{2+}$ ,  $Fe^{2+}$ ,  $Fe^{3+}$  and finally  $K^+$ . Muscovite transforms into kaolinite through the intergrowths of two phases, mica and kaolinite. A degradation series, muscovite  $\rightarrow$  mica/montmorillonite  $\rightarrow$  montmorillonite  $\rightarrow$  kaolinite also is observed. Biotite passes directly into kaolinite, but at higher concentrations of K and Al one observes the following sequence of biotite degradation: biotite  $\rightarrow$  dioctahedral mica rich in Fe  $\rightarrow$  dioctahedral mica poor in Fe  $\rightarrow$  kaolinite. This process involves the exchange of  $Mg^{2+}$  and then  $Fe^{2+}$  of octahedral layers by  $Al^{3+}$  less mobile under weathering conditions. In the next stage of degradation,  $K^+$  removal and kaolinite formation takes place. The micas representing different stages of this transformation, dark green, light-green, and silver-white, have been separated and investigated.

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