

Fe-kaolinite formed in granite saprolite beneath sedimentary kaolin deposits

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Fe-kaolinite was found from granite saprolite underneath sedimentary kaolin deposits in the Seto district. The clay fractions of granite saprolite consist mostly of kaolinite with subordinate micaceous clay, quartz and feldspars. The kaolinite in clay fractions contained an average 3.30-3.72 wt. % of Fe_2O_3 , indicative of Fe-kaolinite. Fe+Si was inversely proportional to Al in Fe-kaolinite, indicating coupled substitution between Fe+Si and Al. XANES spectroscopy showed that about 60 to 70 % of Fe in the clay fractions is ferric iron, and EXAFS spectroscopy indicated that Fe is situated in octahedral sites replacing Al. The features of Fe-kaolinite suggest that Fe oxidation occurred with mineral decomposition and elemental leaching during the kaolinization of sedimentary kaolin deposits.

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