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# Stability of *n*-Butylammonium Vermiculite in Powder and Flake Forms

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**Abstract:** Interaction between *n*-butylammonium (BA) chloride and vermiculite from Santa Olalla (Spain) has been studied in large flake ( $5 \times 5 \times 0.1$  mm) or ground powder ( $\leq 80$   $\mu\text{m}$ ) samples. The differences in adsorption and decomposition of BA ions in both particle sizes have been established. In the interlamellar space, the BA ion remains unaltered in powder samples, but is degraded in flakes. The experimental results suggest decomposition of the BA in the interlamellar space of vermiculite flakes by breaking of the C-N bond. The degradation of BA takes place over a short period. The variety with BA in the interlamellar space is transformed into a new one, due to the degradation of alkylammonium. The transformation occurs through an interstratified phase formed between BA-vermiculite and  $\text{NH}_4$ -vermiculite, and finally a phase appears in which only ammonium is present in the interlamellar space. Due to the many industrial applications of alkylammonium-clays, determination of the stability of alkylammonium in the interlamellar space of clay minerals is of great importance.

**Key Words:** Adsorption • Degradation • Interaction • Intercalation Complex • Interstratified Phase • *n*-Butylammonium • Organo-Vermiculite • Particle Size • Vermiculite

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