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# The Orientation of Ornithine and 6-Aminohexanoic Acid Adsorbed on Vermiculite from Polarized I.R. ATR Spectra

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**Abstract:** Determinations of the molecular orientation of ornithine and 6-aminohexanoic acid on the surface of vermiculite using polarized i.r. attenuated total reflectance have shown that the ornithine molecules lay almost flat on the clay surface, except for a C–N bond projecting towards, and hydrogen bonded to, the surface. Ornithine formed two adjacent layers in the interlayer space, whereas 6-aminohexanoic acid formed only one layer. The terminal C-N bond of 6-aminohexanoic acid was at  $46^\circ$  to the surface, the plane of the carbon chain having a tilt of  $34^\circ$ , and the molecular axis sloped at  $36^\circ$  to the surface. The amino acids, thus orientated, were positioned in the interlayer space using van der Waals contact distances and hydrogen bond lengths obtained from i.r. spectra. The i.r. results agreed with two dimensional electron density projections. In the ornithine complex, some of the methylene groups were so close to the clay surface that interaction may have caused the marked reduction observed in the intensity of the C–H stretching vibrations.

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