Unifying Features Relating to the 3D Structures of Some Intercalates of Kaolinite

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Abstract: The recent determination of the three-dimensional crystal structure of a dickite:formamide intercalate allows insight into the clay:organic bonding schemes of amides and other small organic molecule intercalates of the kaolin minerals. It is demonstrated that the observed basal spacings of intercalates with these molecules are consistent with hydrogen bonding schemes in which, if possible, triple hydrogen bonds from the clay hydroxyls to O=C/\ are formed. Variations in basal spacing within a series of amides can be explained by considering the maximization of hydrogen bonding while avoiding close van der Waals contacts.

Key Words: Acetamide • Dickite • Formamide • Intercalate

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