
Methylene Blue Absorption by Clay Minerals. Determination of Surface Areas and Cation Exchange Capacities (Clay-Organic Studies XVIII)

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Abstract: Under appropriate conditions, both surface areas and cation exchange capacities of clay minerals can be measured by absorption of methylene blue from aqueous solutions. The method has been applied to two kaolinites, one illite, and one montmorillonite, all initially saturated with Na⁺ ions. For Na-montmorillonite, the total area, internal plus external, is measured. For Ca-montmorillonite, entry of methylene blue molecules appears to be restricted by the much smaller expansion of the Ca-clay in water. X-ray diffraction data clarify the absorption behavior in Na- and Ca-montmorillonite, and in particular it is shown that two orientations of the methylene blue molecules are involved.

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