Acid strength at clay mineral surfaces

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Abstract:

The interactions of Al³⁺ -montmorillonite, Na⁺ - montmorillonite and Na⁺ -kaolinite with selected Hammett indicators have been reinvestigated. The use of a series of indicators with different acid strengths, Ho, to determine the activity of protons on the clay surface was based on the assumption that the activity of H⁺ on the clay surface is equivalent to activity in solution. The results show that A1³⁺- montmorillonite had the highest acid strength, especially after drying at 110°C. Na⁺-kaolinite had lower acid strength, at two moisture levels: before washing with ethanol and after incorporation of this alcohol. At all moisture levels the acid strength of A1³⁺-montmorillonite was greater than that of either Na⁺- montmorillonite or Na⁺ - kaolinite.