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The Measurement of Surface Areas of Some Silicates by Solution Adsorption

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Abstract: In this study, the adsorption from solution technique was used for the determination of surface areas of some silicate samples (bentonite, sepiolite, zeolitic tuff and kaolin). Methylene blue (MB), orthophenanthroline (OP) and p-nitrophenol (PNP) were selected as solutes. The adsorption data was found to conform with the Langmuir equation within the concentration range studied, and Langmuir constants were determined for each of the samples. The surface area values obtained were compared with those determined by nitrogen adsorption. Also the results were discussed with respect to the cation exchange capacities of the samples. The specific surface area values of the samples were found to decrease in the following order: Bentonite > Sepiolite > Zeolite > Kaolin (for MB and OP adsorption) Sepiolite > Bentonite > Zeolite > Kaolin (for PNP and N₂ adsorption)

Key Words: Surface area determination, solute adsorption, adsorption from solution.

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