Simultaneous X-Ray Diffraction-DTA*

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Abstract: Simultaneous X-ray difffraction-differential thermal analysis equipment for an X-ray diffractometer was evaluated. A brief description of the apparatus and of the method of preparing the sample was given.

Simultaneous XRD-DTA was used to study various clay minerals and inorganic hydrates. It was found in the study of clays such as hectorite, montmorillonite, kaolinite, and attapulgite that information concerning the rate of removal of water and hydroxyl units at various temperatures could be correlated to changes in the X-ray diffraction pattern. Various inorganic hydrates such as barium chloride dihydrate, nickel sulfate hexahydrate, and potassium ferrocyanide trihydrate were examined under dynamic and static conditions of analysis along with vacuum conditions. It was found that good correlation could be obtained between the X-ray diffraction pattern and the loss of water from the hydrates as indicated by the DTA curves.

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