

THE IMPORTANCE OF CLAY MINERAL ORGANIC MOLECULE INTERACTIONS
IN THE GENERATION AND MIGRATION OF PETROLEUM

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Abstract:

An important step in organic diagenesis is the adsorption of organic matter onto clay minerals. The analysis of organic acids associated with various clay minerals isolated from various water systems allows the calculation of the thermodynamic parameters of the clay-acid complexes. The mechanism and strength of organic acid adsorption appears to control the catalytic capacity and reaction products generated during the clay catalyzed decarboxylation of organic acids.

Investigations into the thermodynamics of alkane-clay mineral complexes indicate that alkanes of equivalent carbon number are adsorbed more strongly onto clay minerals as the degree of branching increases. Such a conclusion has profound implications concerning the isomer distribution generated during clay catalyzed cracking of alkanes and the mechanism of that reaction as well as for the process of hydrocarbon migration.