GEOL 575.01: Clay and Shale

Graham R. Thompson

University of Montana - Missoula
<table>
<thead>
<tr>
<th>Week</th>
<th>Discussion Topic and (Readings)</th>
<th>Lab Topic and (Readings)</th>
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<tbody>
<tr>
<td>1</td>
<td>Mineralogy review, silicate minerals, clay minerals (Moore &amp; Reynolds[*] Chs 1 &amp; 4)</td>
<td>X-ray diffraction as a mineral identification tool (*Chs 2 &amp; 3)</td>
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<td>2</td>
<td>The kaolin and serpentine groups (*138-145); 2:1 and 2:2 layer silicates (micas, chlorites, others) (*146-166)</td>
<td>Sample preparation methods for general mineral identification by X-ray diffraction; operating the X-ray diffractometer</td>
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<td>3</td>
<td>Mixed-layer clay minerals. (*167-188)</td>
<td>Interpreting X-ray diffraction patterns for general mineral identification</td>
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<td>5</td>
<td>Mixed-layer clays con't</td>
<td>Interpreting X-ray diffraction patterns of clay minerals *Ch 7)</td>
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<td>6</td>
<td>Mixed-layer clays con't</td>
<td>NEWMOD interpreting X-ray diffraction patterns of</td>
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simple and mixed-layer clay minerals as MacEwan Crystallites (*Ch 7)

7 Mixed-layer clays con't NEWMOD con't
8 Mixed-layer clays con't NEWMOD con't
9 Origins of clay minerals: weathering, neoformation, and hydrothermal alteration (readings from this point on will be listed in a separate bibliography)
10 Origins of clays con't; clays in transport and deposition X-ray diffraction interpretations of mixed-layer clays
11 Burial diagenesis - the conversion of mud to shale Mixed-layer clays con't
12 Burial diagenesis con't Mixed-layer clays con't
13 Diagenesis and the generation and migration of petroleum Mixed-layer clays con't
14 Reaction mechanisms of diagenetic mineral reactions con't
15 Diagenesis to metamorphism Mixed-layer clays con't


Course grading is based on three factors:
1. Participation in lecture discussions based on assigned readings,
2. Completion of laboratory analyses of assigned samples,
3. A final research paper based on your analysis of an assigned clay sample(s) and a thorough literature review of the sample(s) and its occurrence/geologic implications.

September 23 – Last day to add/drop by Cyberbear – Autumn 2002.

October 14 – Last Day to drop/adds (No SSS Back) – Autumn 2002.