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GEOL 575.01: Clay and Shale

Graham R. Thompson
The University Of Montana

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Clay and Shale - G575 Gray Thompson - Fall, 2000

<u>Week</u>	<u>Discussion Topic and (Readings)</u>	<u>Lab Topic and (Readings)</u>
1	Silicate minerals, clay minerals (Moore & Reynolds(*) Chs 1 & 4)	X-ray diffraction as a mineral identification tool (*Chs 2 & 3)
2	The kaolin and serpentine groups (*138 -145); 2:1 and 2:2 layer silicates (micas, chlorites, others) (*146 - 166)	Sample preparation methods for general mineral identification by X-ray diffraction; operating the X-ray diffractometers
3	Mixed-layer clay minerals. (*167 -188)	Interpreting X-ray diffraction patterns for general mineral identification
4	Mixed-layer clays as MacEwan Crystallites (Reynolds & Hower, 1970, Clays & Clay Minerals pp 25-36 "The Nature of Interlayering..."; vs Fundamental Particles (Nadeau et al, 1984, Science pp 923-925, and Clay Minerals, pp 757-769 - also 1984).	Sample preparation methods for clay mineral identification by X-ray diffraction (*Ch 6)
5	Mixed-layer clays con't	Interpreting X-ray diffraction patterns of simple clay structures (*Ch 7)
6	Mixed-layer clays con't	NEWMOD interpreting X-ray diffraction patterns of 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)	NEWMOD con't
10	Origins of clays con't; clays in transport and deposition	MUDMASTER: X-ray diffraction interpretations of mixed-layer clays as fundamental particles (Eberl, 1997)
11	Burial diagenesis - the conversion of mud to shale	Applications of NEWMOD and MUDMASTER to mixed-layer clays 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	Mixed-layer clays con't
15	Diagenesis to metamorphism	Mixed-layer clays con't

* Moore & Reynolds, 1997. X-ray diffraction ... of Clay Minerals 2nd Ed.