

2008 Annual Meeting of the Clay Minerals Society

in Collaboration with the Division of Geochemistry

Final Program, 235th ACS National Meeting, New Orleans, LA, April 6-10, 2008

T. Filley and B. S. Ross, *Program Chairs*

SUNDAY MORNING

Section A

Morial Convention Center -- La Louisiane Ballroom C

Clay Minerals Society Awards Symposium

Victoria. Hover, *Organizer*

8:20 — Introductory Remarks.

8:25 — CMS Presidential Welcome. **R. Ferrell.**

8:40 — Introduction to the Pioneer in Clay Science Lecture.

8:45 —**1.** Origin and fate of toxic elements from abandoned mining activities in the Riotinto area (Iberian Pyritic Belt, Spain). **E. Galán**

9:25 — Introduction to the George W. Brindley Lecture.

9:30 —**2.** The dregs of weathering: Secrets of kaolin and iron oxides in tropical soils. **R. J. Gilkes**

10:10 — Intermission.

10:30 — Introduction to the Jackson Mid-Career Clay Scientist Award.

10:35 —**3.** Research on the smectite-illite reaction: Past history, current status, and future trends. **H. Dong**

11:15 — Introductory to the Bailey Distinguished Member Award.

11:20 —**4.** Clay isotope geochemistry: A contribution beyond dating. **N. Clauer**

12:00 —End

SUNDAY AFTERNOON

Section A

Morial Convention Center -- Rm. 211

General Session on Clays and Clay Minerals; CMS Clay Gumbo

Clay Mineralogy

Brenda Ross, *Organizer*

1:30 —5. Chemical variations of the micas and chlorites compositions along natural geothermal gradient: Example of Helvetic Alps (Glarus). **F. Bourdelle**, T. Parra, O. Beyssac, E. A. Abderrazzak, E. Kohler

1:50 —6. Clay mineralogy of an oolitic iron deposit in the Peace River district, Alberta, Canada. **P. Uhlík**, P. Kerr, T. Etsell, Q. Liu, O. Omotoso

2:10 —7. Composition and structural properties of iron oxides in Lateritic bauxite in the Darling Range, Western Australia. **S. Tawornpruek**, R. J. Gilkes

2:30 —8. Characterization of fine fractions in bitumen froth and tailings produced by hot water extraction of oil sands from the Athabasca region, Alberta, Canada. **A. Hooshiar**, H. A. W. Kaminsky, P. Uhlík, D. G. Ivey, O. E. Omotoso, T. Etsell, Q. Liu

2:50 —9. Clay mineralogical changes in Mediterranean mountain red/brown soils under various precipitation and drainage conditions. **A. Sandler**, F. Hubert, A. Meunier, B. Velde

3:10 — Intermission.

3:30 —10. Unraveling the provenance of the North Sea Muds in the Belgian coastal area using clay mineralogy. **E. Zeelmaekers**, N. Vandenberghe, J. Srodon

3:50 —11. Mineralogy of the Del Rio Clay Formation (Cenomanian), West Texas: Illite/kaolinite ratios as indicators of proximity to riverine sources and/or provenance. **F. S. Bases**, V. C. Hover, B. E. Lock

4:10 —12. Halloysite in relation to kaolinite: Unruly sibling or distant cousin? **G. J. Churchman**, B. K. G. Theng

4:30 —13. Dissolution kinetics of dehydroxylated nickeliferous goethite. **M. Landers**, R. J. Gilkes

4:50 —End

SUNDAY AFTERNOON

Section B

Morial Convention Center -- Rm. 212

Advanced Approaches to Investigating Adsorption at the Solid-Water Interface

Adsorption at Oxide-Water Interfaces

Louise Criscenti, Heather Allen, and Lynn Katz, *Organizers*

1:30 —14. Interaction of nitrate, barium, strontium and cadmium with fused quartz/water interfaces studied by second harmonic generation. **F. M. Geiger**

2:10 —15. Simultaneous inner- and outer-sphere arsenate adsorption on iron and aluminum oxide surfaces. **J. G. Catalano**, C. Park, P. Fenter, Z. Zhang

2:30 —16. Inner-sphere vs. outer-sphere: Ion adsorption at the mineral-water interface. **P. Fenter**, C. Park, V. Kohli, J. G. Catalano, Z. Zhang, K. L. Nagy, N. C. Sturchio

3:10 — Intermission.

3:30 —17. Role of water dipoles in adsorption reactions. **D. A. Sverjensky**

4:10 —18. Application of double-resonance NMR methods to phosphate adsorption on boehmite. W. Li, J. Feng, **B. L. Phillips**

4:30 —19. Structure and chemistry of aluminum on silica surfaces. **S. C. B. Myneni**, M. B. Hay, B. Mishra

5:10 —End

SUNDAY AFTERNOON

Section C

Morial Convention Center -- Rm. 213

Clay Minerals and Health

Javiera Cervini-Silva and Lynda Williams, *Organizers*

1:30 —20. Bioaccessible elements in edible earths. J. Crowner, **R. E. Ferrell Jr.**

1:50 —21. Clay and human health: Benefits and risks. **C. D. S. Figueiredo Gomes**

2:30 —22. Comparing antibacterial clay properties in search of new medicinal applications. **A. Turner**, L. Williams, C. Remenih, S. Haydel

2:50 —23. The role of Fenton reactions on the photocatalytic activity of clay minerals. **D. Kibanova**, J. Cervini-Silva

3:10 — Intermission.

3:30 —24. Interaction of peptide PrP(92-138) and clay surface. Y. Chapron, **L. Charlet**, **N. Sahai**

4:10 —25. Broad-spectrum antibacterial activities of clay minerals. **S. Haydel**, L. Williams

4:50 —26. An in vitro toxicological study of small-sized oxide minerals. M. Henríquez-Salmerón, P. Lappe, P. Fernández-Lomelín, **J. Cervini-Silva**

5:10 —End

MONDAY MORNING

Section A

Morial Convention Center -- Rm. 211

Archeological Clay Source Materials: Their Chemical, Mineralogical, and Physical Characteristics

Sheldon Skaggs and Jennifer Wehby, *Organizers*

8:20 —27. Clays in soils, plants and the history of agriculture. **B. Velde**

9:00 —28. New methods for reconstructing paleoenvironments from terra rossa deposits: Implications for Paleolithic landscape archaeology in Epirus, Greece. **M. A. Everett**

9:20 —29. Prehistoric Gallina ceramic resource selection and technology. **C. I. Constan**

9:40 —30. Elemental interaction: Analyzing trade, sourcing, and the use of secondary products with Tiszapolgár ceramics on the Great Hungarian Plain. **T. A. Parsons, H. Hoekman-Sites, S. Duwe**

10:00 — Intermission.

10:20 —31. Modeling the potter from the clay: Using chemical, mineralogical, and physical characteristics of clay materials to gain insights into prehistoric behavior. **T. E. McReynolds, S. A. Skaggs, P. A. Schroeder, J. M. Herbert**

11:00 —32. Correlation of physical properties for Aeginetan ware with compositional and chemical data from the clay source deposit. **C. M. Shriner, B. J. Douglas, E. R. Elswick, J. G. Brophy, G. E. Christidis, E. Hasaki, H. H. Murray**

11:20 —End

MONDAY MORNING

Section B

Morial Convention Center -- Rm. 212

Advanced Approaches to Investigating Adsorption at the Solid-Water Interface

Adsorption at Oxide-Water Interfaces

Louise Criscenti, Heather Allen, and Lynn Katz, *Organizers*

8:20 —33. Factors controlling the reactivity of metal oxide surfaces. **G. E. Brown Jr.**, T. P. Trainor, P. Eng, A. M. Chaka, T. Kendelewicz, S. Yamamoto, H. Bluhm, J. Ha, A. Gélabert, Y. Wang, A. Nilsson

9:00 —34. Structural investigation of Fe(II) adsorption on α -Fe₂O₃ (1-102) and (0001) using crystal truncation rod diffraction. **K. Tanwar**, S. C. Petitto, S. K. Ghose, P. Eng, T. P. Trainor

9:20 —35. Ion adsorption on oxides, a molecular based thermodynamic model. **T. Hiemstra**, W. H. van Riemsdijk,

10:00 — Intermission.

10:20 —36. Real-time surface-chemistry of arsenite oxidation by hydrous manganese oxide: Impact of oxyanions. **M. Ginder-Vogel**, S. J. Parikh, J. S. Fischel, D. L. Sparks

10:40 —37. Density functional theory calculations combined with X-ray standing wave, EXAFS, neutron scattering, and NMR to examine the solid-water interface. **J. D. Kubicki**, J. O. Sofo, A. V. Bandura, K. T. Mueller, N. M. Washton

11:20 —38. Dissolution kinetics of single particles of nanosize Ferrihydrite using AFM as an analytical tool. **S. Debnath**

11:40 —39. Molecular-investigation of silicate passivation of iron oxide surfaces. **Y -S. Jun**, G. A. Waychunas

12:00 —End

MONDAY MORNING

Section C

Morial Convention Center -- Rm. 213

The Impact of Hurricane Katrina from an Environmental and Petrochemical Perspective

Lore Ramillano and A. Jackson, *Organizers*

8:20 —40. Understanding the impacts of Katrina and Rita on gulf coast energy infrastructure. **D. E. Dismukes**

9:00 —41. Hurricane Katrina and a legal and policy disaster. **N. Stokes**

9:20 —42. Lessons learned: The Dow Chemical Company. **S. Dufrene**

9:40 —43. Immediate and long-term environmental impacts of Hurricane Katrina. **D. D. Reible**, N. Ashley, J. Birdwell, L. Thibodeaux, K. T. Valsaraj

10:00 — Intermission.

10:20 —44. Quantities of arsenic-treated wood in demolition debris generated by Hurricane Katrina. **B. Dubey**, T. Townsend, H. Solo-Gabriele

10:40 —45. Organic contaminants in Hurricane Katrina flood sediments: Identification using comprehensive 2-D gas chromatography/time-of-flight mass spectrometry . **R. P. Eganhouse**, J. Pontolillo

11:00 —46. An analysis of the dissolved organic matter in Hurricane Katrina flood water from New Orleans. J. Birdwell, C. Latta, H. M. Marwani, **R. L. Cook**, G. R. Aiken, K. Thorn, E. M. Perdue, J -F. Koprivnjak

11:20 —47. Long-term monitoring of Mississippi Sound sediment heavy metal concentrations post-Katrina. **S. E. O'Reilly**

11:40 —End

MONDAY AFTERNOON

Section A

Morial Convention Center -- Rm. 211

Archeological Clay Source Materials: Their Chemical, Mineralogical, and Physical Characteristics

Sheldon Skaggs and Jennifer Wehby, *Organizers*

1:30 —48. TTT diagrams in geoarchaeology: Unraveling archaeological problems using provenance and processing. **G. E. Christidis**, C. M. Shriner, H. H. Murray, J. G. Brophy

2:10 —49. In situ characterization of clay minerals and their high temperature phases using infrared microspectroscopy: Implications in archaeology. **F. Berna**, P. Goldberg

2:50 —50. Compositional analysis of construction mortar from Pompeii, Italy. **J. Wehby**

3:10 —51. Characterization of prehistoric turquoise mines in the southwest United States. **C. Hotujec**

3:30 —End

MONDAY AFTERNOON

Section B

Morial Convention Center -- Rm. 212

Advanced Approaches to Investigating Adsorption at the Solid-Water Interface

Ion Pairing

Louise Criscenti, Heather Allen, and Lynn Katz, *Organizers*

1:30 —52. Ions in water: Interfacial effects and ion pairing preferences. **K. D. Collins**

2:10 —53. Nitrate ions and ion pairing in aqueous solution and at the air-aqueous interface. **M. Xu, J. P. Larentzos, L. J. Criscenti, H. C. Allen**

2:50 —54. Temperature effects on adsorbed alkaline-earth-metal coordination structure on gibbsite. **L. E. Katz, L. J. Criscenti, C.-C. Chen, J. P. Larentzos**

3:10 — Intermission.

3:30 —55. Dielectric spectroscopy: A new old tool for studying ions in solution. **G. Hefter, R. Buchner**

4:10 —56. Investigations of metal uptake and speciation on nanoscale iron oxyhydroxide aggregates. **C. S. Kim, C. J. Lentini, B. C. Reinsch, J. G. Dale, J. P. Stegemeier**

4:30 —57. Ion-pairing of alkaline earth metals with chloride and nitrate in aqueous solution and at the gibbsite surface: A molecular dynamics investigation. **L. J. Criscenti, J. P. Larentzos**

4:50 —End

MONDAY AFTERNOON

Section C

Morial Convention Center -- Rm. 213

General GEOC Oral Session

Coastal and Aquatic Transformations and Input

Tim Filley and Cliff Johnson, *Organizers*

1:30 —58. Aggregation of suspended particulate materials in Pearl River, Mississippi and implications for the microfabric of estuarine sediments. **Y. Furukawa**, J. Watkins

1:50 —59. Biogeochemical pathways in marshes undergoing submergence: An experimental and theoretical perspective. **A. S. Kolker**, K. A. Butcher, M. S. Fox, L. A. Dyer, J. Q. Chambers

2:10 —60. Comparison of lignin-phenols and branched/isoprenoid tetraethers (BIT index) as indices of terrestrial organic matter in surface sediments from the abyssal Gulf of Mexico and Fiordland, New Zealand. **R. W. Smith**, T. S. Bianchi, C. Savage, S. B. Peterson

2:30 —61. Composition and flux of dissolved organic carbon from the Pearl River Mississippi. **L. Guo**, Y. Cai, X. Wang

3:10 — Intermission.

3:30 —62. Lignin phenols and organic carbon in sediments preserved on the Louisiana Continental Margin over the last 150 years: Linkage to land-use changes. **T. P. Sampere**, T. S. Bianchi, M. Allison

3:50 —63. Seasonal processes affect the composition of dissolved organic carbon in an urban lake. **M. M. Kelly**, H. E. Hartnett

4:10 —64. Geochemical dynamics in a column biostimulation experiment during the transition from iron to sulfate reduction. R. K. Kukkadapu, H. ElBishlawi, P. R. Jaffe, J. Komlos, P. E. Long, **H. S. Moon**, K. H. Williams

4:30 —65. Studying the sorption of Fe(II) on goethite using a ⁵⁷Fe-isotope tracer approach. **R. M. Handler**, B. L. Beard, C. M. Johnson, M. M. Scherer

4:50 —End

MONDAY EVENING

Section A

Morial Convention Center -- Hall A

Sci-Mix Invited Poster Session

GEOC-CMS

Tim Filley and Brenda Ross, *Organizers*

8:00 – 10:00 PM

- 63.** Seasonal processes affect the composition of dissolved organic carbon in an urban lake. **M. M. Kelly**, H. E. Hartnett
- 105.** Abiotic formation of RNA-like oligomers by montmorillonite catalysis: A model study. R. M. Hazen, A. M. Snellinger-O'Brien, M. C. Ertem, M. V. Johnston, J. P. Dworkin, **G. Ertem**
- 152.** Reduction of structural Fe(III) in nontronite by starved *Shewanella Putrefaciens*. **S. Ji**, H. Dong
- 153.** Interaction of proteins with clay surfaces: A structural and spectroscopic study of the lysozyme-saponite complex. **G. S. Premachandra**, T. Szabo, R. A. Schoonheydt, C. T. Johnston
- 155.** Functional hybrid materials obtained by intercalation of phytochemicals from açai fruit into clay minerals. **V. R -L. Constantino**, A. A. Teixeira-Neto, A. M -C. Ferreira, C. M -S. Izumi, M. L -A. Temperini
- 156.** Exploring the high mass components of humic acid by LDI MS. **G. Chilom**, J. A. Rice
- 160.** Accessibility of different soil organic matter pools to microbial communities: A laboratory soil respiration study. **C. A. Johnson**, T. R. Filley
- 163.** Assessing the physicochemical properties of antibacterial clay minerals. **T. M. Borchardt**, S. Haydel
- 165.** Tracing the long and short-term effects of Katrina on the composition of organic carbon of sediments in Mississippi Sound (USA): Application of plant pigment and lignins as chemical biomarkers. **A. Chatterjee**, T. S. Bianchi, Y. Furukawa
- 172.** Determination of the ideal ionic strength condition as the aggregation method on the uptake and retention of zinc(II) and copper(II) onto iron oxyhydroxide nanoparticles. **J. P. Stegemeier**, J. G. Dale, C. S. Kim
- 181.** Reaction of U(VI) with anionic clay minerals. **D. E. Latta**, E. J. O'Loughlin, K. M. Kemner, M. I. Boyanov, M. M. Scherer
- 187.** Study of uptake and retention of Cu(II) and Zn(II) by iron oxyhydroxides under varying pH conditions. **J. G. Dale**, J. P. Stegemeier, C. S. Kim

212. Geochemical cycling of nitrogen on Titan. **S. H. Abbas**

213. Assembly of organic protomolecules in the seemingly forbidding matrix of magmatic minerals. **F. T. Freund**, J. Mellon, R. Malhotra

TUESDAY MORNING

Section A

Morial Convention Center -- Rm. 211

Clay Minerals and Biomolecules

Gözen Ertem, *Organizer*

8:15 — Introductory Remarks.

8:20 —**66.** Comets, chondritic organic matter, and a possible clay mineral connection. **G. D. Cody**

9:00 —**67.** A self-perpetuating "catalyst" for the production of complex organic molecules in protostellar nebulae. **J. A. Nuth**, N. M. Johnson, S. Manning

9:20 —**68.** Meteoritic amino acids as tracers of solar and pre-solar syntheses. **S. Pizzarello**

10:00 — Intermission.

10:20 —**69.** Mechanisms of biomarker preservation and extraction from Mars-Analog mineral matrixes. **X. Amashukeli**, S. Douglas, A. M. Fisher, F. J. Grunthaner

11:00 —**70.** Organics-bearing phyllosilicates in hematite-rich deposits (Rio Tinto, Spain): Novel model analog for phyllosilicates outcrops on Mars. **R. Bonaccorsi**

11:20 —**71.** GALDI-FTMS as a technique for detecting bioorganic signatures associated with minerals. **J. R. Scott**, J. M. Kotler, C. D. Richardson, N. W. Hinman, T. R. McJunkin

11:40 —End

TUESDAY MORNING

Section B

Morial Convention Center -- Rm. 212

Advanced Approaches to Investigating Adsorption at the Solid-Water Interface

Water Structure at Solid Surfaces

Louise Criscenti, Heather Allen, and Lynn Katz, *Organizers*

8:20 —72. Minerals as molecules— isotope-exchange kinetics in nanometer-size ions. **W. H. Casey**

9:00 —73. Ab initio molecular dynamics calculation of the deprotonation free energy at the silica-water interface. **K. Leung, I. M. B. Nielsen, L. J. Criscenti**

9:20 —74. Dissociative chemisorption of water onto silica surfaces and enhanced hydronium ion formation. **S. H. Garofalini**

10:00 — Intermission.

10:20 —75. The intrinsic electric double layer on goethite and quartz. **M. C. F. Wander, L. J. Criscenti, A. Clark**

10:40 —76. Water structure on aqueous ions and barite-water interfaces. **A. G. Stack**

11:20 —77. Sum-frequency spectroscopy of small molecule adsorption at fluorocarbon monolayer/water interfaces. **A. Hopkins, G. L. Richmond**

11:40 —78. Unraveling the acid-base chemistry of gibbsite. **B. R. Bickmore, S. C. Mitchell, K. M. Rosso**

12:00 —End

TUESDAY MORNING

Section C

Morial Convention Center -- Rm. 213

Methods for Studying Optical and Electrochemical Properties of In Situ Thin Films

Alanah Fitch, *Organizer*

8:40 —79. Applications of electrochemical scanning tunneling microscopy to adsorption and thin films in geochemical systems. **A. G. Stack**

9:20 —80. Electrochemical quartz crystal microbalance study of mass changes at electrodes modified with cationic and anionic clays. **G. Villemure**, R. Roto, L. Sun

10:00 — Intermission.

10:40 —81. Electrogenerated silica thin films on electrodes: Functionalization, mesostructuration and sensor application. **A. Walcarius**

11:20 —82. Use of electroactive planar waveguides for the examination of thin clay film properties. **A. Fitch**

12:00 —End

TUESDAY AFTERNOON

Section A

Morial Convention Center -- Rm. 211

Clay Minerals and Biomolecules

Gözen Ertem, *Organizer*

1:25 — Introductory Remarks.

1:30 —83. Serpentinization, hydrocarbons and life: Insights from Lost City (Mid-Atlantic Ridge). **G. L. Früh-Green**, S. M. Bernasconi, G. Proskurowski, W. J. Brazelton, D. S. Kelley

2:10 —84. Synthetic smectic clays as adsorbents for biologically and environmentally significant molecules. S. Xue, **T. J. Pinnavaia**

2:30 —85. Bioelectric effects on mineral surfaces. **T. A. Kendall**

2:50 —86. Peroxy in minerals and their role in the formation of clays. **F. T. Freund**

3:10 — Intermission.

3:30 —87. Clay mineral control on vascular plant biomarker compositions. **A. C. Robinson**, P. J. Hernes, I. P. Montanez

3:50 —88. Mono- and multilayer films of proteins and clay minerals. **R. Schoonheydt**

4:10 —89. Testing binding of computationally designed peptides to aluminum and comparative metals. **K. M. Elkins**, S. B. Culver, R. E. Bongini

4:30 —End

TUESDAY AFTERNOON

Section B

Morial Convention Center -- Rm. 212

Advanced Approaches to Investigating Adsorption at the Solid-Water Interface

Beyond Oxides

Louise Criscenti, Heather Allen, and Lynn Katz, *Organizers*

1:30 —90. Metal and radionuclide adsorption onto bacterial cell walls: Constraints from multidisciplinary studies. **J. B. Fein**, K. M. Kemner, B. A. Bunker, R. T. Cygan, M. Jensen

2:10 —91. Electrokinetic properties of biopolymers and *Shewanella* spp. cells, and their effects on clay-bacteria-biopolymer aggregation. **J. R. Dale**, Y. Furukawa

2:30 —92. Sorption of As(III), Cd(II), and Hg(II) by nanoparticulate iron sulfide: Uptake mechanisms and modeling. **K. F. Hayes**, T. J. Gallegos, S. P. Hyun, H. Y. Jeong

3:10 — Intermission.

3:30 —93. Molecular architecture of organic acids and lipids on kaolinite and alumina. **M. J. Kelley**, J. E. Thomas

3:50 —94. Modeling amino-acid adsorption on calcite. D. Mkhonto, **N. Sahai**

4:30 —95. Characterizing and designing polycation-montmorillonite composites. A. Radian, D. Zadaka, R. Ganigar, **Y. G. Mishael**

4:50 —96. Spectroscopic study of dibenzo-p-dioxin sorption on clay minerals. **K. Rana**, C. Liu, B. J. Teppen, S. A. Boyd, C. T. Johnston

5:10 —End

TUESDAY AFTERNOON

Section C

Morial Convention Center -- Rm. 213

Methods for Studying Optical and Electrochemical Properties of In Situ Thin Films

Alanah Fitch, *Organizer*

1:50 —97. In situ diffuse reflectance spectroscopy coupled with ex situ temperature and polarization methods for the study of redox processes in iron-bearing clays. R. B. Merola, S. R. Bylen, **M. M. McGuire**

2:30 —98. Multifunctionality of clay-based thin films prepared via layer-by-layer assembly. **J. C. Grunlan**

3:10 — Intermission.

3:50 —99. Ultrastrong materials from clay minerals by layer-by-layer assembly. **N. A. Kotov**, P. Podsiadlo, B. S. Shim, E. M. Arruda, A. M. Waas

4:30 —100. Examining the nanoscale structure of active sites on clay surfaces. **C. T. Johnston**, R. H. A. Ras, B. J. Teppen, S. A. Boyd, R. A. Schoonheydt

5:10 —End

WEDNESDAY MORNING

Section A

Morial Convention Center -- Rm. 211

Clay Minerals and Biomolecules

Gözen Ertem, *Organizer*

8:35 — Introductory Remarks.

8:40 —101. An RNA world scenario for the origin of life: Montmorillonite clay-catalyzed formation of RNA oligomers and their binding to nucleotides and amino acids. **J. P. Ferris**, P. C. Joshi, M. F. Aldersley, J. W. Delano

9:20 —102. Assembly of organic protomolecules in the seemingly forbidding matrix of magmatic minerals. **F. Freund**, J. Mellon, R. Malhotra

9:40 —103. Surface speciation of aspartic and glutamic acid on titanium dioxide in electrolyte solutions: Integration of spectroscopic and surface complexation results. **C. M. Jonsson**, C. L. Jonsson, D. A. Sverjensky, H. J. Cleaves, R. M. Hazen

10:00 — Intermission.

10:20 —104. Multiple surface species of glutamate attached to hydrous ferric oxide: Changes as a function of environmental parameters. **D. A. Sverjensky**, C. M. Jonsson, C. L. Jonsson, H. J. Cleaves, R. M. Hazen

10:40 —105. Abiotic formation of RNA-like oligomers by montmorillonite catalysis: A model study. R. M. Hazen, A. M. Snellinger-O'Brien, M. C. Ertem, M. V. Johnston, J. P. Dworkin, **G. Ertem**

11:00 —End

WEDNESDAY MORNING

Section B

Morial Convention Center -- Rm. 212

Advanced Approaches to Investigating Adsorption at the Solid-Water Interface

Modeling Adsorption in the Field

Louise Criscenti, Heather Allen, and Lynn Katz, *Organizers*

8:20 —106. Copper and cobalt adsorption on assemblages of kaolinite, silica and hydrous ferric oxide. **C. M. Koretsky**, C. J. Landry, T. J. Lund

9:00 —107. Cadmium adsorption on mixed mineral assemblages of kaolinite, silica and hydrous ferric oxide. **M. S. Schaller**, C. M. Koretsky

9:20 —108. Macroscopic, microscopic and spectroscopic investigation of soil minerals hosting uranium in contaminated sediments from Rifle, CO. **N. P. Qafoku**, R. K. Kukkadapu, J. P. Icenhower, S. Yabusaki, C. Resch, B. W. Arey, P. E. Long

9:40 —109. Trace metal contamination in a sand and gravel aquifer (Cascade, Michigan). **T. W. Whitlock**, C. M. Koretsky

10:00 — Intermission.

10:20 —110. Uranium surface species on BX tank farm sediments at the Hanford site. **W. Um**, C. F. Brown, R. J. Serne, Z. Wang, C. J. Dodge, A. J. Francis

10:40 —111. Surface complexation modeling of metal ion adsorption to iron oxides. **L. E. Katz**, S. N. Stokes, C.-C. Chen

11:20 —112. Arsenic mobilization in the critical zone: Oxidation by hydrous manganese oxide. **J. S. Fischel**, M. Ginder-Vogel, D. L. Sparks

11:40 —113. Surface complexation modeling of radionuclide sorption in the saturated zone of Yucca Mountain rocks. **M. Ding**, S. Kelkar, J. T. Fabryka-Martin, F. A. Caporuscio, A. Meijer

12:00 —End

WEDNESDAY MORNING

Section C

Morial Convention Center -- Rm. 213

General Session on Clays and Clay Minerals; CMS Clay Gumbo

Physical Properties & Clay Mineral Transformations

Brenda Ross, *Organizer*

8:20 —114. Kaolin in tropical soils on diverse parent materials. **W. Wiriyakitnateekul**

8:40 —115. Al-substituted iron oxides in bauxite: Conditions for Al release into Bayer liquor. **N. Zwingmann**, A. Jones, S. Dye, P. Swash, R. J. Gilkes

9:00 —116. Interaction of bentonite and iron(0) in aqueous suspension. **J. W. Stucki**, A. S. Anastácio, P. Sellin

9:20 —117. Water behavior in K-exchanged smectite and comparison to R3-ordered illite/smectite. **S. J. Chipera**, D. L. Bish, J. A. Kieschnick, L. Alcantar-Lopez, J. W. Carey

9:40 —118. Demonstration of the potential of chemical reaction to selectively extract potassium, atmospheric argon, and radiogenic argon from different clay sites. **J. M. Wampler**, S. Shata

10:00 — Intermission.

10:20 —119. Effect of pressure under hydrous and anhydrous conditions on the rheological properties of kaolin. **P. Aparicio**, D. L. Bish, H. H. Murray, E. Galán

10:40 —120. Nanoindentation on clays. **A. Pal-Bathija**, M. Prasad

11:00 —121. Comparative analysis of methods for determining exchangeable cations. L. B. Thompson, **R. E. Ferrell Jr.**

11:20 —122. Proposal of a fast new CEC method for the determination of correct exchangeable calcium cations in calcareous clays and soils. **R. Dohrmann**, S. Kaufhold

11:40 —End

WEDNESDAY AFTERNOON

Section A

Morial Convention Center -- Rm. 211

Speciation of Arsenic and Other Trace Elements in Soils and Sediments

Rona Donahoe and Dibyendu Sarkar, *Organizers*

1:25 — Introductory Remarks.

1:30 —123. Arsenic speciation analysis and its importance in understanding arsenic biogeochemistry. **Y. Cai**, G. Liu

2:10 —124. Field evaluation of arsenic transport across the groundwater/surface water interface: Groundwater discharge and iron oxide precipitation. **R. G. Ford**, K. G. Scheckel, S. Acree, R. Ross, B. Lien, P. Clark, B. Scroggins

2:30 —125. Field evaluation of arsenic transport across the groundwater/surface water interface: Speciation in sediment material. **K. G. Scheckel**, R. G. Ford, A. G. B. Williams, T. P. Luxton, P. Clark, B. Scroggins

2:50 —126. AFM study of reductive dissolution of Manganese oxide in the presence of arsenite: Evidence of precipitate on mineral surface. **S. Debnath**

3:10 — Intermission.

3:30 —127. Speciation related micronutrient limitation by Co and Cu in fresh water. **G. Benoit**

4:10 —128. Iron, sulfur, and arsenic dynamics during sulfidization of arsenic-doped iron (oxy)hydroxides. **A. N. Quicksall**, B. C. Bostick, J. D. Landis

4:30 —129. Arsenic and antimony speciation in water and bottom sediments associated with geothermal waste fluids: Dachny geothermal field, Kamchatka, Russia. **A. G. Ilgen**, S. Mueller, M. Newville, T. P. Trainor

4:50 —130. Role of lead speciation in soil and plant in phytoremediation of contaminated soils using vetiver grass. **R. Datta**, D. Sarkar, S. S. Andra, S. Bach

5:10 —End

WEDNESDAY AFTERNOON

Section B

Morial Convention Center -- Rm. 212

Reactions on Clay Surfaces

Susan Brantley, James Kubicki, and Geoffrey Bowers, *Organizers*

1:30 —131. In situ observations of silicate-water interface reactivity. **P. Fenter**, C. Park, V. Kohli, K. L. Nagy, N. C. Sturchio

2:10 —132. Differences in adsorption mechanisms for Rb^+ and Sr^{2+} at the mica-water interface identified by adsorption isotherms measured with resonant anomalous X-ray reflectivity. **C. Park**, P. Fenter, N. C. Sturchio, K. L. Nagy

2:30 —133. Assessing factors determining the reactivity of octahedral Fe(II) in smectites using organic probe compounds and infrared spectroscopy. **A. Neumann**, T. B. Hofstetter, S. Petit, M. Skarpeli-Liati, M. Lüssi, R. P. Schwarzenbach

2:50 —134. Molecular-scale binding and dynamics of ions and H_2O at the surfaces of hectorite: Sorption/desorption monitored with solid-state NMR. **G. M. Bowers**, H. Yuan, D. L. Bish, R. J. Kirkpatrick

3:10 — Intermission.

3:30 —135. NMR study of the self-diffusion of water in concentrated clay suspensions: Effects of salinity and clay fraction. **X. Guichet**, M. Fleury, E. Kohler

3:50 —136. Investigating reactive surface sites on clays using solid-state NMR and computational chemistry. **K. T. Mueller**, R. L. Sanders, N. M. Washton, J. D. Kubicki

4:10 —137. Molecular simulations of hydroxyl behavior in clay minerals. **J. A. Greathouse**, J. S. Durkin, R. T. Cygan

4:30 —138. Chemical weathering of clay-rich shales in the Shale Hills catchment (Central Pennsylvania, USA). **L. Jin**, R. Ravella, B. Ketchum, S. L. Brantley

4:50 —End

WEDNESDAY AFTERNOON

Section C

Morial Convention Center -- Rm. 213

General Session on Clays and Clay Minerals; CMS Clay Gumbo

Brenda Ross, *Organizer*

1:30 —139. Hydrothermal preparation of well ordered hexagonal particles of synthetic cobalt smectite type clay minerals. **G. Villemure**, J. Crouse, M. Correia, L. Sun

1:50 —140. Diversity of natural nanoparticles in soils and causative factors implied. **J. B. Dixon**

2:10 —141. Recycling zeolites filters using electrodialysis. **C. Sooter**, W. Hudnall

2:30 —142. Use of mixed phases for the preparation of high active ingredient content clay-herbicide formulations. **G. Rytwo**, S. Afuta, Y. Gonen, A. Mendelovich, R. Ganigar

2:50 —143. Separation of enantiomers utilizing tailored clay materials. **A. S. Frantzen**, M. R. Harris

3:10 — Intermission.

3:30 —144. Mineralogical reaction paths in geological units during storage of CO₂ : Example of the natural analog of the Moab region, Utah. **B. Blanchet**, T. Parra, M. Jullien

3:50 —145. K-bentonites: Issues in identifying and interpreting ancient tephras. **W. D. Huff**

4:10 —146. Micron-scale chemical speciation toward understanding the unusual fossil preservation and biomineralization pathways in Tlayúa, Mexico. **J. Cervini-Silva**, S. C. Fakra, M. A. Marcus, H. Cornejo-Garrido, Z. Hao, J. Alvarado-Ortega, N. Tamura, L. Espinosa-Arruberena

4:30 —147. Submicron-chemical speciation of late albian, well-preserved bone fossil samples from Tlayúa, the Mexican Solenhofen. **J. Cervini-Silva**, M. A. Marcus, S. Fakra, J. Alvarado-Ortega, L. Espinosa-Arruberena

4:50 —End

WEDNESDAY EVENING

Section A

Morial Convention Center -- Hall A

General Geochemistry and Clay Minerals Society Poster Session

Tim Filley and Brenda Ross, *Organizers*

6:00 - 8:00 PM

- 148.** On the application of clays as nanoporous nanomaterials for the development of new technologies for water treatment for human consumption in marginal zones in the Mixteca Poblana, México. **D. Kibanova**, E. Bandala, B. Corona Vazquez, M. A. Mendez, M. A. Quiroz, J. Cervini-Silva
- 149.** Siderophores catalyze the oxidation of commercial Pb to nanosized lead (hydr)oxides stable in water. H. Cornejo-Garrido, **J. Cervini-Silva**, B. Gilbert, P. Fernández-Lomelín, J. Guzman, M. Trejo, Z. Hao
- 150.** Sorption of basic amino acids on expandable clay surfaces. **J. Lok**, G. S. Premachandra, C. T. Johnston
- 151.** Surface complexation modeling of dicarboxylic acids at the hematite/water interfaces. **Y. S. Hwang**, J. J. Lenhart
- 152.** Reduction of structural Fe(III) in nontronite by starved *Shewanella Putrefaciens*. **S. Ji**, H. Dong
- 153.** Interaction of proteins with clay surfaces: A structural and spectroscopic study of the lysozyme-saponite complex. **G. S. Premachandra**, T. Szabo, R. A. Schoonheydt, C. T. Johnston
- 154.** Gis based on spatial distribution of BTEX concentration in the vadose zone. **J. Y. Lee**, M. Han, J. Choi, J -S. Yang
- 155.** Functional hybrid materials obtained by intercalation of phytochemicals from açai fruit into clay minerals. **V. R -L. Constantino**, A. A. Teixeira-Neto, A. M -C. Ferreira, C. M -S. Izumi, M. L -A. Temperini
- 156.** Exploring the high mass components of humic acid by LDI MS. **G. Chilom**, J. A. Rice
- 157.** Calculations of carbon-isotope fractionation in CO₂(g), aqueous carbonate species, and carbonate minerals. V. E. Jackson, J. R. Rustad, S. L. Nelmes, **D. A. Dixon**
- 158.** Adsorption of iodine on montmorillonites modified with cationic organic compounds. **J. Yoon**, A. Gélabert, J. Ha, G. E. Brown Jr., J -Y. Hwang
- 159.** Arsenic and antimony interactions with kaolinite, montmorillonite and nontronite clays. **A.**

G. Ilgen, M. Newville, T. P. Trainor

160. Accessibility of different soil organic matter pools to microbial communities: A laboratory soil respiration study. **C. A. Johnson**, T. R. Filley

161. Comparative analysis of the adsorption of arsenic (III) and (V) species onto calcite. **C. A. Johnson**

162. In situ ATR-FTIR, diffuse reflectance FTIR and sorption study of glyphosate to goethite. **E. C. Johnson**, C. T. Johnston

163. Assessing the physicochemical properties of antibacterial clay minerals. **T. M. Borchardt**, S. Haydel

164. Deeper insight to mercury bioaccumulation in the bat population in Kentucky and Tennessee. L. Clark, **E. Whitehouse**, C. J. Webb

165. Tracing the long and short-term effects of Katrina on the composition of organic carbon of sediments in Mississippi Sound (USA): Application of plant pigment and lignins as chemical biomarkers. **A. Chatterjee**, T. S. Bianchi, Y. Furukawa

166. Influence of different preparation method on performance and structure of organic modified montmorillonite adsorbent. N. Li, **J. Huang**, C. Cui

167. Chemical characterization of glaucony within a sequence stratigraphic framework: Braggs K-T boundary locality, Lowndes County, Alabama. **D. E. Bulger**

168. Study on removal of phosphate by using an enhanced membrane bioreactor with external recycle anaerobic process. L. Zhang, **X. Cheng**, D. Sun

169. Withdrawn

170. Competitive adsorption of Fe and Mn using treatment agents for acid mine drainage. **J. Choi**, J.-S. Yang, J.-Y. Lee, D. Kwon, J. Ham

171. Determination of gallium in coal gangue by Victoria Pure Blue BO spectrophotometry. **X. Chen**, W. Shi, S. Chen, W. Song, Y. Yu, X. Zhong, Y. Wang

172. Determination of the ideal ionic strength condition as the aggregation method on the uptake and retention of zinc(II) and copper(II) onto iron oxyhydroxide nanoparticles. **J. P. Stegemeier**, J. G. Dale, C. S. Kim

173. Electron donor effects on Fe(II)-bearing secondary mineral formation resulting from the bioreduction of lepidocrocite. **E. J. O'Loughlin**, C. A. Gorski, R. E. Cook, M. M. Scherer

174. Factors influencing ferrihydrite crystallinity in natural and synthetic systems. **R. G. Ford**,

F. M. Michel, J. Thompson

175. Nanoindentation behavior and related mechanical properties of clay minerals. **G. Zhang**, Z. Wei, R. E. Ferrell

176. A macroscopic and spectroscopic investigation of Cr(VI) sorption and desorption during transport through sediments under slightly alkaline and oxic conditions. **N. P. Qafoku**, P. E. Dresel, C. C. Ainsworth, S. V. Mattigod, J. P. McKinley, S. M. Heald, J. L. Phillips, J. S. Fruchter

177. Feasibility of arsenic-75 NMR for studying arsenic oxyanion structure and dynamics at clay surfaces. **G. M. Bowers**, R. J. Kirkpatrick

178. A novel pervious cement reaction barrier (PCRB) in situ arsenic-remediation system. **M. L. Jones**, C. Webb

179. Mineralogic control of cesium uptake in soils at the Savannah River site. **W. C. Elliott**, M. Tajiri, J. M. Wampler, R. L. Rosson, B. Kahn, S. M. Serkiz

180. Characterization of natural and synthetic floating, mixed valent Fe-film (Schwimmeisen). Z. N. Gray, **G. H. Grathoff**, R. B. Perkins

181. Reaction of U(VI) with anionic clay minerals. **D. E. Latta**, E. J. O'Loughlin, K. M. Kemner, M. I. Boyanov, M. M. Scherer

182. Characterization of nonequilibrium distribution in RF plasma discharges. **N. P. Fernandez-Oropeza**, A. Hsu

183. Site selection of cesium in cancrinites formed in high-alkaline solutions. **Y. Deng**, J. B. Harsh, M. Flury

184. Sorption of toxic metals to montmorillonite. **A. D. Burum**, K -A. Kubatko

185. Withdrawn

186. Steric considerations in the combustion of organo-clays. **J. N. Perrin**, A. S. Frantzen

187. Study of uptake and retention of Cu(II) and Zn(II) by iron oxyhydroxides under varying pH conditions. **J. G. Dale**, J. P. Stegemeier, C. S. Kim

188. Summary and findings of the radon daughter monitoring program at Mammoth Cave National Park from 1976 to 2007. **B. E. Peyton**, B. C. Carson

189. Theoretical study of the adsorption of trimethyl phosphate on calcium oxide. **Y. Pauku**, A. Michalkova, J. Leszczynski

190. Thermodynamic studies of standard montmorillonite clays. **K. M. Baugh**, A. S. Frantzen

191. Upgrade of HLRW bentonite with respect to iodide adsorption. **S. Kaufhold**, M. Pohlmann-Lorz, R. Dohrmann

192. The speciation and bioavailability of arsenic through leaching and in vitro studies of mine wastes. E. M. Sugihara, S. R. Miller, **C. S. Kim**

THURSDAY MORNING

Section A

Morial Convention Center -- Rm. 211

Speciation of Arsenic and Other Trace Elements in Soils and Sediments

Rona Donahoe and Dibyendu Sarkar, *Organizers*

8:35 — Introductory Remarks.

8:40 —193. Chemistry of trace and toxic elements in wetland vs. upland environments affecting mobility and biological availability. **R. P. Gambrell**

9:20 —194. Naturally elevated arsenic- and selenium-bearing soils in the southeastern U.S. Piedmont. **P. A. Schroeder**

9:40 —195. Complexation of arsenite with dissolved organic matter in the absence and presence of natural sand. **G. Liu**, A. Fernandez, Y. Cai

10:00 — Intermission.

10:20 —196. Biogeochemical processes and the dynamics of trace metals in sediments. **D. D. Reible**, Y. Hong, N. W. Johnson, L. E. Katz, K. Kinney

11:00 —197. Arsenic speciation in semiarid soils contaminated from lead smelting activities. **M. Gutiérrez-Ruíz**, F. Romero, M. Villalobos, A. Ceniceros

11:20 —198. Experimental simulation of soil contamination by arsenolite. **Z. Yue**, R. J. Donahoe

11:40 —End

THURSDAY MORNING

Section B

Morial Convention Center -- Rm. 212

Reactions on Clay Surfaces

Susan Brantley, James Kubicki, and Geoffrey Bowers, *Organizers*

8:20 —199. Molecular simulations of reactions on clay surfaces. **R. T. Cygan**

9:00 —200. Molecular modeling of amino acid interactions with montmorillonite interlayer surfaces. **L. Tribe**, A. J. Rennig, A. K. Slutter, A. M. Davis, G. Joanis

9:20 —201. Quantum mechanical study of adsorption and reactivity of organic free radicals on silicate surfaces of aerosol particles. **C. Sainz-Díaz**, C. Iuga, A. Vivier-Bunge, A. Hernández-Laguna

9:40 —202. Role of a biopolymer in montmorillonite flocculation: Transmission electron microscopy (TEM) observation. **J. Kim**, Y. Furukawa, K. J. Curry, R. Bennett

10:00 — Intermission.

10:20 —203. Treatment of perchlorate-contaminated water using surfactant-modified clay. **M. E. Cary**, V. A. Nzungung

10:40 —204. Synthesis of clay-TiO₂ nanocomposites with photocatalytic activity for the degradation of air pollutants. **D. Kibanova**, M. Trejo, H. Destailats, J. Cervini-Silva

11:00 —205. Using steam-treated smectites to probe intrinsic controls on the colloidal behavior of gel-forming smectite. **L. Zhu**, D. L. Bish, G. M. Bowers

11:20 —End

THURSDAY MORNING

Section C

Morial Convention Center -- Rm. 213

General GEOC Oral Session

Tim Filley and Cliff Johnson, *Organizers*

8:20 —207. Macrofauna soil turnover rates, depths and transport coefficients. **L. Thibodeaux**

8:40 —208. Macroinvertebrate controls on the transformation of plant derived organic matter in litter and soil. **T. R. Filley**, K. Szlavecz

9:00 —209. Role of macroinvertebrates in cycling phosphorus in surface sediments of Upper Klamath Lake, OR, USA. **N. S. Simon**

9:20 —210. Plant-clay mineral interactions through earthworm activities: A perspective on influences of microbial activities on mineral alteration and some aspects of river water chemistry. **S. Chaudhuri**, N. Clauer

9:40 —211. Earthworm biodiffusion control in soil uptake of PCBs from the atmosphere. **L. Thibodeaux**

10:00 — Intermission.

10:20 —212. Geochemical cycling of nitrogen on Titan. **S. H. Abbas**

10:40 —213. Assembly of organic protomolecules in the seemingly forbidding matrix of magmatic minerals. **F. T. Freund**, J. Mellon, R. Malhotra

11:00 —214. Formation of hydrogen peroxide at the rock-water interface. **M. Bose**, M. Balk, G. Ertem, D. A. Rogoff, L. J. Rothschild, F. Freund

11:20 —End

THURSDAY MORNING

Morial Convention Center -- Rm. 212

The Reynold's Cup 2008

Edwin Zeelmaekers and Douglas McCarty, *Organizers*

11:40 — Competition and Sample Overview

12:00 — Award Ceremony

12:30 — End

THURSDAY AFTERNOON

Section A

Morial Convention Center -- Rm. 211

Speciation of Arsenic and Other Trace Elements in Soils and Sediments

Rona Donahoe and Dibyendu Sarkar, *Organizers*

1:25 — Introductory Remarks.

1:30 —215. Immobilization of soil arsenic using water treatment residuals: Potential to develop into a cost-effective remediation method? **D. Sarkar**, R. Datta, K. Makris, R. Nagar, S. Quazi

2:10 —216. Biological methylation of inorganic arsenic in the presence of smectite clay minerals. **J. Hernandez-Pineda**, P. Fernández-Lomelín, J. Cervini-Silva

2:30 —217. Aqueous arsenic speciation by nanospray and electrospray mass spectrometry. S. Bach, **C. Mullens**, D. Sarkar, K. Makris

2:50 —218. Speciation of selenium associated with coal-combustion by-products using HPLC-ICP-MS. **L. M. Horvath-Lohr**, D. J. Vesper, R. L. Thompson, K. Schroeder

3:10 — Intermission.

3:30 —219. Challenges of determining the speciation of arsenic in contaminated soil. **R. J. Donahoe**

4:10 —220. Remobilization of arsenic(III) sorbed by mackinawite (FeS) under oxic conditions. **H. Y. Jeong**, K. F. Hayes, S. W. Park, C. W. Kim

4:30 —221. Flushing and mineralization of arsenic in contaminated soil: A potential remediation strategy for anoxic soil and groundwater. **G. Neupane**, R. J. Donahoe

4:50 —222. Formation of Zn-Ca phyllo-manganate nanoparticles in grass roots. **B. Lanson**, M. M. Marcus, S. C. Fakra, F. Panfili, N. Geoffroy, A. Manceau

5:10 —End

THURSDAY AFTERNOON

Section B

Morial Convention Center -- Rm. 212

Reactions on Clay Surfaces

Susan Brantley, James Kubicki, and Geoffrey Bowers, *Organizers*

1:30 —223. Effect of dry milling on the structure and thermal stability of a commercial organoclay. **F. Clegg**, C. Breen, S. Bannister

1:50 —224. Influence of clay host on the thermal stability of model organoclays and their commercial counterparts. **C. Breen**, F. Clegg, S. Bannister

2:10 —225. Development of a composite surface complexation model describing plutonium sorption to smectite. **B. A. Powell**, A. B. Kersting, M. Zavarin, P. Zhao

2:30 —226. Examination of the effects of ionic strength and pH on neptunium(V) and plutonium(V) sorption to montmorillonite. **M. Zavarin**, M. Bourbin, A. B. Kersting, B. A. Powell, P. Zhao

2:50 —227. F/Al double resonance NMR to probe variable-charge clay surfaces. **S. G. Cochiara**, B. L. Phillips

3:10 — Intermission.

3:30 —228. Nanohybrid materials from kaolinite: Interlayer grafting and intercalation of ionic liquids and polymers. **C. Detellier**, S. Letaief, T. Elbokl, I. K. Tonle, T. Diaco, S. Gorelski

3:50 —229. Nanostructured materials from the intercalation of insect pheromones in sepiolite. **S. Letaief**, J.-M. Frechette, B. Hubbard, C. Detellier

4:10 —End