

FUEL

Division of Fuel Chemistry

A. M. Herring, *Program Chair*

SOCIAL EVENT:

Joint FUEL/PETR Dinner: Tue

BUSINESS MEETINGS:

Business Meeting: Mon

Executive Committee Meeting: Sun

Program Committee Meeting: Sun

SUNDAY MORNING

Section A

Hilton

Grand Ballroom B

General Papers in Fuel and Energy Chemistry

A. M. Herring, *Organizer, Presiding*

8:00 Introductory Remarks.

8:05 1. New theory for basic water structure and potential fuel and energy applications. **K. L. Jones**

8:30 2. C-Cycle: Carbon dioxide capture, activation and product release. **P. Styring**, O. Aschenbrenner, S. Supasitmongkol

8:55 3. Enhancement of surfactant on the dibenzothiophene biodesulfurization. **H. Chen, W. Li**

9:20 4. A novel used lubricating oils refining technology using cold-stage separation (CSS) system. **T. F. Yen, C. Yang, W. T. Fan**

9:45 5. Application of computational chemistry to combustion processes: Generation of reliable thermokinetic data for the aromatics oxidation mechanisms. **F. Louis, S. Canneaux, M. Ribaucour, A. El Bakali, J-F. Pauwels**

10:10 Intermission.

10:30 6. Exploring the chemical reactivity of asphaltenes. **M. N. Siddiqui**

10:55 7. Nanocomposite oxygen carriers for chemical looping combustion of sulfur-contaminated coal gas. **R. D. Solunke, G. Vesser**

11:20 8. Rapid analysis of bound glycerides in biodiesel using fluorescence. **E. M. Deemer, W-Y. Lee**

11:45 9. Systematic exploration of hydrogen atom transfers in alkyl, alkenyl, and functionalized radicals, as predicted by composite ab initio methods. **C. J. Hayes, D. R. Burgess Jr.**

12:10 Concluding Remarks.

Section B

Hilton

Grand Ballroom A

Alternative Hydrocarbons: Tar Sands, Oil Shale, and Heavy Oil: Production, Processing, and Chemistry Cosponsored by PETR[†]S. Eser, E. M. Suuberg, J. F. Schabron, and P. Rahimi, *Organizers*

8:15 Introductory Remarks.

8:20 10. Waxphallene Determinator for rapid separation of waxes and asphaltenes. **J. F. Schabron, L. Goual, T. F. Turner, B. F. Towler**

8:45 11. Using mass spectrometry to improve on the SARA analysis for a series of Canadian heavy oils. **A. M. Herring, M. H. Johnston, M. Batzle, M. Liberatore, S. F. Dec**

9:10 12. Analysis of Maya crude oil. **A. A. Herod, T. J. Morgan, P. Alvarez, A. George, M. Millan, R. Kandiyoti**

9:35 13. Nonpolar speciation of Athabasca bitumen by atmospheric pressure photoionization FT-ICR mass spectrometry. **A. M. McKenna, J. M. Purcell, P. Rahimi, R. P. Rodgers, A. G. Marshall**

10:00 Intermission.

10:20 Introductory Remarks.

10:25 14. Syncrude characterization.

A. A. Herod, P. Alvarez, C. Berruoco, S. Venditti, A. George, M. Millan, R. Kandiyoti

10:50 15. Development of a drop-in unifuel/single battlefield fuel of high thermal stability. **J. S. Heyne, A. L. Boehman, S. Kirby**

11:15 16. Structure-activity relationship in low temperature oxidation of cyclic hydrocarbons. **Y. Yang, A. L. Boehman**

11:40 17. Proposed reactivity mechanism for trans- and cis-decalin and implications for the development of JP-900. **J. S. Heyne, A. L. Boehman**

12:05 Concluding Remarks.

SUNDAY AFTERNOON

Section A

Hilton

Grand Ballroom B

General Papers in Fuel and Energy Chemistry

A. M. Herring, *Organizer*A. M. Dean and H. H. Cartensen, *Presiding*

2:00 Introductory Remarks.

2:05 18. Affordable cellulosic ethanol by 2012: NREL's thermochemical platform R&D. **W. J. Frederick**

2:30 19. Biomass characterization and organosolv pretreatment of *Buddleja davidii*. **B. B. Hallac, P. Sannigrahi, Y. Pu, M. Ray, R. Murphy, A. J. Ragauskas**

2:55 20. Chemical kinetic mechanism additivity. **H. R. Zhang, E. G. Eddings, A. F. Sarofim**

3:20 21. Development of detailed kinetic models for Fischer-Tropsch fuels. **C. K. Westbrook, W. J. Pitz, H-H. Carstensen, A. M. Dean**

3:45 Intermission.

4:05 22. Development of low temperature glycerol and ethylene glycol fuel cells capable of high energy density and complete oxidation. **R. L. Arechederra, S. D. Minter**

4:30 23. Ethylene pyrolysis and the subsequent molecular weight growth reactions. **I. Kang, A. Al Shoaibi, A. M. Dean**

4:55 24. Low temperature partial oxidation of ethane and propane. **L. K. Huynh, A. Al Shoaibi, H. H. Cartensen, A. M. Dean**

5:20 25. Ozonolysis of biodiesels in the presence of various low molecular weight alcohols. **Z. Cha, H. R. Zhang, E. G. Eddings, A. F. Sarofim**

5:45 Concluding Remarks.

Section B

Hilton

Grand Ballroom A

Alternative Hydrocarbons: Tar Sands, Oil Shale, and Heavy Oil: Production, Processing, and Chemistry Cosponsored by PETR[†]S. Eser, E. M. Suuberg, J. F. Schabron, and P. Rahimi, *Organizers*

2:00 Introductory Remarks.

2:05 26. Biodegradation effects on the molecular and isotopic compositions of petroleum columns: A case study from the Alberta tar sands. **N. I. Marcano, S. Larter, B. Mayer**

2:30 27. Calculations on model compounds for heavy petroleum constituents. **P. Seidl, K. Z. Laal, S. M. C. D. Menezes, L. C. Navarro Quintero, J. F. Dias, E. B. Lindgren, A. M. Carautia**

2:55 28. Catalytic cracking of residual oil with iron-based catalyst in a steam atmosphere. **E. Fumoto, A. Matsumura, S. Sato, T. Takanohashi**

3:20 29. Compatibility and stability characteristics when blending different diluents and bitumen crudes. **P. Rahimi, Z. Fan, S. Cooper, T. Alem, I. A. Wiehe**

3:45 Intermission.

4:05 30. Desulfurization process of heavy fuel oil. **N. Y. Chan, W. T. C. Fan, T. F. Yen**

4:30 31. Exhaust emission and combustion behavior of Fischer-Tropsch fuel in a compression ignition engine. **K. Yehliu, O. Armas, A. L. Boehman**

4:55 32. Regional and local scale GIS surface and groundwater models of the oil shale basins. **P. G. Quinn**

5:20 Concluding Remarks.

Nanotechnology in Catalysis VI Sponsored by CATL (probationary), Cosponsored by COLL, FUEL, I&EC, PETR, and NANO

MONDAY MORNING

Section A

Hilton

Grand Ballroom B

Membranes for Fuel and Energy Applications

J. D. Way, *Organizer, Presiding*

8:15 Introductory Remarks.

8:20 33. Synthesis and characterization of heteropolyacid immobilized membranes. **S. Sachdeva, A. M. Herring**

8:45 34. Novel polyoxometalate containing membranes for PEM fuel cells. **M. K. Harrup, F. F. Stewart, T. A. Luther, T. Trowbridge**

9:10 35. Triazole bearing sol-gel membranes as water free proton exchange membranes for hydrogen fuel cells. **S. Granados-Focil, J. R. Conway, M. Thom, C. Versek, M. T. Tuominen**

9:35 36. Theoretical predictions for novel membranes for high temperature H₂ purification: Amorphous films and dense sulfides. **C. Ling, S. Hao**

10:00 Intermission.

10:20 37. Properties of palladium-ruthenium membranes produced by electroless codeposition. **S. K. Gade, M. K. Keeling, A. P. Davidson, J. D. Way**

10:45 38. Using first-principles calculations to screen ternary alloys as membranes for high temperature hydrogen purification. **D. S. Sholl, L. Semidey-Flecha, C. Ling, T. Watanabe**

11:10 39. Performance improvement for palladium alloy membranes for hydrogen production. **Ø. Hatlevik, J. D. Way**

11:35 40. Ab initio studies of palladium-niobium alloys for hydrogen separation. **S. Aboud, E. Ozdogan, J. Wilcox**

12:00 Concluding Remarks.

Section B

Section B

Hilton

Grand Ballroom A

Gas Hydrates and Clathrates

Hydrates in Nature

C. A. Koh, E. D. Sloan, and A. K. Sum, *Organizers*C. Ruppel and J. A. Ripmeester, *Presiding*

8:00 Introductory Remarks.

8:05 41. Energy and hydrates: An overview inside the flowline and in nature. **E. D. Sloan**

8:45 42. Japan's national gas hydrate program. **M. Kurihara**

9:25 43. India's national gas hydrate program. **V. Sibal**

10:05 Intermission.

10:25 44. China's national hydrate program. **S. Fan**

The official technical program for the 237th National Meeting is available online at oasys2.confex.com/acs/237nm/techprogram/.

11:05 45. Overview of energy-related studies of gas hydrates in Canada. **S. R. Dallimore**

11:45 46. Gas hydrate energy resource studies in the United States. **T. Collett, R. Boswell, K. Rose, W. Agena, R. Baker**

12:25 Concluding Remarks.

Section C

Hilton

Topaz Room

Methods and Techniques in Analytical Characterization for Fuel Nanoscience Cosponsored by NANO

R. E. Winans, *Organizer*R. J. Pugmire, *Organizer, Presiding*

8:30 Introductory Remarks.

8:35 47. Applications of pair distribution function analysis to study energy-related materials. **K. W. Chapman, P. J. Chupas, R. E. Winans, R. J. Pugmire**

9:00 48. In situ NMR and pair distribution function studies of local structure in silicon anodes for lithium ion batteries. **B. Key, R. Bhattacharya, C. P. Grey**

9:25 49. Catalyst structure determination using operando XAFS. **J. C. Linehan, J. L. Fulton, M. Balasubramanian, Y. Chen, T. Autrey, N. K. Szymczak, J. A. Franz, R. G. Finke, T. E. Bitterwolf, W. J. Shaw, T. Smurthwaite**

9:50 Intermission.

10:10 50. Examining the correlation between molecular modeling and X-ray scattering structures of Green River oil shale kerogen. **R. J. Pugmire, I. Pimental, J. Facelli, D. R. Locke, P. J. Chupas, K. W. Chapman, R. E. Winans**

10:35 51. In situ characterization of heterogeneous catalysts using time-resolved X-ray diffraction. **J. C. Hanson, X. Wang, W. Wen, L. Barrio, G. Zhou, M. Estrella, J. A. Rodriguez**

11:00 52. In situ XAFS analysis of cobalt-containing fuel cell cathode electrocatalysts. **A. J. Kropf, D. Myers, M. Smith, J. Christunoff, G. Wu, P. Zelenay**

11:25 53. Grazing incidence small-angle X-ray scattering studies of nanometal catalysts. **R. E. Winans, B. Lee, S. Seifert, S. Lee, J. W. Elam, S. Vajda**

11:50 Concluding Remarks.

Nanotechnology in Catalysis VI Sponsored by CATL (probationary), Cosponsored by COLL, FUEL, I&EC, PETR, and NANO

MONDAY AFTERNOON

Section A

Section A

Hilton

Grand Ballroom B

Catalysis in Fuel Chemistry

Catalytic Upgrading of Fuels Cosponsored by CATL (probationary)

C. K. Narula, *Organizer*C. K. Narula, *Organizer*S. H. Overbury, *Organizer, Presiding*

2:00 Introductory Remarks.

2:05 54. Catalysts important in the refining of Fischer-Tropsch syncrude to fuels. **A. De Klerk**

2:35 55. Overview of Fischer-Tropsch aqueous product refining strategies. **A. De Klerk, R. Nel**

3:05 56. Blending performance of hydroprocessed coal pyrolysis products in low-temperature Fischer-Tropsch diesel. **D. Lamprecht**

3:30 57. Catalytic oxidative desulfurization of jet fuel for fuel cell applications. **M. T. Timko, R. C. Mlake-Lye, R. P. Ciccolini, M. Mock, J. W. Tester, D. Minus**

3:55 58. Withdrawn.

4:15 Intermission.

4:35 59. Catalytic conversion of syngas to oxygenates: Challenges for selectivity and activity. **J. J. Spivey, A. Eggebi, M. Gupta, N. D. Subramanian, N. Kumar, J. G. Goodwin Jr., X. Mo**

5:05 60. In situ FT-IR studies of CO and CO₂ hydrogenation over titania supported Rh and Rh-Li catalysts. **V. Schwartz**, K. More, S. H. Overbury, A. Egbeti, J. J. Spivey

5:35 61. Effect of CO₂ on CO hydrogenation to ethanol over Rh-Mn-Li/TiO₂ vs. Rh-Mn-Li-Fe/TiO₂. **A. Egbeti**, J. J. Spivey

6:00 Concluding Remarks.

Section B

Hilton
Grand Ballroom A

Gas Hydrates and Clathrates Hydrates in Nature

C. A. Koh and A. K. Sum, *Organizers*

S. R. Dallimore, *Presiding*

E. D. Sloan, *Organizer, Presiding*

2:00 Introductory Remarks.

2:10 62. Methane hydrates and global climate change: A status report. **C. Ruppel**

2:50 63. Gas hydrate occurrence in marine sediments and volcanic ash of the Andaman Arc: Results from the Indian NGHP Expedition 01, Site 17. **P. Long**, K. Rose, H. T. Schaef, M. E. Torres, E. S. Solomon, M. Kastner, J. E. Johnson, L. Giosan, W. J. Winters, S. Dewri, P. Kumar

3:15 64. Gas production from methane hydrates. **M. J. Castaldi**, Y. Zhou, T. Yegulalp

3:40 Intermission.

4:00 65. Development and test of innovative technologies for gas hydrate exploration and gas production from hydrate bearing sediments. **J. M. Schicks**, K. Wallmann, J. Bialas, M. Haeckel

4:25 66. Hydrate formation from single-phase aqueous solutions of CO₂ in the presence of bentonite particles. **R. P. Warzinski**, W. Zhang

4:50 67. Thermal conductivity and thermal diffusivity of methane hydrate using a single-sided approach. **E. Rosenbaum**, D. W. Shaw, R. J. Lynn, R. P. Warzinski

5:15 Discussion.

Section C

Hilton
Topaz Room

Methods and Techniques in Analytical Characterization for Fuel Nanoscience

Cosponsored by NANO

R. J. Pugmire, *Organizer*

R. E. Winans, *Organizer, Presiding*

2:00 Introductory Remarks.

2:05 68. Interaction of CO₂ with coals via SAXS. **J. M. Calo**, E. J. Bain, R. E. Winans, S. Seifert, A. H. Clemens

2:30 69. S-XANES analysis of sulfur forms in coals and kerogens. **T. B. Bolin**

2:55 70. Detailed heteroatom speciation in petroleum by high resolution FT-ICR MS. **R. P. Rodgers**, P. Juyal, A. M. McKenna, A. G. Marshall

3:20 Intermission.

3:40 71. Mass spectral characterization of a VGO. **M. T. Cheng**, J. D. Hudson, C. Dimagmalaw

4:05 72. An improved method for determination of kinetic parameters from constant heating rate TGA oil shale pyrolysis data. **J. L. Hillier**, J. S. Fletcher, C. Isackson, J. Orgill, T. H. Fletcher

4:30 73. Fluorous metal organic frameworks. **C. Yang**, M. A. Omari

4:55 74. Electrochemical hydrogenation and hydrogen evolution on carbon nanotubes. **Z. Zhang**, P. Zimmerman, C. B. Musgrave

5:20 Concluding Remarks.

Section D

Hilton
Grand Ballroom C

General Papers in Fuel and Energy Chemistry

A. M. Herring, *Organizer*

1:30-4:00

75. A novel method to prepare activated carbon monolith with high mechanical strength. **X-L. Yan**, X-M. Liu, K. Qiao, Y-H. Wang, Z-F. Yan

76. Facile enrichment of tocopherols by automated flash chromatography. **J. E. Silver**, N. Fowler, P. Bellinghausen, C. Scanlon

77. Novel catalysts for transesterification of vegetable oils. **V. A. Curtis-Palmer**, M. W. Majewski

78. Polypyrrole and platinum nanocomposite for fuel cell applications. **X. Zhang**, F. N. Crespiho, V. Zucolotto, S. K. Manohar, L. H. C. Mattoso, K. Bergamaski

79. Ionic liquids as "green" replacements for hydrazines in bipropellant rocket application. **M. S. Rosander**, S. Schneider, T. W. Hawkins

80. Oxidation characteristics of biodiesel and its blends from vegetable oils under accelerated oxidation conditions. **J-K. Kim**, W. J. Lee, J. Seo, E. S. Yim, S-C. Shin, K. Y. Chung, D. Kim, B. H. Han

81. Synthesis and characterization of functionalized mesoporous carbon acid catalyst for biodiesel production. **B. M. Naah**, N. S. Chong, B. G. Ooi, C. Liang

82. Withdrawn.

83. Study on the effects of activator on the stability of sulfonated cobalt phthalocyanine in alkaline solution. **X. Si**, D. Xia, Y. Xiang

84. Catalytic role of nanostructured carbon on NaAlH₄ hydrogen sorption. **A. C. Stowe**, P. Berseht, A. Harter, R. Zidan, A. Blomqvist, C. M. Araujo, R. Ahuja, P. Jena

85. Development of a REMPI/SPI-TOFMS for the detection of tar formation in biomass gasification. **D. J. Robichaud**, A. M. Scheer, M. R. Nimlos, G. B. Ellison

86. Enzymatic bioreactor for butanol production. **S. Besic**, S. D. Minter

87. Factors affecting lignin measurements in dilute acid pretreated herbaceous feedstock. **R. Katahira**, D. W. Templeton, D. J. Schell, M. F. Davis

88. Immobilization of the first five glycolysis enzymes for biofuel cell applications. **C. E. Menius**, S. D. Minter

89. Methanol biofuel cell based on NAD-dependent enzymes immobilized at electrodes by hydrophobically modified Nafion. **P. K. Addo**, S. D. Minter

90. Optimization of PQQ-dependent alcohol dehydrogenase activity in *Gluconobacter* sp. 33 for use in biofuel cells. **Z. Zulic**, S. D. Minter

91. Performance of PEG membranes in scale-up of pervaporation for gasoline desulfurization. **L. Lin**

92. Poly(arylene ether)s carrying pendant (3-sulfonated)phenyl sulfonyl groups. **M. Abdellatif**, D. R. Douglass, **E. Fossum**

93. Producing energy efficient concrete using Illinois coal fly ash. **M-I. Chou**, S-F. Chou

94. Pyrolysis of lignin model compounds using a hyperthermal nozzle: Decomposition pathways of the aryl ethers. **C. Mukarakate**, A. M. Scheer, D. J. Robichaud, B. Ellison, M. R. Nimlos, M. F. Davis

95. Surface modification for efficiency improvement of inline solar cell manufacture. **J. Hoogboom**, J. Oosterholt, S. Ritmeijer, L. Groenewoud, A. Stassen, M. Koppes, K. Tool, J. Bultman

96. Tar quantification from a fluidized bed biomass gasification: Gas chromatographic and gravimetric methods. **H. Cui**, S. Q. Turn

Catalysis for Cellulosic Feedstock

Conversion Sponsored by CATL (probationary), Cosponsored by CELL, COLL, FUEL, I&EC, and PETR

Nanotechnology in Catalysis VI Sponsored by CATL (probationary), Cosponsored by COLL, FUEL, I&EC, PETR, and NANO

MONDAY EVENING

Section A

Salt Palace Convention Center
Hall 5

Sci-Mix

A. M. Herring, *Organizer*

8:00-10:00

2, 7-8, 13, 15, 20-21, 25, 31-32, 44-45, 55, 65, 67, 73-74, 95. See previous listings. **106, 111, 116, 118, 134-135, 140, 144, 147, 149, 160, 162, 165, 170, 175-176, 180-181, 185, 188, 191-192.** See subsequent listings.

Sci-Mix Sponsored by CATL (probationary), Cosponsored by COLL, FUEL, I&EC, and PETR

TUESDAY MORNING

Section A

Hilton
Grand Ballroom B

**Catalysis in Fuel Chemistry
Catalytic Upgrading of Fuels** Cosponsored by CATL (probationary)

S. H. Overbury and C. K. Narula,
Organizers

A. De Klerk, *Presiding*

8:15 Introductory Remarks.

8:20 97. A comparative study of ZnO-CuO-Al₂O₃/SiO₂-Al₂O₃ composite and hybrid catalysts for direct synthesis of dimethyl ether from syngas. **S. P. Naik**, H. Wan, S. Bali, J. Miller, W. W. Zmierczak

8:45 98. Adsorbate Cu interactions and catalyst morphologies under reactive water gas shift environment: A first principle study. **N. G. Inoglu**, J. R. Kitchen

9:10 99. Catalytic strategies for upgrading of fuels from conventional and renewable resources. **S. P. Crossley**, S. Sithisa, P. Do, D. E. Resasco

9:35 100. Characterizing and designing bimetallic catalysts for selective reductions of oxygenates. **J. W. Medlin**, M. P. Hyman, M. T. Schaal, J. R. Monnier, C. T. Williams, S. Ma

10:00 Intermission.

10:20 101. Key catalysis of metal cation-exchanged ZSM-5 zeolites for conversion of methane in the presence of ethene. **T. Baba**, K. Inazu

10:45 102. Mechanistic insights into dimethyl ether homologation to branched hydrocarbons on acidic zeolites. **J. H. Ahn**, **D. A. Simonetti**, B. Temel, E. Iglesia

11:10 103. Solid phosphoric acid: Have the sands of time run out for this steadfast catalyst? **N. M. Prinsloo**, A. De Klerk

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11:35 104. Transition-metal-based catalytic systems for the dehydrogenation and metathesis of alkanes: Solution-phase and solid-supported iridium-based pincer catalysts. **A. S. Goldman**, M. Brookhart, Z. Huang, K. Krogh-Jespersen, S. Kundu, S. L. Scott

12:00 Concluding Remarks.

Section B

Hilton
Grand Ballroom A

Gas Hydrates and Clathrates Hydrate Flow Assurance & Technology

E. D. Sloan and A. K. Sum, *Organizers*

M. Kurihara, *Presiding*

C. A. Koh, *Organizer, Presiding*

8:00 Introductory Remarks.

8:10 105. State-of-the-art perspectives of natural gas hydrates in industrial flow assurance. **J. L. Creek**

8:50 106. Interpretation and modeling of chord length distribution from FBRM results during gas hydrate formation and agglomeration from water-in-oil emulsion. **J-M. Herri**, **H. LeBa**, A. Cameirao, M. Darboret, J-L. Peytavy, P. Glénat

9:15 107. Managing gas hydrates at high water cuts with antiagglomerant. **S. Gao**

9:40 Intermission.

10:00 108. Studies of mass transfer resistances to hydrate formation. **S. R. Davies**, C. A. Koh, A. K. Sum, E. D. Sloan Jr.

10:25 109. Enhanced rate of gas hydrate formation in a silica sand matrix compared to a stirred vessel. **P. Linga**, C. Haigva, J. A. Ripmeester, P. Englezos

10:50 110. Progress on the gas hydrate process for CO₂/N₂ and CO₂/H₂ separation using a large scale apparatus. **P. Linga**, R. Kumar, J. A. Ripmeester, P. Englezos

11:15 111. Uncertainty analysis of gas hydrate gas handling applications. **J. P. Osegovic**, B. Blake-Collins, M. D. Max, I. Slattery

11:40 Discussion.

Section C

Hilton
Topaz Room

Emissions from Combustion Processes: Environmental Issues, Assessment, and Control

J. S. Lighty, G. Silcox, and J. J. Helble,
Organizers

8:00 Introductory Remarks.

8:05 112. Application of Raoult's Law to model contaminant mixtures of polycyclic aromatic hydrocarbons. **J. L. Goldfarb**, **E. M. Suaberg**

8:30 113. Characterization of aircraft gas turbine engine particle emissions. **M. T. Timko**, Z. Yu, H-W. Wong, R. C. Miake-Lye, T. Onasch, J. T. Jayne, M. R. Canagaratna, S. C. Herndon, E. C. Wood

8:55 114. Control of flue gas mercury emissions: Effects of acid gases on sorbent reactivity. **E. Olson**

9:20 115. Detailed microphysical modeling of particle emissions from aircraft gas turbine engines. **H-W. Wong**, M. T. Timko, R. C. Miake-Lye, I. A. Waitz

9:45 116. Fate of arsenic and selenium in air pollution control devices in coal-fires power plants. **C. Senior**

10:10 Intermission.

10:30 117. Potential of animal waste as a reburn fuel on emissions control: Performance. **H. Oh**, K. Annamalai, J. M. Sweeten

10:55 118. Soot deposit properties in practical flames. **I. Preciado**, E. G. Eddings, A. F. Sarofim, R. B. Dinwiddie, W. D. Porter, M. J. Lance

‡ Cooperative Cosponsorship

- 11:20 **119.** Utilization of solid amine sorbents for the capture of carbon dioxide. **M. L. Gray**, K. J. Champagne, D. J. Fauth, S. W. Hedges, J. S. Hoffman, D. Hreha, H. W. Pennline
- 11:45 **120.** Understanding heterogeneous mercury chemistry. **J. Wilcox**, S. Aboud, E. Sasmaz, B. Padak
- 12:10 Concluding Remarks.

George A. Olah Award in Hydrocarbon or Petroleum Chemistry: Symposium in Honor of Cynthia M. Friend
Catalysis and Reaction Mechanisms
 Sponsored by CATL (probationary), Cosponsored by COLL, FUEL, I&EC, PETR, WCC, and PHYS

Nanotechnology in Catalysis VI Sponsored by CATL (probationary), Cosponsored by COLL, FUEL, I&EC, PETR, and NANO

TUESDAY AFTERNOON

Section A

Hilton
 Grand Ballroom B

Catalysis in Fuel Chemistry
ACS Award for Team Innovation:
Emissions Control Catalysis Cosponsored by CATL (probationary)

S. H. Overbury, *Organizer*

C. K. Narula, *Organizer, Presiding*

- 1:30 Introductory Remarks.
- 1:35 **121. Award Address** (ACS Award for Team Innovation, sponsored by the ACS Corporation Associates). Development of a diesel emissions control system based on a lean NOx trap catalyst and a catalyzed particulate filter. **N. W. Currier**, A. Yezerets, B. J. Stroia, H.-Y. Chen, H. S. Hess
- 2:20 **122.** Formation and thermal decomposition of nitrites and nitrates on BaO/Pt(111) model catalysts. **K. Mudiyansele**, J. Szanyi, C.-W. Yi
- 2:45 **123.** Impact of biofuel blending on diesel soot oxidation characteristics: Implications for aftertreatment catalysts. **A. Strzelec**, C. S. Daw, T. J. Toops, D. E. Foster, C. Rutland
- 3:10 Intermission.
- 3:30 **124.** Emissions control technology for the 21st century. **P. T. Fanson**
- 4:00 **125.** First-principles modeling of coverage-dependent rates of catalytic oxidations. **W. F. Schneider**, R. B. Getman, A. Phatak, A. D. Smeltz, W. N. Delgass, F. H. Ribeiro
- 4:30 **126.** Catalyst by design: Combining the power of theory, experiments, and nanostructural characterization for catalyst development. **M. Moses DeBusk**, C. K. Narula
- 5:00 **127.** Interaction of combustion gases with CaO (100) surface: Adsorption kinetics and dynamics. **E. B. Kadossov**, M. R. Hoffmann, U. Burghaus
- 5:25 Concluding Remarks.

Section B

Hilton
 Grand Ballroom A

Gas Hydrates and Clathrates
Hydrates in Science

C. A. Koh and E. D. Sloan, *Organizers*

T. Collett, *Presiding*

A. K. Sum, *Organizer, Presiding*

- 1:30 Introductory Remarks.
- 1:40 **128.** New developments in the science of clathrate hydrates. **J. A. Ripmeester**, C. I. Ratcliffe, K. Udachin, I. Moudrakovski, H. Lu, S. Alavi, S. Mittin, R. Susilo, P. Englezos
- 2:20 **129.** Nucleation and growth of clathrate hydrates studied with a coarse-grained water model. **L. Jacobson**, V. Molinero
- 2:45 **130.** Molecular dynamics simulation of hydrate lattice distortion. **M. Zhang**, **B. J. Anderson**, R. P. Warzinski, G. D. Holder

- 3:10 Intermission.
- 3:35 **131.** Phase equilibrium and cage occupancy calculations of CO₂ hydrates using an ab initio intermolecular potential. **S. Velaga**, B. J. Anderson
- 4:00 **132.** Investigation of methane hydrate growth using molecular dynamics simulation. **M. Walsh**, D. Wu, A. K. Sum, C. A. Koh, E. D. Sloan
- 4:25 **133.** Gas hydrate formation and dissociation using high pressure DSC. **P. Le Parlouër**
- 4:50 Discussion.
- 5:20 Concluding Remarks.

Section C

Hilton
 Topaz Room

Emissions from Combustion Processes:
Environmental Issues, Assessment, and Control
NOx

J. S. Lighty, G. Silcox, and J. J. Helble, *Organizers*

- 1:30 Introductory Remarks.
- 1:35 **134.** Activity enhancement of MgO-doped Ag/Al₂O₃ catalyst for selective catalytic reduction of NOx with methane in the presence of SO₂ and H₂O. **H. Pan**, Q. Su, J. Wei, Y. Liu
- 2:00 **135.** Dual-stage approach for aftertreatment of lean burn natural gas engine exhaust. **B. Mirkelamoglu**, M. Liu, U. S. Ozkan
- 2:25 **136.** Evaluation of a new approach for NOx removal from the flue gas in lab-scale. **S.-H. Zhang**, Y. Liu, L.-L. Cai, **W. Li**
- 2:50 **137.** Low emissions with microemulsion fuels. **L. Bernert**, S. Engelskirchen, C. Simon, R. Strey
- 3:15 Intermission.
- 3:35 **138.** NOx control technologies in a semi-industrial pilot: Experimental study and computational fluid dynamics (CFD) modeling. **D. Q. Dao**, L. Gasnot, J. F. Pauwels
- 4:00 **139.** Plasma-assisted C₃H₈-SCR over Co-In/H-beta catalyst for NOx abatement. **Q. Su**, H. Pan, J. Chen
- 4:25 **140.** Ultrahigh capacity coprecipitated manganese oxide sorbents for oxidative mercury capture. **C. E. Snape**, J. Lakatos, C.-G. Sun, R. Perry
- 4:50 Concluding Remarks.

George A. Olah Award in Hydrocarbon or Petroleum Chemistry: Symposium in Honor of Cynthia M. Friend
Surface Chemistry of Oxides Sponsored by CATL (probationary), Cosponsored by COLL, FUEL, I&EC, PETR, WCC, and PHYS

Nanotechnology in Catalysis VI Sponsored by CATL (probationary), Cosponsored by COLL, FUEL, I&EC, PETR, and NANO

WEDNESDAY MORNING

Section A

Hilton
 Grand Ballroom B

Catalysis in Fuel Chemistry
Biomass and Alternative Fuels
 Cosponsored by CATL (probationary)

S. H. Overbury and C. K. Narula, *Organizers*

Y. Xu, *Presiding*

- 8:00 Introductory Remarks.
- 8:05 **141.** Aromatic production from biomass by catalytic fast pyrolysis. **T. Carlson**, J. Jae, G. Tompsett, **G. W. Huber**
- 8:35 **142.** Catalytic cellulose conversion in ionic liquids. **G. Li**, J. A. Franz, D. M. Camaioni, D. L. King, J. L. Fulton
- 9:05 **143.** Designing reforming catalysts for liquid fuel synthesis. **K. Magrini**, W. Jablonski, Y. Parent, M. Yung, J. Pankow

- 9:30 **144.** Kinetics of a coupling catalytic reaction for producing biodiesel using high acid value oils. **F. Shubo**, Z. Eri
- 9:55 Intermission.
- 10:15 **145.** High density hydrocarbon fuels from renewable feedstocks. **B. G. Harvey**, M. E. Wright, R. L. Quintana
- 10:40 **146.** Catalytic gasification of automotive shredder residues with hydrogen generation. **K.-S. Lin**, A. Krishna Adhikari
- 11:05 **147.** Considerations for catalyst properties required for S-I thermochemical cycle applications. **H. H. Farrell**, L. M. Petkovic, D. M. Ginosar
- 11:30 **148.** Theoretical study of ammonia-borane dehydrogenation pathways: Homogeneous catalysis and aminoborane oligomerization. **P. Zimmerman**, A. Paul, Z. Zhang, C. B. Musgrave
- 11:55 Concluding Remarks.

Section B

Hilton
 Grand Ballroom A

Hydrogen Storage in Clathrate Materials
 Cosponsored by PHYS²

C. A. Koh and E. D. Sloan, *Organizers*

Z. Bacic and M. D. Ward, *Organizers, Presiding*

- 8:00 Introductory Remarks.
- 8:05 **149.** Neutron- and Raman-scattering measurements of hydrogen dynamics in clathrates hydrates. **L. Ulivi**, M. Celli, A. Giannasi, M. Zoppi, A. J. Ramirez-Cuesta
- 8:45 **150.** Quantum dynamics of small clusters of hydrogen molecules inside nanocages of clathrate hydrates. **M. Xu**, F. Sebastianelli, Z. Bacic
- 9:25 **151.** Thermodynamic stability of hydrogen clathrate hydrates. **H. Tanaka**
- 10:05 Intermission.
- 10:25 **152.** Gas hydrates and semicathrate hydrates for H₂ and CH₄ storage: Kinetics, capacity and stability. **A. I. Cooper**, W. Wang, B. Carter, C. Bray, J. Bacsa, A. Steiner, F. Su, D. J. Adams, C. Cropper, G. Overend, J. V. M. Weaver, J. T. A. Jones, J. A. Iggo, Y. Z. Khimyak
- 11:05 **153.** Studies of clathrate hybrid compounds. **T. Strobel**, Y. Kim, G. Andrews, J. R. Ferrell III, C. A. Koh, A. M. Herring, E. D. Sloan Jr.
- 11:45 **154.** Hydrogen storage in clathrate materials. **P. R. Prasad**, A. K. Sum, E. D. Sloan, C. A. Koh
- 12:25 Concluding Remarks.

George A. Olah Award in Hydrocarbon or Petroleum Chemistry: Symposium in Honor of Cynthia M. Friend
Bimetallics and Electrocatalysis Sponsored by CATL (probationary), Cosponsored by COLL, FUEL, I&EC, PETR, WCC, and PHYS

Nanotechnology in Catalysis VI Sponsored by CATL (probationary), Cosponsored by COLL, FUEL, I&EC, PETR, and NANO

WEDNESDAY AFTERNOON

Section A

Hilton
 Grand Ballroom B

Catalysis in Fuel Chemistry
Characterization of Catalytic Systems
 Cosponsored by CATL (probationary)

S. H. Overbury and C. K. Narula, *Organizers*

G. M. Veith, *Presiding*

- 2:00 Introductory Remarks.
- 2:05 **155.** In situ elevated temperature electron microscopy of catalysts with single-atom resolution using a novel MEMS-based heater technology. **L. F. Allard**

- 2:35 **156.** Bimetallic PdZn catalysts for the steam reforming of methanol. **A. K. Datye**, T. Conant, A. Karim, P. D. Burton, H. N. Pham, E. Petersen, V. Lebarbier, B. Halevi, Y. Wang, L. F. Allard
- 3:05 **157.** Withdrawn.
- 3:30 Intermission.
- 3:50 **158.** Patterns of reactivity for alcohols on cerium oxide thin films. **D. R. Mullins**, W. O. Gordon, S. D. Senanayake, S. H. Overbury
- 4:20 **159.** XANES Studies of sulfur poisoning in Rh, Ni catalysts for steam reforming of liquid hydrocarbons. **Y. Chen**, C. Xie, Y. Li, C. Song
- 4:45 **160.** Essential role of surface hydroxyls for the stabilization and catalytic activity of TiO₂-supported gold nanoparticles. **G. M. Veith**, A. R. Lupini, N. J. Dudney
- 5:15 **161.** Structure of Au-nanoparticles on oxide supports: X-ray scattering and PDF study. **W. Dmowski**, A. Chuang, T. Egami, H. Yin, S. Dai, S. H. Overbury
- 5:40 **162.** CO₂ reduction and formation of organic molecules on pyrite surface and pyrite surface supported cubane clusters. **Z. Zhang**, R. L. Jaffe, M. R. Philpott, J. Lawson
- 6:05 Concluding Remarks.

Section B

Hilton
 Grand Ballroom A

Coal Chemistry

C. E. Snape, J. P. Mathews, and C. Burgess Clifford, *Organizers*

- 2:00 Introductory Remarks.
- 2:05 **163.** Coal contributions to the overhead liquids obtained from co-cooking in a laboratory scale delayed coker. **O. Gul**, C. E. B. Clifford, L. R. Rudnick, H. Schobert
- 2:30 **164.** Understanding carbon dioxide adsorption on coal. S. Aboud, Y. Liu, **J. Wilcox**, A. R. Kivosek
- 2:55 **165.** Directly capturing aromatic structural features in coal via "Fringe3-D" generating 3-D molecular models directly from HRTEM lattice fringe images. **V. Fernandez-Alos**, J. K. Watson, J. P. Mathews
- 3:20 Intermission.
- 3:40 **166.** Survival of aliphatic biomarkers in high rank coals. **C. E. Snape**, R. S. Lockhart, W. Meredith, G. D. Love
- 4:05 **167.** Direct liquefaction of selected Chinese and American coals. S. Wang, G. D. Mitchell, Y. Tang, **H. Schobert**
- 4:30 **168.** Relationship between relaxation of hydrogen bond by solvent polarity and the extraction yield of hypercoal. **K. Koyano**, T. Takanohashi
- 4:55 **169.** Does water pressure retard coalification? **S. Colin E. C. Uguna**, W. Meredith, A. D. Carr, I. C. Scotchman, R. C. Davis

George A. Olah Award in Hydrocarbon or Petroleum Chemistry: Symposium in Honor of Cynthia M. Friend
Surface Characterization and Chemistry
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The official technical program for the 237th National Meeting is available online at oahys2.confex.com/acs/237nm/techprogram/.

THURSDAY MORNING

Section A

Hilton
Grand Ballroom B

Catalysis in Fuel Chemistry
Catalysis for Fuel Cells Cosponsored by
CATL (probationary)

S. H. Overbury and C. K. Narula,
Organizers

S. Dai, *Presiding*

- 8:30** Introductory Remarks.
8:35 170. Effect of oxide catalysts and oxygen-conducting supports on partial oxidation of liquid hydrocarbons. **M. W. Smith**, D. A. Berry, D. Shekhawat, D. Haynes, J. J. Spivey
9:00 171. Catalysis of electrochemical and partial oxidation of CH₄. **S. S. C. Chuang**, R. Singh, F. Guzman
9:30 172. Feasibility of using sulfur as a growth promoter for CNx PEM and DMFC ORR catalysts. **E. J. Biddinger**, D. S. Knapke, D. von Deak, U. S. Ozkan
9:55 Intermission.
10:15 173. Effect of pretreatment on Pt-Co cathode catalysts for the oxygen reduction reaction. **E. B. Fox**, H. Colon-Mercado
10:40 174. Binary and tertiary platinum based alloys as anode surface catalysts for direct methanol fuel cells. **N. Dimakis**, E. S. Smotkin
11:05 175. Pt/Carbon electrocatalysts functionalized with phenylsulfonic acid and perfluorooctylphenyl groups. **T. T. Salguero**, P. Liu, S. Van Atta, C. Zhou, M. Behroozi, A. Phelps, C. Ji, Y. Liu, R. Koestner
11:30 Concluding Remarks.

Section B

Hilton
Grand Ballroom A

Reaction Mechanisms of Coal & Biomass Gasification

B. Eiteneer, *Organizer*

- 8:15** Introductory Remarks.
8:20 176. Mechanism of the thermal decomposition of furan. **A. Vasilou**, M. Nimlos, G. B. Ellison
8:45 177. Thermal decomposition of anisole and the methoxyphenols. **A. M. Scheer**, D. J. Robichaud, B. Ellison, M. R. Nimlos
9:10 178. Thermal degradation pathways of levoglucosan as an intermediate in cellulose pyrolysis. **M-K. Bahng**, H-H. Carstensen, A. Vasilou, G. B. Ellison, M. R. Nimlos
9:35 179. Pyrolysis reactions of lignin-rich corn stover residue in a laminar entrained flow reactor. **M. W. Jarvis**, M. R. Nimlos
10:00 Intermission.
10:20 180. Formation of liquid products from solid fuel in filtration combustion. **E. A. Salgansky**, V. M. Kislov, S. V. Glazov, M. V. Salganskaya, G. B. Manelis
10:45 181. Global mechanisms of tar formation during biomass gasification. **M. Nimlos**, W. Jablonski, K. Gaston, D. Carpenter, C. Feik
11:10 182. Rate estimation rules for H abstraction reactions from alcohols by H atoms and CH₃ radicals. **H-H. Carstensen**, A. M. Dean
11:35 183. Rate constants for the elimination of water from alcohols and biomass model compounds. **H-H. Carstensen**, A. M. Dean
12:00 Concluding Remarks.

Catalysis for Coal Conversion Sponsored by CATL (probationary), Cosponsored by FUEL and I&EC

‡ Cooperative Cosponsorship

THURSDAY AFTERNOON

Section A

Hilton
Grand Ballroom B

Catalysis in Fuel Chemistry
Carbon Catalysis Cosponsored by CATL (probationary)

S. H. Overbury and C. K. Narula,
Organizers

V. Schwartz, *Presiding*

- 2:00** Introductory Remarks.
2:05 184. Self-assembly synthesis and functionalization of mesoporous carbon materials for catalysis and energy applications. **S. Dai**
2:35 185. Influence of devolatilization residence time on the reactivity of modified drop-tube furnace coal chars. **K. Le Manquais**, C. E. Snape, J. Barker, I. McRobbie
3:00 Intermission.
3:20 186. Hydrogen spillover: Its "diffusion" from catalysis to hydrogen storage community. **C. I. Contescu**, V. V. Bhat, N. C. Gallego
3:50 187. Activity and structural characterization of activated carbon-supported catalysts for diethyl carbonate synthesis. **D. N. Briggs**, A. T. Bell
4:15 Concluding Remarks.

Section B

Hilton
Grand Ballroom A

Reaction Mechanisms of Coal & Biomass Gasification

T. H. Fletcher and B. Eiteneer, *Organizers*

- 1:30** Introductory Remarks.
1:35 188. Advances in wire mesh reactor and diagnostics. **C. Zeng**
2:00 189. CFD modeling of gas phase tar chemistry in a fluidized-bed biomass gasifier. **P. Pepiot**, M. R. Nimlos
2:25 190. Development of fundamentals-based gasification kinetic model. **B. Eiteneer**, V. Zamansky, D. L. Derr, J. S. Ravichandra, C. Zeng, T. H. Fletcher
2:50 191. Kinetics of catalytic steam gasification of HyperCoal. **A. Sharma**, I. Saito, T. Takanohashi
3:15 192. Prediction of Chinese coal ash fusion temperatures in an H₂ atmosphere. **W. Song**, Z. Zhu
3:40 Intermission.
4:00 193. Prediction of thermal decomposition of biomass using reaction MD. **J. W. Daily**, A. C. van Duin, W. A. Goddard III
4:25 194. Pressurized spent pulping liquor gasification kinetics. **K. Iisa**, W. J. Frederick Jr.
4:50 195. The importance of char structure in determining high temperature, high pressure gasification rates. E. M. Hodge, **D. G. Roberts**, D. J. Harris, J. F. Stubington
5:15 196. The role of a Langmuir-Hinshelwood formulation in understanding high pressure char gasification kinetics. **D. G. Roberts**, D. J. Harris
5:40 Concluding Remarks.

Please refrain from using cellular telephones and cameras during technical sessions.

GEOC

Division of Geochemistry

D. B. Kent, *Program Chair*

SUNDAY MORNING

Section A

Hilton
Alpine Ballroom East

Coprecipitation of Metals during Chemically and Biologically Induced Mineral Precipitation

Y. Fujita and A. Kappler, *Organizers*

- 8:30** Introductory Remarks.
8:40 1. Adding structure to reactivity: How do aqueous oxides really react? **W. H. Casey**
9:10 2. Ca, Zn, and Cd ions at buried solid/ water interfaces studied by second harmonic generation. **F. M. Geiger**, J. N. Malin, P. L. Hayes
9:30 3. Changes in chemical speciation of Ce(III) and its association with biogenic manganese oxides. **T. Ohnuki**, N. Kozai, T. Nankawa, F. Sakamoto, Y. Suzuki, K. Tanaka, A. J. Francis
9:50 4. Coprecipitation in the barite isostructural family. **C. Zhu**
10:20 Intermission.
10:40 5. Co-precipitation of metals and actinides mediated by microbial phosphatases. **P. A. Sobecky**, R. J. Martinez, M. J. Beazley, S. Webb, M. Taillefer
11:10 6. Induced precipitation of apatite as a strategy to reduce ⁹⁰Sr mobility in the subsurface. **K. E. Wright**, Y. Fujita, D. E. Janney
11:30 7. Influence of calcium carbonate precipitation kinetics and solution stoichiometry on Sr co-precipitation. **M. S. Beig**, G. D. Redden, Y. Fujita, J. Taylor, R. W. Smith
11:50 8. Metal and carbon dioxide sequestration through biologically induced mineral precipitation: Influence of hydrodynamics. **R. Gerlach**, A. B. Cunningham, F. G. Ferris, A. C. Mitchell

Section B

Hilton
Salon I

Metal and Metalloid Speciation and Adsorption in Honor of James O. Leckie Surface Complexation Modeling of Mineral Surfaces Cosponsored by ENVR

M. M. Benjamin, W. P. Ela, D. B. Kent, C. Papielis, G. D. Redden, and A. P. Robertson, *Organizers*

J. A. Davis and K. F. Hayes, *Organizers*, *Presiding*

- 8:30** Introductory Remarks.
8:50 9. Surface complexation: From model systems to the natural oxide fraction. **T. Hiemstra**, W. H. van Riemsdijk
9:30 10. Surface complexation of oxyanions: Unity of the inorganic and organic realms. **D. A. Sverjensky**
10:10 Intermission.
10:25 11. Evaluating the thermodynamics of metal ion adsorption at the molecular scale. **L. J. Criscenti**, L. E. Katz, M. C. F. Wander
10:50 12. Surface complexation models of iron adsorption in soils. G. Sposito, **S. Goldberg**
11:15 13. Sorption of trivalent metals on uranium(VI) silicates. **S. L. Holbrook**, N. A. Wall, S. B. Clark
11:35 14. Relative contributions of surface and solution reactions to the acid-base chemistry of gibbsite suspensions. **A. K. Karamalidis**, D. A. Dzombak

Section C

Hilton
Salon II

Molecular Computational Geochemistry for Water-Rock Interactions

B. R. Bickmore and K. M. Rosso, *Organizers*

- 8:30** Introductory Remarks.
8:35 15. Computer simulations of the interaction of water with complex mineral surfaces and clusters. **N. H. de Leeuw**
9:00 16. Bond-valence analysis of liquid and interfacial molecular dynamics simulations. **B. R. Bickmore**, K. M. Rosso, S. Kerisit, I. D. Brown
9:25 17. Interactions of water with hematite and alumina surfaces. **A. M. Chaka**, C. R. Iccaman, S. E. Mason, T. P. Trainor
9:50 18. Structure and transport behavior of nanoconfined water and enhanced hydrogen ion formation. **S. H. Garofalini**, T. Mahadevan
10:15 Intermission.
10:25 19. Diffusion of water and solutes near clay surfaces: Bridging the nanopore and continuum scales. **I. C. Bourg**, G. Sposito
10:50 20. Structure and dynamics of water at mineral interfaces and in nanoconfinement: Connecting molecular modeling with experimental observations. **A. G. Kalinichev**
11:15 21. Predicting the effect of ordered water on the adsorption of ions on nanoparticle surfaces and aggregation of hematite nanoparticles. **D. Spagnoli**, B. Gilbert, G. A. Waychunas, J. F. Banfield
11:40 22. Potential of mean force studies of the adsorption of rare earth elements to defect ridden quartz. **A. Clark**, M. C. F. Wander

SUNDAY AFTERNOON

Section A

Hilton
Alpine Ballroom East

Coprecipitation of Metals during Chemically and Biologically Induced Mineral Precipitation

Y. Fujita and A. Kappler, *Organizers*

- 1:30 23.** Iron cycling at neutral pH and the production of iron oxyhydroxides with unique morphologies and properties by oxygen-dependent iron-oxidizing bacteria. **D. Emerson**
2:00 24. Mechanisms of arsenite sequestration by Fe(II)-(hydr)oxides after (bio)reduction of Fe(III)-oxyhydroxides. **G. Morin**, G. Ona-Nguema, Y. Wang, G. E. Brown Jr.
2:20 25. Coprecipitation and immobilization of arsenic by iron(II)-oxidizing bacteria. **A. Kappler**, C. Hohmann, E. Winkler, G. Morin, Y. Zhu
2:40 26. Optimizing Cr(VI) bioremediation through nanoscale bioanion mineral engineering. **R. S. Cutting**, V. S. Coker, R. L. Kimber, N. D. Telling, C. I. Pearce, E. Arenholz, G. van der Laan, R. A. D. Patrick, D. J. Vaughan, J. R. Lloyd
3:00 Intermission.
3:20 27. Arsenic in lake sediments: Resolving historical deposition from biogeochemical transformation. **P. Van Cappellen**, B. Shafiei, R-M. Couture, C. Gobeil, A. Tessier
3:50 28. Biogenic Zn_{1-x}Cd_xS in anaerobic peatlands of western New York. **C. E. Martinez**, S-J. Yoon, C. Yáñez, N. Martínez-Villegas, M. A. Bruns
4:10 29. Pb and Zn Coprecipitation with iron oxyhydroxide nanoparticles. **P. Lu**, C. Zhu, S. Kelly, T. Nuhfer
4:30 30. Tc(VII) attenuation in Hanford sediments exposed to highly alkaline and saline fluids. **N. P. Qafoku**, J. P. Icenhower, C. F. Brown, R. J. Serne, C. Resch