

Goldschmidt 2005

CONFERENCE PROGRAMME

Saturday May 21st 2005

Symposium S05**Room: Albertson 102****Advances in *in situ* Microanalysis of Trace Elements****Convenors:****Adam Kent & Steve Eggins**

- 08:30** **Sutton S, Newville M, Rivers M, Eng P & Lanzirotti A:**
X-Ray Fluorescence Microprobes using Microfocusing Mirrors
- 08:45** **Metrich N, Berry A, O'Neill H & Susini J:**
A XANES Study of Sulfur Speciation in Synthetic Glasses and Melt Inclusions
- 09:00** **Anderson A, Mayanovic R, Bassett W & Chou I:**
X-Ray Microspectroscopic Analyses of Mineral-Fluid and Melt-Fluid Interactions at Extreme Temperatures and Pressures
- 09:15** **Keller L, Flynn G & Sutton S:**
Submicrometer-Scale Minor and Trace Element Mapping in Comet Dust
- 09:30** **Houk R:**
KEY New Directions in ICP-MS
- 10:00** **Olesik J & Casey N:**
Sub-ms Time-Resolved Laser Ablation-ICP-Mass Spectrometry
- 10:15** **Potrasson F, Freydier R, Mao X, Mao S & Russo R:**
INV Femtosecond Laser Ablation ICP-MS Analysis of Trace Elements in Solids
- 10:30** **Horn I & von Blanckenburg F:**
196 nm Femtosecond Laser Ablation: Applications to Trace Element and Radiogenic Isotope Ratio Determinations
- 10:45** **Hervig R:**
INV Useful Ion Yields and Limits of SIMS Analysis
- 11:00** **Layne G, Tivey M & Humphris S:**
INV Trace Metal Concentrations in Common Sulfide Minerals using SIMS
- 11:15** **Genareau K, Roggensack K & Hervig R:**
SIMS Depth-Profiling of Igneous Phenocrysts: Examining Trace Element Variations on the Edge
- 11:30** **Le Fèvre B & Ottolini L:**
SIMS Analysis of Chlorine at Low Contents in Silicates: a New Tool for Upper-Mantle Geochemical Studies
- 11:45** **Kinman W & Neal C:**
Crystal Size Distributions as a Guide for Microanalysis: An Example from Detroit Seamount

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Symposium S12**Room: Agricultural Science 204****Carbon and Gold****Convenors:****John Parnell & Robert Hough**

- 09:30** **Southam G & Lengke M:**
KEY Bacteria Gold Interactions
- 10:00** **Phillips N:**
KEY Carbon, and Gold-Only Deposits
- 10:30** **Barnicoat A, Phillips G, Walshe J & Lawrence S:**
Carbonaceous Matter and Gold in Carlin Deposits: How Intimate was the Relationship?

(Symposium S12 continues on page 15)

Symposium S20**Room: Renfrew 125****Earth Materials and Human Health****Convenors:****Geoff Plumlee & Greg Meeker****08:30 Miller A:***KEY* Libby, MT: Overview of Asbestos Exposures and Health Effects**09:00 Meeker G, Lowers H & Brownfield I:**

Asbestos from Libby Montana; Compositions and Morphologies That Don't Fit Current Asbestos Definitions

09:15 Sanchez M & Gunter M:

Low-Level Detection of Libby Amphiboles in Attic Insulation

09:30 Dogan AU & Dogan M:

Re-Evaluation and Re-Classification of Erionite Group Minerals

09:45 Swayze G, Higgins C, Clinkenbeard J, Kokaly R, Clark R, Meeker G & Sutley S:

Using Imaging Spectroscopy to Map Ultramafic Rocks, Serpentinites, and Tremolite-Actinolite-Bearing Rocks in California

10:00 Wendlandt R, Harrison W, Vaughan D & Wincott P:*INV* Surface Coatings on Quartz Grains in Bentonites and their Relevance to Human Health**10:15 Walraven N, Vriend S, van Os B, Klaver G & Oomen A:***KEY* Factors Controlling the Bioaccessibility of Pb in Polluted Soils**10:45 Goldhaber M, Morrison J, Reynolds R & Smith D:**

A Soil Geochemical Transect in Northern California-Links to Human Health Issue

11:00 Zhu J, Zheng G, Johnson TM & Li S:

Distribution of Native Selenium in Yutangba of China and its Environmental Implications

11:15 Sahabi F & Kheirkhah M:

Flour Pollution in Drinking Water in Makoo City of West Azarbaijan, Northwest Iran

11:30 Lowers H, Breit G & Foster A:

Importance of Pyrite as an Arsenic Sink in Bengal Sediment

11:45 Plumlee G:

The Medical Geology and Geochemistry of Mineral Deposits

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Symposium S24**Room: Agricultural Science 106****Geochemical Controls on Microbial Processes****Convenors:****Greg Druschel & Jan Amend****08:30 Pearson A:***KEY* Assessing Microbial Metabolisms *in situ*: Insights from Carbon Isotopic Analyses at the Molecular Level**09:00 Whitaker R, Allen E, Tyson G & Banfield J:***INV* Population Dynamics in Acid Mine Drainage Biofilms from the Richmond Mine at Iron Mountain, California**09:15 Knab NJ, Fossing H & Joergensen BB:**

Methane Flux Control in Ocean Margin Sediments

09:30 Sivan O, Schrag D & Murray R:

Rates of Methanogenesis and Methanotrophy in Deep-Sea Sediments

09:45 Jin Q & Banfield J:*INV* Thermodynamics Controls the Rates of Microbial Sulfate Reduction**10:00 Koretsky C, Moore C, DiChristina T & Van Cappellen P:***INV* Unravelling the Effects of Macrofauna, Macrophytes and Microbes on Iron and Sulfate Reduction in Saltmarsh Sediments**10:15 Carey E, Burns J, DiChristina TJ & Taillefert M:***INV* Formation of Soluble Organic-Fe(III) Complexes during Microbial Iron Reduction**10:30 Buss H, Bruns MA, Schultz M, Mathur C, Moore J & Brantley S:**

Microbial Fe Cycling in Deep Regolith

10:45 Edwards K, Rogers D & Webb E:*KEY* Microbial Weathering of Seafloor Hydrothermal Sulfides**11:15 Inskeep W, Macur R, Ackerman G, Kozubal M, Taylor W & Korf S:**

Linking Microbial and Geochemical Processes in Geothermal Habitats

11:30 D'Imperio S, Lehr C & McDermott T:*INV* Microbial Interactions with Sulfide and Arsenite in an Acidic Geothermal Spring in Yellowstone National Park**11:45 Amend J, Rogers K, Rusch A & Gammon C:**

The Vulcano Hydrothermal System: Microbial Community Structure, Novel Isolates, and Geochemical Energy Sources

(Symposium S24 continues on page 16)

Symposium S34**Room: Albertson 101****Growth and Dissolution under Stress: Pressure Solution, Replacement and Weathering****Convenors:****Dag Dysthe & Francois Renard****10:00 Boles J, Israelachvili J, Alcantar N, Anzalone A, Meyer E, Greene W & Pataki M:***KEY* Pressure Solution and Mica in Quartzose Sandstone: Observations and Experiments**10:30 Karcz Z, Aharonov E, Ertas D, Polizzotti R & Scholz C:***KEY* The Evolution of Grain Contacts Undergoing Pressure Solution – Unique Insights from a Confocal Viewpoint**11:00 Bisschop J, Putnis C, Jamtveit B & Dysthe DK:**

Does Stress Affect the Dissolution Reaction of Calcite?

11:15 Katsman R & Aharonov E:

Modelling Localized Volume Changes: Application to Pressure Solution and Stylolites

11:30 Koehn D & Renard F:*INV* Modelling the Formation of Stylolites as a Competition between Elastic Forces, Surface Tension and Noise**11:45 Merino E:***INV* Physical Chemistry of Replacement: Consequences for Petrology and Reaction-Transport Modeling

(Symposium S34 continues on page 16)

Symposium S42**Room: Renfrew 126****Isotopic Records of Early Planetary Evolution****Convenors:****Jeff Vervoort, Trevor Ireland & Yuri Amelin****08:30 Stevenson D:***KEY* Earth Formation: Combining Physical Models with Isotopic and Elemental Constraints**09:00 Ireland T, Holden P & Norman M:**

The Oxygen Isotope Composition of the Sun

09:15 Lyons J:

CO Self-Shielding and Oxygen Isotopes in the Solar Nebula

09:30 Podosek FA:*INV* Early Solar System Timescales**09:45 Dunn S, Amelin Y & Nemchin A:**

U-Pb Dating of Meteoritic Perovskite

10:00 Bouvier A, Blichert-Toft J, Vervoort J, McClelland W & Albarède F:

Pb-Pb Geochronology of the Early Solar System

10:15 Wadhwa M:*INV* From Dust to Planets: Time Scales of Accretion and Differentiation in the Early Solar System**10:30 Stirling C, Halliday A, Potter E & Andersen M:**The Formation of the Solar System: New Constraints from the ^{247}Cm - ^{235}U Chronometer**10:45 Jacobsen S:***INV* The Hf-W Isotopic System and the Origin of the Earth and Moon**11:00 Wiechert U & Halliday AN:**

Magnesium Isotope Composition of Chondrites, Achondrites and the Earth-Moon System

11:15 Schönbacher M, Hauri E, Carlson R & Horan M:

Ag Isotope Variations in the Earth

(Symposium S42 continues on page 17)

Symposium S44**Room: Albertson 201****Lifetime Predictions of Toxic and Radioactive Waste Disposal and Remediation Schemes: Thermochemical Data, Theoretical Models and Reaction Transport Codes****Convenors:** Dave Wesolowski, Jordi Bruno & Rod Ewing**08:30 Murphy W & Pickett D:***KEY* Episodic Release and Transport at the Peña Blanca Repository Analog Site**09:00 Grambow B:***INV* Coupled Modelling of the Source-Term for Radionuclide Release from Nuclear Waste Forms in the Near-Field**09:15 Sassani D:***INV* Coupled Processes in Performance Assessment Source-Term Models for Geologic Repository Systems**09:30 Navrotsky A:***INV* Calorimetric Study of Stability of Phases Containing Exchangeable Anions: Sodalite, Cancrinite, Hydrotalcite**09:45 Pekala M, Kramers J & Waber N:**Uranium Series Disequilibrium in the Opalinus Clay – A way to Assess the Effective Diffusion Coefficient for ²³⁴U**10:00 Janots E, Brunet F, Goffé B & Poinssot C:**

Thermochemical and Experimental Stability of Synthetic La-Bearing Minerals as Analogues to Nuclear-Waste Forms

10:15 Skomurski E, Shuller L, Becker U & Ewing R:The Corrosion of UO₂ Versus ThO₂: a Quantum Mechanical Investigation**10:30 Pourtier E, Ballerat-Busserolles K, Devidal J, Gibert F & Majer V:**

Standard Thermodynamic Properties of Aqueous Lanthanides and Solubility of Synthetic Pure Nd Monazite

10:45 Neuhoff P:

Thermodynamic and Structural Models of Pollucite-Analcime Solid Solutions

11:00 Carroll S, Alai M, Craig L, Gdowski G, Hailey P, Nguyen QA, Rard J, Staggs K, Sutton M & Wolery T:*INV* Chemical Environment at Waste Package Surfaces in a High-Level Radioactive Waste Repository**11:15 Palmer D, Anovitz L, Cole D, Fayek M, Gruszkiewicz M, Riciputi L, Wesolowski D & Wilson L:***INV* Experimental Approaches to Predict the Behavior of Liquid Films**11:30 Wolery T, Peterman Z, Carroll S, Jove-Colon C, Sutton M, Rard J & Wijesinghe A:**

Dust Salts and Deliquescence on Waste Packages in an Unsaturated-Zone Repository

11:45 Juckett M, Yang L & Pabalan R:

Deliquescence Relative Humidity and Characterization of Dusts from the Vicinity of Yucca Mountain, Nevada

(Symposium S44 continues on page 12)

Symposium S45**Room: Renfrew 111****Mantle Heterogeneity, Past and Present****Convenors:**

Francis Albarède & Paul Tackley

08:30 Tackley P & Xie S:*KEY* Modeling Mantle Geochemical (Isotopic) and Geodynamical Evolution**09:00 Deschamps F, Trampert J & Tackley P:***INV* A Comparison between Lower Mantle Models from Probabilistic Tomography and Models of Thermo-Chemical Convection**09:15 Wen L:***INV* The Core-Mantle Boundary Region, Hotspot Motion and Geochemistry**09:30 Angel R, Zhao J, Vanpeteghem C & Ross N:**

Structure and Properties of Silicate Perovskites in the Deep Mantle

09:45 Burnard P & Toplis M:Helium Solubility in Carbonate Liquids: Potential for Generating High ³He/U Mantle**10:00 Class C & Goldstein S:**

Evolution of Helium Isotopes in the Earth's Mantle

10:15 Ballentine C, Marty B, Sherwood Lollar B & Cassidy M:*INV* The Source and Consequence of Neon Isotope Heterogeneity in the Mantle**10:30 Kellogg J & Tackley P:***INV* A Comparison of Methods for Modeling Chemical Variability in the Earth's Mantle**10:45 Weaver K & DePaolo D:**

Sr-Isotopic Evolution of the Mantle

11:00 Garnero E, Helmberger D & McNamara A:*INV* Deep Mantle Heterogeneity, Anisotropy, and Thermochemical Piles**11:15 Ito G & Mahoney J:***INV* MORB versus OIB Genesis: Stratification in Mantle Composition or in Upper Mantle Melting?**11:30 Li B:**

Scales of Thermal Anomaly and Chemical Heterogeneity in the Lower Mantle

11:45 Peltier R & Liu Y:

Phase Transition Mediated Mantle Mixing: The Influence of Temperature Dependent Clapeyron Slope on the Heterogeneity Spectrum

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Symposium S58**Room: CNR 010****Novel Isotopic Methods in Tracing Paleooceanographic Processes****Convenors:****Ariel Anbar & Olivier Rouxel****08:30 Pagani M:***INV* Controls on Paleo-Alkenone $\delta^{13}\text{C}$ **09:00 Galy A, Sime NG & Tipper ET:***INV* The Importance of a Vital Effect on the Ca Isotopic Composition of Foraminiferal Tests**09:15 Morris E, Paytan A & Bullen T:**

Seawater Calcium Isotopes from Marine Barite: a Potential Record of Carbonate Deposition in the Oceans

09:30 John S, Bergquist B, Saito M & Boyle E:

Zinc Isotope Variations in Phytoplankton and Seawater

09:45 Bergquist BA, John SG & Boyle EA:

Iron Isotopes in the Marine System

10:00 Ge C, Jiang S, Ling H & Chen P:

Boron Isotope Variation and its Environmental Implication in Wuqian River Estuary, Hainan Island, China

10:15 Wing B, Johnston D, Ono S, Farquhar J & Paytan A:

Sulfur Multiple Isotope Constraints on the Cenozoic-Cretaceous Sulfur Cycle

10:30 Johnston D, Farquhar J, Wing B, Lyons T, Kah L, Strauss H & Canfield D:

Using the Multiple Isotopes of Sulfur to Constrain Microbial Processes in the Proterozoic Ocean

10:45 Chu X, Zhang T, Strauss H, Zhang Q & Feng L:

Dynamic Ocean Chemistry Around the Marinoan glaciation – Isotopic Evidence from Cap Carbonates

11:00 Rouxel O, Bekker A & Edwards K:

Iron Isotope Constraints on the Archean and Paleoproterozoic Ocean Redox State

11:15 Kaufman A, Xiao S & Yin L:

Ion Microprobe Carbon Isotope Analysis of Archean Microfossils?

11:30 Anbar A & Williams G:

Molybdenum Isotope Prospects

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Symposium S68**Room: Renfrew 112****Subduction Zone Magmatism and Related Processes****Convenors:****Gene Yogodzinski & Terry Plank****08:30 Hilton D, Fischer T, Shaw A, De Leeuw D & Walker J:**The CO_2 -He Isotope and Relative Abundance Systematics of the Central American Arc**08:45 Fischer T, Hilton D, Elkins L, Shaw A, Zimmer M, Takahata N & Sano Y:**

Central America Arc Volatiles: Along- and Across- arc Variations

09:00 de Leeuw D, Hilton D, Fischer T & Walker J:

Along and Across-Arc Profiles in He-C Systematics: New Data from El Salvador and Honduras

09:15 Shaw A, Hauri E, Kelley K, Fischer T, Hilton D, Stern R, Hawkins J & Plank T:*INV* Hydrogen Isotope Variations in Mariana Arc Melt Inclusions**09:30 Bindeman I, Turner S, Eiler J & Portnyagin M:***INV* The Isotopic Composition of Subduction Fluid: High-, Low-, or Normal $\delta^{18}\text{O}$?**09:45 Kelley K & Plank T:***INV* Distribution of Water in the Mantle Wedge of Subduction Zones**10:00 Danyushevsky L, Crawford T, Leslie R, Tetroeva S & Falloon T:***KEY* Subduction-Related Magmatism along the Southeast Margin of the North Fiji Backarc Basin**10:30 Hergt J & Woodhead J:**

Magmatic Evolution in the Lau-Tonga Arc-Backarc Basin System

10:45 Woodhead J:*INV* Hf-Isotopes in Subduction Settings: The Plot Thickens**11:00 Barry T, Pearce J, Leat P & Millar I:**

Some Isotopic Constraints on Fluid versus Melt Transfer from Slab to Wedge: Hf Isotope Evidence from the South Sandwich Arc

11:15 Brown S, Yogodzinski G, Gersen M & Vervoort J:

Slab Contributions in the Aleutian Arc: a Hf Isotopic Perspective

11:30 Singer B, Leeman W, Thirlwall M, Tonarini S, Jicha B & Rogers N:B and $\delta^{11}\text{B}$ in Aleutian Island Arc Basalt Track Slab and Sediment Fluid Addition to the Mantle Wedge**11:45 Aulbach S, Griffin WL, Pearson NJ & O'Reilly SY:**The Eclogite Mantle Reservoir: $^{176}\text{Hf}/^{177}\text{Hf}$, Nb/Ta and Zr/Hf of Rutile

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Symposium S71**Room: Albertson 101****Teaching Geochemistry****Convenors:****Cathy Manduca & David Mogk**

- 08:30 Mogk D, Lennon L & Kirk K:**
Digital Resources for Teaching Geochemistry
- 09:00 Ratajeski K, Mogk D & Downs R:**
Teaching Mineralogy with Crystal Structure Databases and Visualization Software:
a Digital Resource Collection
- 09:30 Long D:**
A Laboratory in Environmental Geochemistry
- 09:45 Hoskin P:**
Retention of Visual-Kinesthetic Activities in Geochemical Syllabi

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Symposium S73**Room: Administration Auditorium****The Earth's Weathering Engine; Coupling Chemical Weathering With Physical Erosion, Biology, Hydrology and Climate****Convenors: Arjun Heimsath, Art White, Jerome Gaillardet & Susan Brantley**

- 08:45 Dietrich W:**
KEY Does Life Leave a Topographic Signature on Earth?
- Presentation by the Houtermans Medallist**
- 09:15 Hodson M, Andre J, Ashton HS, Arnold RE, Carpenter D, Currie M, Lapied E & Nahmani JY:**
What Earthworms Get up to in Soil
- 09:45 Keller CK & Balogh Z:**
Chemical Weathering, Land Plants, and CO₂ Sinks: Role of Ecological Disturbance
- 10:00 Fimmen R, Richter D & Vasudevan D:**
INV Rhizosphere Iron-Redox Cycling: Electron Transfer Reactions that Drive Mineral Weathering
- 10:15 Needham S & Worden R:**
Worm Excretion Processes and the Weathering of Icelandic Basalt
- 10:30 White A, Schulz M & Vivit D:**
Distinguishing between Lithogenic and Biologic Processes in Soils
- 10:45 Gislason S, Eiriksdottir E, Sigfusson B, Snorrason A, Elefsen S, Hardardottir J, Karjilov M, Oelkers E, Torssander P & Gisladottir G:**
The Effect of Climate, Vegetation, Rock Age, and Human Activity on Basalt Weathering Rates in NE-Iceland
- 11:00 Blum A & Hellmann R:**
Weathering within Soils Developed on a Chronosequence of Glacial Moraines in the French Alps
- 11:15 Frogner Kockum P, Herbert R & Gislason S:**
A Diverse Ecosystem Response to Volcanic Ash Falls
- 11:30 Patino L, Velbel M, Price J & Wade J:**
Element Redistribution during Weathering of Volcanic Rocks in Sedentary Landscapes
- 11:45 Phillips F:**
Desert Soils and Global Climate Cycles: Vapor Lock in the Earth's Weathering Engine

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Symposium G04**Room: Renfrew 126****Cosmochemistry**

- 11:30** **Neal C & Shearer C:**
Evidence for Garnet in the Lunar Mantle
- 11:45** **McDonough W:**
How and When did the Earth Inherit its Volatile Signature?

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Symposium G12**Room: Agricultural Science 204****Hydrothermal Geochemistry**

- 10:45** **Mark G, Williams P, Blake K, van Achterberg E & Ryan C:**
Br-Cl Fractionation in Mid-Crustal Fluid-Rock Systems
- 11:00** **Allan M & Yardley B:**
Hydrothermal Processes in a Breccia-Hosted Au Deposit
- 11:15** **Koski A & Wood S:**
The Geochemistry of the Geothermal System in the Alvord Basin, Oregon
- 11:30** **Kendrick M:**
⁴⁰Ar/³⁹Ar-Kr-Xe Systematics of Quartz: Mt Isa, Australia
- 11:45** **Bastrakov E, Shvarov Y, Girvan S, Cleverley J, McPhail DB & Wyborn L:**
FreeGs: a Web-Enabled Thermodynamic Database for Geochemical Modelling

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Symposium G18**Room: Agricultural Science 204****Mineral Deposits**

- 08:30** **Partey F, Lev S, Casey R, Widom E, Lueth V & Rakovan J:**
Source of Fluorine and Petrogenesis of the Rio Grande Rift Type Barite-Fluorite-Galena Deposits
- 08:45** **Hai-Jun Z, Run-Sheng H & Wei-Xuan F:**
Geochemical Evidences for Origin of Metallogenic Materials in the Maoping Pb-Zn Deposit, Zhaotong, Yunnan, China
- 09:00** **Da Silva F & Lima A:**
Assessing the Performance of BLEG to Detect Gold Anomalies in Stream Sediment Geochemistry (Portugal)
- 09:15** **Run-Sheng H, Zhi-Long H, Jin C, Geng-Sheng M & Hai-Jun Z:**
S, Pb, C and O Isotope Evidences for Deposit Genesis in the Huize Carbonate-Hosted Zn-Pb-(Ag) District, Yunnan, China

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Symposium S10

Room: Albertson 101

**Bioirrigation: Field-, Laboratory- and Model- Based
Assessments of the Geochemical Influence of Burrowing
Macrofauna**

Convenors: **Carla Koretsky, Christof Meile & Yoko Furukawa**

- 13:30 Van Cappellen P, Meile C & Koretsky C:**
KEY Irrigation in Early Diagenetic Models: From One-Dimensional Mass Transfer Coefficients to Multi-Dimensional, Ecologically-Based Models
- 14:00 Meile C, Berg P, Van Cappellen P & Tuncay K:**
Heterogeneity in Aquatic Sediments: 1D Representations of a 3D Environment
- 14:15 Boudreau B:**
INV The Nonlocal Irrigation Model: Misleading or Misunderstood?
- 14:30 Shull D:**
KEY Modeling the Effects of Burrow Geometry on Pore-Water Transport in Marine Sediments
- 15:00 Finelli C:**
INV Bioirrigation as a Source of Nutrients for Benthic Algae: a Study of Burrow Ventilation by Ghost Shrimp (*Thalassinidea*) from the Northern Gulf of Mexico
- 15:15 Stahl H & Glud R:**
INV Two Dimensional Optical O₂ Measurements in Marine Bioturbated Sediments
- 15:30 Zorn M, Lalonde S, Gingras M & Konhauser K:**
Microscale Oxygen Distribution in Invertebrate Burrows from Willapa Bay, Washington
- 15:45 Gingras M:**
Wide Range of Infaunal Animal Behaviors Means the Geochemical Impacts of Sediment-Animal Interactions are Extremely Variable

16:40 Plenary Lecture by the Urey Medalist Administration Auditorium
Navrotsky A:
Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

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Symposium S13

Room: CNR 010

**Carbonates - Powerful Archives for Paleooceanographic
Research - The Good the Bad and the Most Confusing**

Convenors: **Adina Paytan & Zanna Chase**

- 13:30 Russell A, Schmidt M, Spero H & Anderson D:**
KEY Timing of Glacial Changes in SST and pCO₂ from Foraminiferal U/Ca, Mg/Ca and δ¹⁸O in a Caribbean Core
- 14:00 Hastings D, Hollweg T, Flower B, Cronin T, Edgar NT & Quinn T:**
INV High-Resolution Deglacial Record of Climate Change in Central Florida from Fresh Water Ostracodes
- 14:15 Broecker W, Barker S & Clark E:**
The Radiocarbon Age Glacial Deep Water
- 14:30 Billups K & Scheiderich K:**
INV Paired Mg/Ca and δ¹⁸O Records Reveal Mid Miocene Paleooceanography
- 14:45 Eiler J, Ghosh P, Affeck H, Adkins J, Schauble E, Schrag D & Hoffman P:**
Carbonate Paleothermometry Based on Abundances of ¹³C-¹⁸O Bonds
- 15:00 Stoll H, Arevalos A, Burke A, Shimizu N, Theroux S & Ziveri P:**
KEY Unraveling Nutrient, Growth Rate, Calcification, and Diagenesis Effects on the Chemistry of Coccolith Calcite
- 15:30 Hall J:**
INV Foraminiferal Lithium as a Paleooceanographic Proxy
- 15:45 Lyons T, Hurtgen M & Gill B:**
INV New Insight into the Utility of Carbonate-Associated Sulfate
- 16:00 Hemming G & Hönisch B:**
INV A Critical Review and Recent Advances in the Boron Isotope Paleo-PH Proxy
- 16:15 Brand U:**
Isotopes in Paleozoic Carbonate Components: An Evaluation of Proxies

16:40 Plenary Lecture by the Urey Medalist Administration Auditorium
Navrotsky A:
Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

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Symposium S27 **Room: Renfrew 111**
**Geochemical, Rheological, and Geophysical Aspects of Deep
 Mantle Phase Changes**

Convenors: Isabelle Daniel & Jay Bass

- 13:30 Li B & Kung J:**
KEY Composition of the Earth's Lower Mantle: Results from Forward and Inverse Mineral Physics Modeling
- 14:00 Akber-Knutson S, Steinle-Neumann G & Asimow P:**
INV On the Sharpness of the Perovskite/Post-Perovskite Transition in the Earth's Mantle
- 14:15 Kopylova M & Hayman P:**
 First Natural Samples of Ferropericlaase from the Lowermost Mantle
- 14:30 Sun D, Ahrens TJ & Asimow PD:**
INV Thermodynamics of the Lowermost Mantle
- 14:45 Agee C & Draper D:**
 New Experimental Constraints on the Martian Basalt Source Mantle
- 15:00 Lakshatanov D, Sinogeikin S, Litasov K, Ohtani E & Bass J:**
 Effect of Al³⁺ and H⁺ on Elasticity of Stishovite
- 15:15 Nestola E, Gatta GD & Boffa Ballaran T:**
 The Effect of Ca Substitution on the Compressional Behavior of Enstatite (Mg₂Si₂O₆) up to 10 GPa
- 16:40 Plenary Lecture by the Urey Medalist** **Administration Auditorium**
Navrotsky A:
 Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

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Symposium S32 **Room: Renfrew 125**
Geochronology of Mantle Samples

Convenors: Graham Pearson, Larry Heaman & Rick Carlson

- 13:30 Shirey S, Schmitz M, Westerlund K, Richardson S, Wiechert U, Pearson G, Carlson R & Harris J:**
 Dating Mantle Samples: Examples from the Re-Os System in Eclogites and Diamonds
- 13:45 Schmitz M, Shirey S & Carlson R:**
INV Diamonds beneath an Ancient Continental Rift: The Star Kimberlite, South Africa
- 14:00 Aulbach S, Griffin WL, Pearson NJ, O'Reilly SY & Kivi K:**
INV Os-Hf-Nd Isotope Constraints on Subcontinental Lithospheric Mantle Evolution, Slave Craton (Canada)
- 14:15 Wang K, O'Reilly S, Griffin W, Pearson N, Matsumura R & Shinjo R:**
 Proterozoic Mantle Lithosphere beneath the East African Rift (Southern Ethiopia): *In situ* Re-Os Evidence
- 14:30 Garden B, Carlson R, Pearson G, Shirey S & Richardson S:**
 A Comparison of Mineral and Whole Rock Approaches to Re-Os Dating of the Kaapvaal Lithospheric Mantle
- 14:45 Luguet A, Pearson DG, Jaques AL, Bulanova GP, Smith CB, Roffey S & Rayner MJ:**
INV Archean Mantle beneath the Halls Creek Mobile Zone, W. Australia Revealed by Re-Os Isotopes
- 15:00 Zhi X, Xia Q, Jin Z & Wang Y:**
 Re-Os Isotopic Systematics of the Neo-Tethys Dongqiao Ophiolite Complex, Northern Tibet: First Data
- 15:15 Jacob D:**
INV Radiometric Dating of Eclogite Xenoliths from Kimberlites
- 15:30 Schmidberger S, Heaman L, Simonetti A & Whiteford S:**
In situ Pb and Sr and Lu-Hf Isotope Systematics of Mantle Eclogites from the Diavik Diamond Mine, NWT, Canada
- 15:45 Pearson DG, Nowell G & Ottley C:**
 Dating Mantle Melting using the Lu-Hf Isotope System
- 16:00 Lapen TJ, Medaris, Jr. LG, Johnson CM & Beard BL:**
 Archean to Middle Proterozoic Evolution of the Sandvik Ultramafic Body, Norway: Evidence from Sm-Nd and Lu-Hf Isotope Analyses
- 16:15 Wittig N, Duggen S, Baker J, Kluegel A & Hoernle K:**
 HIMU Lithospheric Mantle beneath Northwest Africa
- 16:40 Plenary Lecture by the Urey Medalist** **Administration Auditorium**
Navrotsky A:
 Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

(Symposium S32 continues on page 16)

Symposium S36**Room: Agricultural Science 204****Hydrothermal Fluids, Magmatic Volatiles, and Surficial Metal Mobility in Platinum-Group Element (PGE) Deposits****Convenors: Iain Samson & Jacob Hanley****13:30 Wood S:***KEY* The Effect of Organic Ligands on the Mobility of the PGE in Soils and Natural Waters: Implications for Exploration and the Environment**14:00 Normand C & Wood S:**

Effect of the Trihydroxamate Siderophores Desferrioxamine-B and Ferrichrome on the Mobility of Pd, Pt, Rh and Ir

14:15 Wilde A:*INV* Economic Pt and Pd in Amagmatic Settings?**14:30 Almeida C & Olivo G:**

The Hydrothermal Ni-Cu-PGE Sulfide Ore of the Fortaleza de Minas Deposit, Brazil

14:45 Boudreau A:*KEY* On the Hydrothermal Origin of Platinum-Group Element Deposits in Layered Intrusions**15:15 Mathez E & Kent A:***INV* Tracing Geochemical Evolution of the Bushveld Complex with Lead Isotopes Analyzed by LA-MC-ICP-MS**15:30 Li C & Ripley E:**

The Roles of Fluid in the Genesis and Modification of Reef-Type PGE Deposits in Large Layered Intrusions

15:45 Ripley E:

Re/Os Isotopic and Fluid Inclusion Studies of Fluid-Rock Interaction in the Contact Aureole of the Duluth Complex, Minnesota

16:00 Shafer P, Ripley E & Li C:

Re/Os Isotopic Studies of Oxide Minerals in the Birch Lake PGE Prospect, Duluth Complex, MN

Plenary Lecture by the Urey Medalist**Administration Auditorium****16:40 Navrotsky A:**

Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

(Symposium S36 continues on page 17)

Symposium S41**Room: Albertson 102****Isotopic Ratio Measurement Using Microbeam Methods: Where do we Stand and Where are we Going?****Convenors: Erik Hauri & Norm Pearson****13:30 Guenther D, Kuhn H & Guillong M:***INV* Characterization of Laser-Induced Aerosol for Quantitative Analysis of Solids using LA-ICP-MS**13:45 Pearson N, Griffin W & O'Reilly S:**Laser Ablation MC-ICP-MS: Shedding New Light on *in situ* Isotope Ratio Measurement**14:00 Woodhead J:***INV* Spatial Resolution and the Analysis of Complex Geometries in LA-MC-ICPMS**14:15 Bouman C, Tiepolo M, Vannucci R & Schwieters J:***In situ* Single Spot Analysis of B Isotope Ratios by Laser Ablation Multiple ion Counting ICPMS**14:30 Valley J & Kita N:**

Microanalysis of Oxygen Isotopes

14:45 Steinhöfel G, Horn I, Schoenberg R & von Blanckenburg F:*In situ* Fe Isotope Determination using Femtosecond LA-MC-ICP-MS**15:00 Peucker-Ehrenbrink B, Ball L, Bouman C & Schwieters J:**Low-Level ¹⁸⁷Os/¹⁸⁸Os Analysis by Laser Ablation, Multi-Ion-Counting ICPMS**15:15 Cox R & Barnes S:***In situ* Analysis of Os and Pb Isotope Ratios using Laser Ablation and Collision-Cell Quadrupole ICP-MS**15:30 Kent A & Dilles J:***In situ* Analysis of Pb Isotope Ratios by LA-MC-ICP-MS: Applications to Ore Genesis and Igneous Petrogenesis**15:45 Ramos F & Wolff J:***INV* *In situ* Sr Isotopes Measured by LA-MC-ICPMS: Utility for the Average Joe**16:00 Paces J, Neymark L & Wooden J:**

Ion Microprobe U-Series Dating and Cathodoluminescence of Secondary Opal at Yucca Mountain, Nevada

16:15 Eggins S, GrÛn R, McCulloch MT, Pike AWG, Chappell J & Kinsley L:*INV* *In situ* U-Series Dating by Laser-Ablation MC-ICPMS**Plenary Lecture by the Urey Medalist****Administration Auditorium****16:40 Navrotsky A:**

Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

(Symposium S41 continues on page 17)

Symposium S42**Room: Renfrew 126****Isotopic Records of Early Planetary Evolution****Convenors:** Jeff Vervoort, Trevor Ireland & Yuri Amelin

- 13:30** **Halliday A:**
KEY Timing, Mechanisms and Conditions of Terrestrial Planet Accretion and Early Differentiation
- 14:00** **Vervoort J:**
The Implications of the Hf and Nd Isotopic Records for the Early History of the Silicate Earth
- 14:15** **Bennett V & Nutman A:**
INV Early Terrestrial Mantle Dynamics from the ¹⁴³Nd Isotopic Record of 3600 Ma to >3850 Ma Mafic and Felsic Rocks
- 14:30** **Bourdon B & Caro G:**
INV Early Differentiation of Terrestrial Reservoirs and Extinct Radioactivities
- 14:45** **Sharma M & Andreasen R:**
INV Remains of an Enriched Hadean Protocrust in Modern Mantle
- 15:00** **Harrison TM, Blichert-Toft J, Müller W, McCulloch M, Albarède F, Mojzsis S & Holden P:**
Heterogeneous Hadean Hafnium: Evidence of Continental Crust by 4.5 Ga?
- 15:30** **Cavosie AJ, Wilde SA & Valley JW:**
A Lower Age Limit for the Archean Based on $\delta^{18}\text{O}$ of Detrital Zircons
- 15:45** **Stevenson R & Bizzarro M:**
Hf and Nd Isotope Evolution of Lithologies from the 3.8 Ga Nuvvuagittuq Sequence, Northern Superior Province, Canada
- 16:00** **Brandon A, Walker R, Puchtel I & Humayun M:**
Platinum-Osmium Isotope Evolution of the Earth's Mantle
- 16:15** **Puchtel IS, Brandon AD, Humayun M & Walker RJ:**
Pt-Re-Os Isotope and HSE Systematics of 2.8 Ga Komatiites
- 16:40** **Plenary Lecture by the Urey Medalist Administration Auditorium**
Navrotsky A:
Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

(Symposium S42 continues on page 17)

Symposium S44**Room: Albertson 201****Lifetime Predictions of Toxic and Radioactive Waste Disposal and Remediation Schemes: Thermochemical Data, Theoretical Models and Reaction Transport Codes****Convenors:** Dave Wesolowski, Jordi Bruno & Rod Ewing

- 13:30** **Yabusaki S, Fang Y & Waichler S:**
Building Conceptual Process Models of Field Scale Uranium Reactive Transport for the Hanford 300 Area
- 13:45** **Bruno J:**
KEY Geochemical Modelling Challenges in the Siting of Deep (and Not so Deep) Repositories for Spent Fuel Disposal
- 14:15** **Follin S:**
INV Hydrogeochemical-Hydrogeological Modeling in the Swedish Nuclear Waste Programme – Principles Used and Examples of Application
- 14:30** **Altmann S, Vinsot A & Coelho D:**
INV Mineral-Solution Interfacial Phenomena Influences on Porewater Over-Pressures in Clay Rocks
- 14:45** **Arcos D, Domènech C & Grandia F:**
INV Reactive Transport Models for Deep Radioactive Waste Disposal
- 15:00** **Xiong Y, Nowak EJ & Brush L:**
Predicting Actinide Solubilities in Various Solutions up to Concentrated Brines: The Fracture-Matrix Transport (FMT) Code
- 15:15** **Anderson C, Jakobsson A & Pedersen K:**
Subsurface Microbial Biofilms and Nuclear Waste Disposal – Geochemical Friends or Foes?
- 15:30** **Van Cappellen P:**
INV Representing Geomicrobial Processes in Subsurface Reactive Transport Models (RTMs)
- 15:45** **Clark S, Felmy A, Qafoku O & Wang Z:**
Thermochemical Data to Describe Actinide Partitioning to Bacteria: a Mixed Solvent Approach
- 16:00** **Forsyth A, Weisener C, Burns P & Fowle D:**
Reductive Dissolution of Zippeite Group Minerals by *Desulfovibrio desulfuricans*
- 16:15** **Monsef R, Moinvaziri H, Emami M & Tajbakhsh G:**
New Field Observations on the Uranium Veins in Intrusive Rocks as the Natural Contamination Source, NE of Tehran
- 16:40** **Plenary Lecture by the Urey Medalist Administration Auditorium**
Navrotsky A:
Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

(Symposium S44 continues on page 18)

Symposium S48 **Room: Agricultural Science 106**
**Microbial Mineral Transformations I: Microbial Influences
on Mineral Speciation and Stability**

Convenors: **Johnson R. Haas & Thilo Behrends**

- 13:30** **Gorbushina AA:**
KEY Sub-Aerial Rock-Inhabiting Communities: Role in Land Colonization and Contribution to Biogeochemistry of Rock Surfaces
- 14:00** **MacLean L, Pray T, Onstott T & Southam G:**
High Resolution Structural and Chemical Characterisation of Framboidal Pyrite Formed within a Bacterial Biofilm
- 14:15** **Neal A, Magnuson T, Connon S & Ledbetter R:**
Photostable β -As₄S₄ Produced at Low Temperature in Culture by a Novel Bacterial Isolate from the Alvord Hydrothermal Basin, Oregon
- 14:30** **Gebrehiwet T, Krishnamurthy R & Haas J:**
Stable Carbon Isotope Fractionation during Anaerobic Microbial Reduction of Metals
- 14:45** **Ferris G:**
KEY Microbial Mineral Transformations in the Fe(II)-Fe(III)-H₂O System
- 15:15** **Ray A, Connon S, Neal A, Sivaswamy VS, Peyton B, Cummings D, Fujita Y & Magnuson T:**
Microbial Transformation of AQDS, Fe(III), Cr(VI), and U(VI) by a Novel *Clostridiales*, Strain UFO1
- 15:30** **Davranche M, Vogt L, Dia A, Gruau G & Nowack B:**
Investigation of Iron Oxyhydroxides Reduction and Associated Metals Release in Soils using an *in situ* Iron-Coated Support
- 15:45** **Kenward P, Yee N & Fowle D:**
Microbially Controlled Selenate Reduction in Nutrient Limited Systems
- 16:00** **Murray K & Tebo B:**
Active Bacterial Mn(II) Oxidation Accelerates Cr(III) Oxidation Compared to Abiotic Oxidation by Mn Oxide Minerals
- 16:15** **Haas J & Northup A:**
Dependence of Microbial Dissimilatory U(VI) Reduction on U(VI) Chemical Speciation
- Plenary Lecture by the Urey Medalist** **Administration Auditorium**
- 16:40** **Navrotsky A:**
Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

(Symposium S48 continues on page 18)

Symposium S68 **Room: Renfrew 112**
Subduction Zone Magmatism and Related Processes

Convenors: **Gene Yogodzinski & Terry Plank**

- 13:30** **Mandeville C, Webster J, Tappen C, Rutherford M, Hauri E & Bacon C:**
INV Depth of Andesitic Magma Storage beneath Mt. Mazama from Melt Inclusions and Experimental Petrology
- 13:45** **Blundy J:**
KEY The Volcanic-Plutonic Connection at Subduction Zones
- 14:15** **Dungan M, Leeman W, Goldstein S, Langmuir C, Davidson J & Piatrowski A:**
INV Partial Assimilative Recycling of the Plutonic Roots of a Continental Arc
- 14:30** **Feineman M, Moriguti T & Nakamura E:**
INV Sources of Magmatism at Daisen Volcano, Southwest Japan Arc
- 14:45** **Yogodzinski G & Kelemen P:**
The Origin of Mafic and Ultramafic Xenoliths from Kanaga and Adak Islands, Central Aleutians, Alaska
- 15:00** **MacKenzie J & Canil D:**
Experimental Constraints on Re Mobility in Silicate Magmas
- 15:15** **Lee C, Leeman W, Canil D & Li Z:**
INV Similar V/Sc Systematics in MORBs and Arc Basalts: Implications for the Oxygen Fugacities of their Mantle Source Regions
- 15:30** **Neilson J, Kokelaar P & Fitton G:**
Enigmatic Voluminous Andesite Magmatism at Glencoe Caldera Volcano, SW Scottish Highlands
- 15:45** **Guo F, Fan W, Li C, Li X & Gao X:**
Late Mesozoic Adakites from the Northeastern China: Evidence for Subduction of the Paleo-Pacific Ocean Toward the NE Asian Continent
- 16:00** **Zhang J, Liu S, Zhao G & Sun M:**
Geochemistry of the Wutai Granitoids: Constraints on the Tectonic Evolution of the Trans-North China Orogen
- 16:15** **Denduluri S, Dasari S, Vysetti B, Nirmal C & Thota R:**
Boninitic Magmatism in the Vicinity of Meso Neoproterozoic Epicratonic Chattisgarh Basin, Central India
- Plenary Lecture by the Urey Medalist** **Administration Auditorium**
- 16:40** **Navrotsky A:**
Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

(Symposium S68 continues on page 20)

Symposium S73 Room: Administration Auditorium

**The Earth's Weathering Engine; Coupling Chemical
Weathering With Physical Erosion, Biology, Hydrology
and Climate**

Convenors: Arjun Heimsath, Art White, Jerome Gaillardet & Susan Brantley

13:30 von Blanckenburg F:

KEY The Links between Climate, Tectonics, and Denudation from Cosmogenic Nuclides in River Sediment

14:00 Dosseto A, Bourdon B, Gaillardet J, Allegre CJ & Filizola N:

INV Rapid Response of Erosion to Recent Climatic Changes: New Insights from Uranium-Series

14:15 Anderson S:

INV Mechanical-Chemical Weathering Linkage: Erosion and Solute Fluxes due to Glaciers

14:30 Lemarchand D & Gaillardet J:

Non-Steady State Erosion of Shales in the Mackenzie River Basin (Canada), Evidences from Boron Isotopes

14:45 Riotte J, Godd ris Y, Chabaux F, Munhoven G, Fran ois L & Lorenz S:

Modelling the Global Riverine U Fluxes to the Oceans

15:00 Spence J & Telmer K:

Dissolved and Adsorbed Rare Earth Element (REE) Transport by Rivers in the Canadian Cordillera: Influence of Weathering and Erosion

15:15 Dessert C, Dupr  B, Gaillardet J, Godd ris Y, Fran ois L & Schott J:

INV Basalt Weathering Laws and the Impact of Basalt Weathering on the Global Carbon Cycle

15:30 Calmels D, Gaillardet J, Brenot A & France-Lanord C:

The Mackenzie River Basin: Limited Atmospheric CO₂ Consumption by Rock Weathering

15:45 Godderis Y, Donnadieu Y, Tombozafi M, Pierrehumbert R, Gaillardet J, Kump L & Dupre B:

Links between Climate, Paleogeography and Silicate Rock Weathering: A Cretaceous vs Present Day Comparative Study with the GEOCLIM Model

16:00 Moore J, Lichtner P, White A & Brantley S:

Reactive Transport Modeling of Reaction Fronts

16:15 Fletcher RC, Brantley SL & Buss HL:

Quantitative Model of Spheroidal Weathering: Coupling of Transport, Reaction, and Fracture in the Transformation of Rock to Soil

Plenary Lecture by the Urey Medalist

Administration Auditorium

16:40 Navrotsky A:

Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

(Symposium S73 continues on page 21)

Symposium G08

Room: Renfrew 111

Experimental Geochemistry/Petrology

15:30 Nair R & Chacko T:

Eclogite Stability in MORB-Type Bulk Compositions: New Constraints from Fluid-Absent Melting Experiments on Amphibolites

15:45 Miller S, Asimow P & Burnett D:

Melt Thermodynamics and Divalent Element Partitioning between Anorthite and CMAS Liquids

16:00 Lo Cascio M, Liang Y & Shimizu N:

A New Experimental Method for Determining Cpx/melt Trace Element Partitioning during Peridotite Melting

16:15 Shmulovich K, Yardley B & Graham C:

The Solubility of Quartz in Chloride Solutions at 400°-800°C and 0.1-0.9 GPa

Plenary Lecture by the Urey Medalist

Administration Auditorium

16:40 Navrotsky A:

Geochemical, Thermochemical, Crystal Chemical: Some Recurring Themes

(Symposium G08 continues on page 22)

Symposium S05

Posters

Advances in *in situ* Microanalysis of Trace Elements

- 1 **Aubaud C, Withers A, Hirschmann M, Guan Y, Leshin L, Mackwell S & Bell D:**
A New Calibration of H Measurements by SIMS in Glasses and Nominally Anhydrous Minerals: Application to Experimental Determinations of H Partitioning
- 2 **Fryer B & Gagnon J:**
A Simple Technique for Preparing Matrix- and Concentration-Matched Standards for LA-ICPMS Analysis?
- 3 **Gagnon J, Fryer B, Williams-Jones A & Samson I:**
Quantitative Major, Minor and Trace Element Analysis of Minerals by LA-ICPMS Without an Internal Standard
- 4 **Jezequel D, Metzger E, Viollier E, Prevot F, Brayner R & Fievet F:**
Combined Probes for Sub-Millimetric Investigations in Aquatic Sediments
- 5 **Mocek B, Hellebrand E & Ionov D:**
Tracing Element Zonation in Garnet-Peridotites by *in situ* SIMS
- 6 **Monteleone B, Baldwin S, Webb L & Fitzgerald P:**
Constraints on Eclogite Facies Metamorphism in Southeastern Papua New Guinea from *in situ* Ion Microprobe U-Pb and REE Analyses
- 7 **Scott K & French D:**
Rutile Geochemistry as a Guide to Mineralization at the Escondida Cu Deposit, Chile
- 8 **Severin K, Brown R, Babaluk J, Campbell I & Newville M:**
A Comparison of Line Scans and Maps using EPMA, Micro-XRF, and PIXE

Symposium S10

Posters

Bioirrigation: Field-, Laboratory- and Model- Based Assessments of the Geochemical Influence of Burrowing Macrofauna

- 9 **Koretsky C, Meile C & Van Cappellen P:**
Incorporating Complementary Ecological and Biogeochemical Information into Quantitative Bioirrigation Models

Symposium S12

Posters

Carbon and Gold

- 10 **Emsbo P & Koenig A:**
Discovery and Significance of Gold-Rich Bitumen in the Rodeo Deposit, Northern Carlin Trend, Nevada
- 11 **Norman D & Blamey N:**
Methane in Carlin-Type Gold Deposit Fluid Inclusions

Symposium S13

Posters

Carbonates - Powerful Archives for Paleooceanographic Research - The Good the Bad and the Most Confusing

- 12 **Burdige D & Hu X:**
Isotopic Evidence for Shallow-Water Carbonate Dissolution and Reprecipitation
- 13 **Guo F, Qin X, Pan J & Xia F:**
Carbon and Oxygen Isotopic Characteristics of Carbonate Rocks of Carboniferous-Permian in Jiangshan, Zhejiang Province, China
- 14 **Korte C, Brand U, Dickins J, Mertmann D & Veizer J:**
Latitudinal Gradient in $\delta^{18}\text{O}$ of Permian Brachiopods
- 15 **Lakshatanov L, Dubinina E & Stipp S:**
Oxygen Isotope Exchange between Calcite and Water: An Experimental Study
- 16 **Mahmudy Gharai MH, Chen Y & Matsumoto R:**
Methane-Derived Carbonates of the Nankai Trough in Southeast Japan: Are They Related Methane Hydrates?
- 17 **Qiu Y, Fan W & Qi L:**
Ce Anomaly of Carbonate Rock as a Geochemical Tracer for Redox Conditions of Paleo-Atmosphere
- 18 **Rambeau C, Föllmi KB, Matera V, Adatte T & Steinmann P:**
Cadmium Enrichments in Jurassic Carbonates: Causes and Mechanisms
- 19 **Schiff J & Byrne RH:**
Systematic Spatial Variations of Ba and Sr Enrichments over Ambient Seawater Values in Saline, Geothermal, Submarine Springs on the West Florida Shelf
- 20 **Snyder G, Dickens G, Matsumoto R, Hiruta A, Tomaru H, Dicus C & Castellini DG:**
Elemental Remobilization in Marine Sediments: Growth and Destruction of Authigenic Mineral Fronts above Gas Hydrate Systems
- 21 **Taylor K & Perry C:**
Impacts of Fe-Rich Sediment Input upon Chemical Diagenesis of Shallow Marine Tropical Carbonates: Discovery Bay, Jamaica
- 22 **Voice P, Grammer M, Harrison W, Krishnamurthy RV & Swart P:**
A Paleooceanographic Model For the Michigan Basin during Silurian Time from Stable Isotopic Analysis of Brachiopods

21:PO

15

Saturday May 21st 2005: Poster Session

Symposium S24

Posters

Geochemical Controls on Microbial Processes

- 23 **Biddle J, House C & Brenchley J:**
Cultivation of Deeply Buried Microbes Shows Influence of Geochemistry
- 24 **Borch T, Masue Y & Fendorf S:**
Poisoning of Iron Biomineralization by Surface Compositional Changes
- 25 **Druschel G, Lorenson G, Rizzo D, Rogers D & Edwards K:**
Field, Lab, and Computational Tools and Techniques for Linking Geochemical and Microbial Processes in a Range of Environments
- 26 **Esser BK, Beller HR, Carle SF, Hudson GB, Kane SR, LeTain TE, McNab WW & Moran JE:**
New Approaches to Characterizing Microbial Denitrification in the Saturated Zone
- 27 **Fujita Y, Petzke L, Taylor M, Taylor J, Tyler T & Smith R:**
Characterizing Microbial Ureolytic Activity in Groundwater for the Potential to Facilitate Calcite Precipitation for Remediation of ⁹⁰Sr
- 28 **Geissler A, Scheinost A & Selenska-Pobell S:**
Influence of U(VI) on Natural Bacterial Community of a Soil Sample from a Uranium Mining Waste
- 29 **Lorenson G, Rogers D, Price R, Edwards K & Druschel G:**
Application of *in situ* Au-Amalgam Microelectrodes in Yellowstone National Park to Guide Microbial Sampling
- 30 **Meier J & Wendt-Potthoff K:**
Effect of Temperature on Activity, Growth, and Structure of Fe(III) and Sulfate Reducing Communities
- 31 **Plummer M, Hull L, Cooper D, Fox D & Seitz R:**
Oxygen Consumption and Carbon Dioxide Production in a Large Physical Model of the Vadose Zone
- 32 **Rosling A & Finlay R:**
Responses of Ectomycorrhizal Fungi to Mineral Substrates
- 33 **Shepler C, Hull L, Letain T, Hazen T, Nitsche H & Clark S:**
The Interaction of U(VI) with *Bacillus sphaericus*
- 34 **Shukurov N, Pen-Mouratov S, Steinberger Y & Talipov R:**
Soil Free-Living Nematodes Community Structure and Soil Microbial Biomass Response to Soil Pollution in the Vicinity of Navoiy Industrial Area, Uzbekistan

Symposium S27

Posters

Geochemical, Rheological, and Geophysical Aspects of Deep Mantle Phase Changes

- 35 **Eeckhout S & Bolfan-Casanova N:**
Cr Oxidation State in Periclase by XANES Spectroscopy
- 36 **Tian S, Hou Z & Ding T:**
Geochemistry of Carbonatites in Lizhuang REE Deposit, Sichuan, China

Symposium S32

Posters

Geochronology of Mantle Samples

- 37 **Bianchini G, Beccaluva L, Bonadiman C, Nowell G, Pearson G, Siena F & Wilson M:**
Sr-Nd-Hf Isotope Constraints on Lithospheric Mantle Evolution beneath Olot, NE Spain

Symposium S34

Posters

Growth and Dissolution under Stress: Pressure Solution, Replacement, and Weathering

- 38 **Gustavson J & Neuhoff P:**
Pore-Scale Coupling of Dissolution, Diffusion, and Crystallization Forces during Alteration of Vesicular Lavas
- 39 **Jordan G, Aldushin K, Lohkämper T & Schmahl WW:**
Dissolution-Precipitation Creep Under Cyclic Stress
- 40 **Karcz Z, Aharonov E, Ertas D, Polizzotti R & Scholz C:**
The Importance of Plastic Flow in the Deformation of a Sodium Chloride Indenter Undergoing Pressure Solution
- 41 **Renard F:**
3D Microtomography of a Halite Aggregate during Pressure Solution Creep

Symposium S36

Posters

Hydrothermal Fluids, Magmatic Volatiles, and Surficial Metal Mobility in Platinum-Group Element (PGE) Deposits

- 42 **Hanley J & Mungall J:**
A Magmatic End-Member Fluid at Sudbury, Canada?
- 43 **Samson I, Fryer B, Gagnon J & Donnelly CL:**
High Resolution LA-ICP-MS Analyses of PGMs and Sulphides, Marathon Pd-Cu Deposit, Ontario

Symposium S41

Posters

Isotopic Ratio Measurement Using Microbeam Methods: Where do we Stand and Where are we Going?

- 44 **Cocherie A, Robert M & Guerrot C:**
In situ U-Pb Zircon Dating using LA-MC-ICPMS and a Multi-Ion Counting System
- 45 **Fayek M & Palenik CS:**
Characterization of Nd, Te and U Isotope Ratios in Uraninite using SIMS
- 46 **Gerdes A:**
Laser Ablation ICP-MS Dating of Complex Magmatic and Metamorphic Zircon
- 47 **Golledge S, Krinsley D, O'Hara P, Gasser R & Schieber J:**
Time of Flight Secondary Ion Mass Spectrometry (ToF-SIMS) Use in Sedimentary Geochemistry
- 48 **Harlou R, Pearson DG, Nowell GM, Davidson JP & Kent AJR:**
Sr Isotope Studies of Melt Inclusions by TIMS
- 49 **Kemp T, Foster G, Coath C & Schersten A:**
INV Hf Isotopes by Laser Ablation Multi-Collector ICP-MS: Progress, Pitfalls and Prognosis
- 50 **Simonetti A, Heaman L, MacHattie T, Chacko T, Hartlaub R & Eccles R:**
In situ Petrographic Thin Section U-Pb Dating of Zircon and Titanite by Laser ablation-MC-ICP-MS
- 51 **Tunheng A & Hirata T:**
In situ Fe Isotopic Fractionation Determination by Laser Ablation MC-ICP-MS

Symposium S42

Posters

Isotopic Records of Early Planetary Evolution

- 52 **Barnes J, Brearley A, Sharp Z & Chaussidon M:**
 $\delta^{37}\text{Cl}$ Values of the Solar System
- 53 **Fike D, Grotzinger J, Summons R, Pratt L, Finkelstein D & Newall M:**
Uncoupled C and S Biogeochemical Cycling in the Neoproterozoic from the Huqf Supergroup, Oman
- 54 **Hartlaub R, Heaman L, Simonetti A & Bohm C:**
Was There Voluminous Ancient (>4.0 Ga) Sialic Crust? Implications from the Hf Composition of Detrital Zircons
- 55 **Iizuka T, Horie K, Komiya T, Maruyama S, Hirata T, Hidaka H & Windley B:**
Occurrence of a 4.2 Gyr old Zircon in the Acasta Gneiss Complex of Northwestern Canada
- 56 **Jia Y & Kerrich R:**
A ^{15}N -Enriched Archean Atmosphere
- 57 **Lefticariu L, Pratt L, Ripley E & Bish D:**
Experimental Study of Sulfur Isotope Fractionation Associated with Pyrite Oxidation by H_2O_2
- 58 **Matsuda J, Omori H & Maruoka T:**
Carbon Isotope Variations of Carbon Deposits Synthesized in the Laboratory by Arc Discharge
- 59 **Mukasa S, Choi SH, Andronikov A, Osanai Y & Harley S:**
Lu-Hf Systematics of the Earliest Crust in Antarctica: The Napier Complex of Enderby Land
- 60 **Pushkarev Y:**
Rare Earth Elements in the Core?
- 61 **Sano Y, Takahata N & Tsutsumi Y:**
NANO-SIMS U-Pb Dating of Monazite
- 62 **Schoenberg R, Kamber BS & von Blanckenburg F:**
Comparative Stable Fe Isotope Systematics of Terrestrial and Meteoritic Materials

Symposium S44

Posters

Lifetime Predictions of Toxic and Radioactive Waste Disposal and Remediation Schemes: Thermochemical Data, Theoretical Models and Reaction Transport Codes

- 63 **Bates W, Samson S & Nagy K:**
Dissolution of Labradorite Feldspar in Alkaline, Sodium Nitrate, and Simplified Hanford Tank Solutions
- 64 **Buckau G, Duro L, Kienzler B & Bruno J:**
Presentation of the Funmig Integrated Project within the 6TH FP of the EC
- 65 **Cao H & Wood S:**
The Effect of Organic Ligands on the Solubility of CeO₂ in NaNO₃ Medium
- 66 **Gowd S:**
Environmental Risk Assessment and Remediation of Soils Contaminated due to Waste Disposal from Tannery Industries: a Case Study of Ranipet Industrial Area, Tamil Nadu, India
- 67 **Lee S, Lee KY, Yoon YY, Cho SY & Kim Y:**
Sorption Properties of ⁶⁰Co, ¹⁵²Eu, ¹⁶⁰Tb and ²⁴¹Am in Geological Materials
- 68 **Liu Q, Xu H & Navrotsky A:**
Synthesis and Thermochemistry of Nitrate Cancrinite and Nitrate Sodalite
- 69 **Otani H & Shikazono N:**
Rare Earth and Minor Elements Behavior in Red Soil from Principle Component Analysis
- 70 **Smith R & Fujita Y:**
In situ Stabilization of ⁹⁰Sr by Microbially Facilitated Calcite Precipitation
- 71 **Wood S & Cetiner Z:**
Experimental Measurements of the Solubility of ThO₂ in NaNO₃ Solutions: Hydrolysis of Th(IV) and Complexation by Organic Ligands

(Symposium S44 continues on page 27)

Symposium S45

Posters

Mantle Heterogeneity, Past and Present

- 72 **Afanasiev V, Ashchepkov I, Zinchuk N, Kuchkin A, Saprykin A & Anoshin G:**
Zonation of Ebelykh Eclogite and Peridotite Diamonds: LAM ICP MS
- 73 **Ashchepkov I, Vladykin N, Rotman A, Logvinova A, Pokhilenko H, Saprykin A, Palessky S, Anoshin G, Khelnikova O & Kuchkin A:**
Regularities of Mantle Structure beneath Siberian Craton
- 74 **Choi SH, Mukasa SB, Andronikov AV & Marcano MC:**
Geochemistry of the Tinaquillo Peridotite Massif, Venezuela
- 75 **Matsumoto I, Okada J, Iwamoto K & Arai S:**
Petrological Characteristics of Chromitite Bearing Gabbro from the Inazumiyama Ultramafic Complex of the Sangun Zone, Southwest Japan
- 76 **Osmaston M:**
A New Mechanism for Intraplate Magmagenesis and Petrogenetic Variation: The Importance of Process
- 77 **Rotman A, Ashchepkov I, Nossiko S, Palessky S, Saprykin A, Somov C, Shipupi J, Khelnikova O & Anoshin G:**
Mantle Layering beneath Angola
- 78 **Tirone M & Morgan JP:**
Equilibrium Thermodynamics: Applications to Mantle Geodynamics

Symposium S48

Posters

Microbial Mineral Transformations I: Microbial Influences on Mineral Speciation and Stability

- 79 **Bishay A:**
Bio-Extraction of REE and Other Valuable Elements from Red Mud Left after Alkaline Processing of Gibbsite Bearing Sediments, Sinai, Egypt
- 80 **Lynn J, Nair B & Childers S:**
Microbial Selenate Reduction in a Selenium-Contaminated Watershed
- 81 **Tufano K, Stewart B, Herbel M & Fendorf S:**
Stimulated Migration of Arsenic and Uranium by Reductive Transformation of Iron

Symposium S49

Posters

Microbial Mineral Transformations II: Microbially-Induced Solid Phase Transformations

- 82 **Bank T, Jardine P, Ginder-Vogel M, Fendorf S & Baldwin M:**
Discerning Geochemical and Biogeochemical Metal Reduction Through Gamma Sterilization
- 83 **Duan J & Hou B:**
Microbial Transformation of Iron Oxide to Sulfide Species on Steel Immersed in Seawater
- 84 **Furukawa Y & O'Reilly SE:**
Rapid Precipitation of Amorphous Silica and Aluminum Phases in Experimental Systems with Nontronite (NAu-1) and *Shewanella oneidensis* MR-1
- 85 **Hutchens E, Valsami-Jones E, McEldowney S & Oelkers E:**
Minerals and Bacteria, Friends or Foes?
- 86 **Kocar B, Tufano K, Masui Y, Stewart B, Herbel M & Fendorf S:**
Arsenic Mobilization Influenced by Iron Reduction and Sulfidogenesis
- 87 **Rogers S & Grey N:**
Molecular Study of Microbial S Oxidation in Sulfidic Sediments
- 88 **Weisener C, Forsyth A, Burns P & Fowle D:**
Investigation of the Geochemical Relationships Governing Dissimilatory Bacterial Reduction of U(VI) from Solid Uranyl Mineral Phases

(Symposium S49 continues on page 28)

Symposium S56

Posters

New Results from the Robotic Exploration of Mars and Titan and their Implications on Planetary Environmental Conditions and Cosmochemistry

- 89 **Clevy J & Kattenhorn S:**
Enigmatic Linear Patterns of Hydrogen Concentration on Mars
- 90 **Fan C & Schulze-Makuch D:**
Columbia Plateau Basalt as an Analog to the Basalt of the Martian Northern Plains
- 91 **Fink W, Datta A & Baker V:**
AGFA: (Airborne) Automated Geologic Field Analyzer
- 92 **Pan J, Ma D, Lehmann B, Cao S, Xia F & Chen S:**
Paleoenvironmental Study of Doushantuo Formation: Insights of Trace Element and Carbon Isotope

(Symposium S56 continues on page 37)

Symposium S58

Posters

Novel Isotopic Methods in Tracing Paleooceanographic Processes

- 93 **Ding T, Ma G, Shui M, Wan D & Li R:**
Effect of Rice Growth on Geochemical Circle of Silicon: Silicon Isotope Study on Rice Plants Grew in Field and Laboratory
- 94 **Gao Y, Svec R, Joner S & Bryant B:**
The Life History and Stock Structure of Groundfish from Stable Isotopic Analysis of Otoliths
- 95 **Holmden C, Eglinton B & Papanastassiou D:**
High Mass Resolution Plasma Mass Spectrometry of Cr Isotopes
- 96 **Leighton E, Prave AR, Hawkesworth CJ & Elliott TR:**
Fe Isotope Composition in Neoproterozoic Dolomite Rocks and Banded Iron Formations
- 97 **Yang J, Jiang S, Ling H & Chen Y:**
Re-Os Isotopes as a Tracer and Dating Technique for Black Shales and Ocean Anoxic Events

Symposium S68

Posters

Subduction Zone Magmatism and Related Processes

- 98 **Bebout G & Kump L:**
Sensitivity of Global Carbon Cycling Models to Changing Subduction Fluxes
- 99 **Bryant J, Yogodzinski G & Churikova T:**
Petrology of Metasomatized Mantle Xenoliths from Shiveluch Volcano, Kamchatka
- 100 **Chakravadhanula M, Kerrich R & Naqvi M:**
Geochemistry of First Cycle Volcanogenic Sedimentary Rocks from the Neoarchean Sandur Superterrane, India
- 101 **Dektor C, Yogodzinski G & Churikova T:**
Petrology of Ultramafic Xenoliths from Kharchinsky Volcano, Russia
- 102 **Eyuboglu Y, Bektas O & Sen C:**
Hornblende and Phlogopite-Bearing Ultramafic Cumulates: Evidence for Subduction-Related Ultramafic Magmatism in the Eastern Pontides, Amasya Area, NE Turkey,
- 103 **Georgiev S, von Quadt A, Peytcheva I & Heinrich C:**
Isotopic Investigations on the Magmatism in Eastern Srednogie
- 104 **Gerseny M, Vervoort J, Brown S & Yogodzinski G:**
Characterizing Contributions to Aleutian Lavas along the Length of the Arc: Evidence from Hf-Nd Isotope Systematics
- 105 **Liu C & Sun W:**
Subduction Modified Re-Os Features of the Mantle Wedge
- 106 **Qiu J, Jiang S, Wang R & Lo Q:**
Petrology and Geochemistry of Shoshonitic Volcanic Rocks from Luzong in the Lower Yangtze Region, Eastern China: Petrogenesis and Inferences on the Nature of the Mantle Sources
- 107 **Rodriguez C, Selles D, Dungan M, Leeman W & Langmuir C:**
Adakitic Signatures in Andean Water-Rich Magmas at Nevado de Longaví
- 108 **Streck M, Browning-Craig H, Haldar D, Ramos F & Duncan R:**
Hornblende Andesites/Dacites in an Oceanic Arc Setting at Narcondam Volcano, Andaman Sea, S.E. Asia
- 109 **Yu C & Vervoort J:**
Hf-Nd-Pb Isotope Variations of Subducting Sediments

Symposium S69

Posters

Subduction Zone Metamorphism. 1. Processing of Geochemical Tracers

- 110 **Busigny V, Cartigny P, Philippot P & Javoy M:**
Contribution of Oceanic Gabbros to the N Recycling in Subduction Zones
- 111 **Gao J, John T & Klemd R:**
INV Partial Dehydration of Blueschist: Insights into the Slab-Wedge Transfer
- 112 **John T & Schenk V:**
Interrelations between Intermediate-Depth Earthquakes and Fluid Flow in Subducting Oceanic Plates
- 113 **King R, Bebout G, Moriguti T & Nakamura E:**
Mélange Zones as a Better Source for the "Slab" Signature in Arcs
- 114 **Zhang L, Zhang H & Zhong Z:**
Geochemical Structure of Pb Isotopes in Tongbai-Dabie area, China

(Symposium S69 continues on page 29)

Symposium S70

Posters

Subduction Zone Metamorphism. 2. Fluids from the Slab to the Surface

- 115 **Mekala RM, Drona SS & Thota GR:**
Geochemistry of High Fe- Tholeiites from the Ramagiri-Hungund Greenstone Belt of Eastern Dharwar Craton, India
- 116 **Sadofsky S, Hoernle K & van den Bogaard P:**
Volatile Cycling Through the Central American Volcanic Arc from Melt Inclusion Studies of Nicaraguan and Costa Rican Magmas
- 117 **Spandler C & Hermann J:**
High-Pressure Veins in Eclogite from New Caledonia; Implications for Fluid Migration and Seismic Activity in Subduction Zones
- 118 **Tessalina S, Yudovskaya M, Françoise C, Birck J, Vadim D, Chaplygin I & Allègre C:**
Sources of Unique Rhenium Enrichment in the Kudriavy Volcano, Kurile Islands

(Symposium S70 continues on page 29)

Symposium S71**Teaching Geochemistry**

- 119 **Knudsen A:**
Rethinking the Traditional Mineralogy Curriculum
- 120 **McCarthy A, Domanik K & Downs R:**
Determining Structural Chemical Formulae using the American Mineralogist Crystal Structure Database

Symposium S73**The Earth's Weathering Engine; Coupling Chemical Weathering With Physical Erosion, Biology, Hydrology and Climate**

- 121 **Aggarwal J, White A & Bullen T:**
Weathering and Uptake of Silicon in the Santa Cruz Terraces: New Evidence from Silicon Isotopes
- 122 **Almeida A & Begonha A:**
The Susceptibility of Peraluminous Two-Mica Granites to Weathering: Implications in the Stone Decay of Built Heritage (Oporto, NW Portugal)
- 123 **Aloisi G, Wallmann K, Drews M, Bohrmann G, Greinert J & Eisenhauer A:**
A Possible CO₂ Sink Through Submarine Weathering of Detrital Silicate Minerals
- 124 **Bentahila Y, Luck J, Ben Othman D & Lallemand S:**
Erosion on Taiwan: Trace Element and (Sr, Pb, Zn) Isotopic Constraints on Marine Sediment Provenance
- 125 **Braun JJ, Ruiz L, Riotte J, Mohan Kumar MS, Murari V, Sekhar M, Barbiero L, Descloitres M, Bost A & Dupré B:**
Chemical and Physical Weathering in the Kabini River Basin, South India
- 126 **Drouet T, Herbauts J & Demaiffe D:**
Strontium Isotopes Highlight Change in Ca Sources in Forest Ecosystems
- 127 **Hausrath E, Neaman A & Brantley S:**
Basalt and Granite Dissolution Rates in the Presence of Citrate
- 128 **Lee C & Little M:**
Theoretical and Observational Links between Erosion and Chemical Weathering
- 129 **Mehta P, Tripathi JK, Pandey D & Rajamani V:**
Geochemistry of Amphibolite Weathering in Different Climatic Setup of Kaveri Catchment of Southern India and its Implications
- 130 **Banerjee A & Merino E:**
Weathering Replacement of Limestone by Clay+Iron Oxide at Bloomington, Indiana

Posters

- 131 **Pacheco FAL & Van der Weijden CH:**
Hydrologic and Kinetic Modeling of Plagioclase Weathering Rates in the Rio Vouga Basin (Portugal)
- 132 **Phedorin M, Fedotov A, Goldberg E, Saeva O, Zolotarev K & Grachev M:**
Century-Resolved 1 Myr History of Paleogeographic Changes in Lake Khubsugul (Mongolia), Reconstructed from Geochemical Markers in Lake Bottom Sediments
- 133 **Pomies C, Bickle M, Tipper ET, Chapman H, Fairchild IJ & Harris N:**
Record of the Weathering Timescale in Himalayan Rivers
- 134 **Rad S, Gaillardet J, Louvat P, Bourdon B & Allègre CJ:**
Weathering Process on Tropical Volcanic Islands (Guadeloupe, Martinique and Réunion) by using U-Series
- 135 **Schroth A, Friedland A & Bostick B:**
Influence of Overstory Vegetation on Long-Term Chemical Weathering Rates
- 136 **Simons S & Nemchin A:**
U-Series Ages of the Latest Silification Event in Regolith of the Yilgarn Craton, Western Australia
- 137 **Singh SK & Rai SK:**
Sediment Tracing in the Ganga River System
- 138 **Tripathi JK & Rajamani V:**
Geochemistry and Origin of Ferruginous Nodules from the Weathered Gneissic Rocks of Presently Subarid Southern India Mysore Plateau
- 139 **Wang B, Gough L, Smith D & Gustavsson N:**
Geochemical Landscapes of Alaska

Symposium S80**Water in the Terrestrial Planets**

- 140 **Grow J & Gunter M:**
In situ use of Microwaves to Remotely Determine the Water Content of Minerals

(Symposium S80 continues on page 32)

Posters

Symposium G04

Posters

Cosmochemistry

- 141 **Galimov E & Krivtsov A:**
Geochemical Constraints and Dynamic Simulation of the Origin of the Earth-Moon System
- 142 **Giannuzzi L & Friedmann EI:**
The Characterization of Martian Meteorite ALH84001 using Focused Ion Beam Specimen Preparation and Transmission Electron Microscopy
- 143 **Huber H, Rubin A & Wasson J:**
Fractionated REE in EL Chondrites
- 144 **Zheng Y, Wang S & Ouyang Z:**
Dielectric Properties of Lunar Material and its Microwave Penetration Depth

Symposium G08

Posters

Experimental Geochemistry/Petrology

- 145 **Brady J & Cherniak D:**
Fe-Mg Interdiffusion Experiments in Olivine
- 146 **Burchard M, Fockenberg T & Maresch W:**
Fluids in the System CaO-Al₂O₃-SiO₂-H₂O (CASH) – Thermodynamic Modeling of Experimental Results
- 147 **Dogan AU, Dogan M, Kilinc A, Steele I, Yesilyurt FI, Ustunisik G, Ozbay S, Tigli M, Conger O & Tosun S:**
TE and REE Modeling of Central Anatolian Volcanics, Turkey
- 148 **Dwarzski R, Draper D, Shearer C & Agee C:**
Crystal Chemical Controls on Garnet Partitioning of REE and HFSE
- 149 **Jacobsen B, Yin Q, Tinker D & Leshar C:**
Tungsten Self-Diffusion: Constraints on the Core Formation Timescale
- 150 **Kanthurugovindappa A & Chintamani S:**
Geochemistry of the Granite Intrusion in the Madurai Block, South of Palghat - Cauvery Shear Zone
- 151 **Mönicke A, Laporte D & Schiano P:**
Partial Melting of a Fertile Peridotite: Application of the Microcrack Extraction Technique
- 152 **Perri F, Rizzo G, Mongelli G & Critelli S:**
Zircons from the Arenite of Early Mesozoic Continental Redbeds of the Western and Central Mediterranean Area: a Case of Typological Study
- 153 **Yaxley G, Berry A, Woodland A & O'Neill H:**
Calibration of XANES for Determination of Fe³⁺/ΣFe in Garnet

Symposium G11

Posters

Hydrology/Hydrogeochemistry

- 21:PO
- 23
- 154 **Banks V, Al T, Loomer D, Parker B & Mayer U:**
Trace-Metal Mobility during KMnO_4 Oxidation of TCE: Column Experiments
- 155 **Baxter A & Price J:**
Atmospheric/Soil CO_2 Consumption at Coweeta Hydrologic Laboratory, Western North Carolina, USA
- 156 **Chelnokov G & Tchepkaia N:**
The Geochemistry of Rare Earth Elements in Groundwater from Northern Sikhotealin (Far East of Russia)
- 157 **Chudaev O, Chudaeva V, Sugimori K, Kuno A, Matsuo M & Nordstrom K:**
Geochemistry of Thermal Waters of Mendeleev Volcano (Kuril Islands)
- 158 **Fairley J, Hinds J & Zakrajsek JR:**
Field Evidence for Unstable Thermal-Convective Transport in a Fault Controlled Geothermal System
- 159 **Griffioen J:**
Cation-Exchange Patterns in Groundwater in Coastal Lowlands of the Western Netherlands
- 160 **Jaffe L, Hilton D, Porcelli D, Swarzenski P, Baskaran M & Kulongoski J:**
U-Th-Ra-Rn-He Relationships in Mojave River Basin Groundwaters
- 161 **Qian J, Wu J & Liu Y:**
Experiment Study on Validity of LCL and Critical Re for Groundwater Flow in a Single Fracture
- 162 **Tchepkaia N & Chelnokov G:**
Groundwater Chemistry and Origin of Na-HCO_3 Type of Water from Northern Primorye (Russia)
- 163 **Wu J, Qian J & Chen Y:**
Comparative Methodologies for Hydro-Geochemical Sampling Plans for Contaminant Plume Monitoring under Uncertainty
- 164 **Wu J, Zhu X & Ye S:**
Groundwater Modeling for the Phreatic-Confined Aquifers System in the Huolinhe River Basin, Inner Mongolia, China
- 165 **Ye S, Xue Y & Wu J:**
Numerical Modeling of Land Subsidence in Shanghai
- 166 **Zhou Y & Wang S:**
Hydrogeochemical Process and its Environmental Indication of Drip Water: Study on Four Caves of Guizhou, China

Symposium G12

Posters

Hydrothermal Geochemistry

- 167 **Baker L & Wood S:**
A Modified Hydrogen Electrode Concentration Cell (HECC): Study of Scheelite Solubility
- 168 **Bickle M & Pomies C:**
Timescale of TAG Activity Revisited
- 169 **Evans K & Powell R:**
The Thermodynamics of Mixing in Saline and Mixed Solvent Solutions at Elevated Temperature and Pressure: a Framework for Geological Phase Equilibria Calculations
- 170 **Guijian L:**
Geochemistry of Sulfur in Chinese Coal
- 171 **Jin Z, Zhu D, Hu W, Zhang X & Zhang J:**
Mineralogical and Geochemical Features of Hydrothermally Dissolved Carbonate Reservoir Rocks in Tarim Basin, NW China
- 172 **Kissin S, Cetiner Z, Stoffregen R & Wood S:**
Investigation of the Alunite-Natroalunite Solid Solution and Na-K Exchange between Solid and Solution at 250°C
- 173 **Li X, Hua R & Mao J:**
Clay Mineralogy, Kübler Index and K-Ar Ages of Illite in Yinshan Polymetallic Deposit, Dexing, Jiangxi Province, South China
- 174 **Liu W & McPhail DC:**
Thermodynamic Properties of Copper Chloride Complexes and Copper Transport in Magmatic Hydrothermal Solutions
- 175 **Sadeghi Bojd M & Moore F:**
From Fluid Inclusion Study to Genesis of the Anguran Ore Deposit, NW Iran
- 176 **Song Y, Hu W, Ni P & Duan Z:**
An Improved Iterative Technique to Determine the Volume and Composition of $\text{NaCl-H}_2\text{O-CO}_2$ Fluid Inclusion
- 177 **Sun Z:**
Gas Geochemistry of Ore-Forming Solution in the Xiazhuang U-Ore-Field, North Guangdong, China
- 178 **Ye L:**
Origin of Mineralizing Fluid of Niujiaotang Cd-Rich Zinc Deposit, Duyun, Guizhou, China
- 179 **Zhang W, Ni P, Hua R & Wang R:**
The Geochemical Characteristics of the Ore-Forming Fluid of Dajishan Tungsten Deposit in South China

Symposium G15**Posters****Low-Temperature Aqueous Geochemistry**

- 180 Spycher N & Pruess K:**
A Non-Iterative Model for H₂O-CO₂ Mutual Solubility in Chloride Brines
- 181 Um W & Serne RJ:**
Iodide Adsorption and Transport at the Hanford Site, Washington
- 182 Zhou G & Zheng Y:**
An Experimental Study of Kinetic Oxygen Isotope Fractionation during CaCO₃ Polymorphism

Symposium G17**Posters****Metamorphic Geochemistry**

- 183 Chetty T & Parthasarathy G:**
Metamorphism of Neoproterozoic Kerala Khondalite Belt: a Study on Fluid Deposited Graphite
- 184 Mazaheri SA & Kaheni S:**
Genetic Model Formation of Bimetasomatic Skarns from Australia
- 185 Sazonov A & Zviaguina E:**
Geochemistry of Gold of Metamorphic Rocks
- 186 Schneiderhan EA, Zimmermann U & Gutzmer J:**
Provenance Studies on the Neoproterozoic the Ventersdorp Supergroup (South Africa)
- 187 Zimmermann U & Bahlburg H:**
The Crustal Evolution of the Central Andes during the Neoproterozoic to the Silurian

Symposium G18**Posters****Mineral Deposits**

- 188 Gao J & Lu J:**
REE Characters of Sulphide Oxidation Zone of Xinqiao Massive Sulphide Deposit of Anhui, China
- 189 Gao Z, Yu Y, Yang Z & Rao W:**
The Red-Clay-Type Gold Deposit in China
- 190 Hofstra A & Emsbo P:**
Source of Salt in Hydrothermal Fluids Based on Na-Cl-Br of Fluid Inclusions
- 191 Lafontaine J, Thorne K & Lentz D:**
Devil Pike Brook Gold Deposit, South-Central New Brunswick: An Example of a Mesothermal Lode Gold System in the Canadian Appalachians
- 192 Lima A & Da Silva F:**
Adapted BLEG Method in Stream Sediment Geochemistry at Régua-Verin Structure (Portugal)
- 193 Lu J, Hua R & Yao C:**
Re-Os Age for Molybdenite from the Dexing Porphyry Cu-Au Deposit of Jiangxi Province, China
- 194 Noronha F & Lima A:**
Li Stream Sediment Geochemistry at Barroso Pegmatite Field (Portugal)
- 195 Run-Sheng H, Xiao-Feng L, De-Yun M, Geng-Sheng M & Zhi-Cai T:**
Fault Tectono-Geochemistry and Prognosis of Concealed Ores in the Tongchang Cu-Au Polymetallic Orefield, Shaanxi, China
- 196 Vetter S & Lentz DR:**
Geology of the Elmtree Gold Deposit, Northern NB, Canada

Goldschmidt 2005

CONFERENCE PROGRAMME

Sunday May 22nd 2005

Symposium S09 **Room: Renfrew 111**
Basalt Geochemistry and Mantle Dynamics

Convenors: **Dennis Geist & Dominique Weis**

- 08:30 Farnetani C & Samuel H:**
INV Filaments in a Laterally Heterogeneous Plume Tail
- 09:00 Jellinek M & Manga M:**
INV An Explanation of the Longevity and Composition of Hotspot Volcanism in Terms of the Dynamics of Mantle Plume Formation
- 09:15 Diefenbach B, Geist D, Kurz M, Fornari D & Harpp K:**
 Geochemistry and Morphology of Submarine Terraces from the Southwestern Galápagos Platform
- 09:30 Geist D, Harpp K & Kurz M:**
 The Depleted Galápagos Mantle: Plume or Upper Mantle?
- 09:45 Barker A, Holm PM, Peate D & Baker J:**
 Temporal Variations of a Heterogeneous Mantle Plume Source; Santiago, Cape Verde
- 10:00 Nohda S, Kaneoka I & Hanyu T:**
 Isotopic and Geochemical Characteristics of the Réunion Hotspot; Evidence from the Lavas of Mauritius
- 10:15 Putirka K:**
 Estimates of Mantle Temperatures Based on Olivine Phenocrysts and Olivine-Melt Equilibria
- 10:30 Toomey D & Hooft E:**
INV Magmatic Segmentation of the East Pacific Rise
- 10:45 le Roux P, Dixon J, Shirey S & Hauri E:**
 Boron Isotope Compositions of South Atlantic MORB and Mantle Sources
- 11:00 Cartigny P, Pineau F & Javoy M:**
 Volatile (C, N, Ar) Heterogeneity in MORB Popping-Rock Vesicles: Mantle Volatiles Mixed with Air
- 11:15 Ito G, Bianco T, Mahoney J, Becker J & Garcia M:**
INV Upper Mantle Dynamics Expressed in Hotspot and Mid-Ocean Ridge Basalt Chemistry
- 11:30 Kurz M:**
 Spatial and Temporal Isotopic Variability in Ocean Island Volcanism: The Noble Gas Story

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Symposium S33 **Room: Renfrew 125**
Geochronology of Tectonic Processes

Convenors: **Peter Reiners & Randy Parrish**

- 08:30 Harrison TM:**
KEY Unravelling Polytectionism using *in situ* Th-Pb Dating of Monazite
- 09:00 Hacker B, Gehrels G, Grove M, Johnston S, Mattinson J, Root D, Walsh E & Young D:**
KEY Geochronology of the Western Gneiss Region UHP Terrane
- 09:30 Ernst WG, Hacker BR & Liou JG:**
INV Petrotectonics-Geochronology of Ultrahigh-Pressure (UHP) Crustal and Upper Mantle Rocks – Implications for Phanerozoic Orogeny
- 09:45 Flowers R, Pringle M, Mahan K, Bowring S, Williams M, Hodges K & Reiners P:**
 Temporal Constraints on the Juxtaposition and Exhumation of Deep Crustal Domains, East Athabasca Region, Western Canadian Shield
- 10:00 Wang Y, Liu D, Ren L & Williams I:**
 Geochemical Characteristics and Ion Microprobe Age of the Mafic Granulites from the Larsemann Hills, East Antarctica
- 10:15 Schaltegger U, Chew D, Miskovic A, Fontignie D & Frank M:**
 The Active Margin of Gondwana in Peru – Isotopic and Geochronologic Constraints
- 10:30 Heizler M, Karstrom K, Timmons JM & Sanders R:**
 Reactivation of Precambrian Fault Networks: a K-Feldspar $^{40}\text{Ar}/^{39}\text{Ar}$ Study
- 10:45 Wong M & Gans P:**
 Constraining the Slip History and Initial dip of Low-Angle Normal Faults using $^{40}\text{Ar}/^{39}\text{Ar}$ K-Feldspar Thermochronology: a Case Study from the Sierra Mazatan Core Complex, Sonora, Mexico
- 11:00 Schwartz J, John B, Cheadle M, Grimes C, Miranda E, Wooden J & Dick H:**
 Inherited Zircon and the Magmatic Construction of Oceanic Crust
- 11:15 Grimes C, John B, Swapp S, Schwartz J, Mazdab F, Schroeder T & Wooden J:**
 U-Pb Dating of Hydrothermal Zircon: Fracturing and Fluid Flow in Mantle Peridotite at the MAR
- 11:30 Xie Z & Chen J:**
 Multi-Stage Evolution of the Orthogneiss from Baizhangyan, North Dabie, China
- 11:45 Yang X-:**
 The Geochemical Characteristics during Mylonitization in Tan-Lu Fault Belt, East China

(Symposium S33 continues on page 35)

Symposium S39 **Room: Administration Auditorium**
**Interaction Along Mineral Grain Boundaries: Diffusion,
Mass Transfer, and the Role of Fluids**

Convenors: **Bruce Watson & Dan Harlov**

- 08:30 Selverstone J:**
KEY Grain-Boundary Fluids, Chemical Transport, and Rheology: An Alpine Perspective and Resulting Questions
- 09:00 Wilbur D & Ague J:**
INV Garnet Morphology and the Kinetics of Deep Crustal Reactions
- 09:15 Luttge A:**
INV Mineral Dissolution Kinetics at Grain Boundaries
- 09:30 Cooper R:**
INV Grain and Phase Boundaries and Viscoelastic Mechanical Response
- 09:45 Evans B:**
INV Hem-Switching, Chemically Induced Grain Boundary Migration, and Rocks
- 10:00 Dohmen R:**
A New Thin Film Approach to Study Grain Boundary Transport in an Incompatible Matrix
- 10:15 Parsons I & Lee M:**
KEY Grain-Boundary and Intra-Crystal Dissolution-Reprecipitation Reactions in Alkali Feldspars
- 10:45 Baxter E:**
INV Importance of Ar, He Transport and Partitioning in Grain Boundaries
- 11:00 Holness M:**
INV On the Process of Dihedral Angle Change
- 11:15 Thomas J, Wark D, Watson B & Jiang Z:**
Quartz-H₂O Dihedral Angles and Crystal Misorientation
- 11:30 Zhang X, Watson B & Cherniak D:**
Oxygen Diffusion 'Fast-Paths' in Titanite Single Crystals
- 11:45 Courty M, Crisci A, Fedoroff M, Leroy E, Mermoux M, Pastol J & Smith D:**
Effects on a Basaltic Surface of an Impact-Derived Hot Fluid Bed (Kirbet-El-Umbachi, Syria)

(Symposium S39 continues on page 44)

Symposium S44 **Room: Albertson 201**
**Lifetime Predictions of Toxic and Radioactive Waste
Disposal and Remediation Schemes: Thermochemical Data,
Theoretical Models and Reaction Transport Codes**

Convenors: **Dave Wesolowski, Jordi Bruno & Rod Ewing**

- 08:30 Nordstrom DK:**
INV Thermodynamic Consistency, Geochemical Codes, and Predictions
- 09:00 Langmuir D & Apte M:**
INV Waste Isolation Strategies for Heavy Metals and Radionuclides in the Subsurface
- 09:15 Richter A, Brendler V & Nebelung C:**
Effects of Data Scatter and Inconsistency in Sorption Modeling
- 09:30 Missana T, Garcia-Gutierrez M, Alonso U, Granizo N, Mingarro M & Martín PL:**
Evolution of the Sorption Studies on a Spanish Bentonite during 8 Years of the FEBEX Project
- 09:45 Redkin A & Wood S:**
Investigation of pH and mCO₂ Influence on Gd³⁺ and UO₂²⁺ Sorption onto Goethite and Nontronite
- 10:00 Hull L, Pepper S & Clark S:**
Adsorption of Lanthanum to Goethite in the Presence of Gluconic Acid
- 10:15 Rahgoshay M, Shafaii Moghadam H & Monsef I:**
Environmental Impacts of Ophiolitic Alteration Products as Natural and Anthropogenic Contamination Sources: An Example of Iranian Ophiolitic Massifs
- 10:30 Mifflin A, Al-Abadleh H, Konek C, Voges A & Geiger F:**
Can Kinetics Tell us More? Cr(VI) Binding to Organic Adlayers at Silica/water Interfaces Studied by Second Harmonic and sum Frequency Generation
- 10:45 Mayes M, Pace M, Fendorf S, Jardine P & Yin X:**
Uranium Hydrogeochemistry of the Hanford Caliche Layer
- 11:00 Siebert C, Möller P, Geyer S & Berger D:**
The Dynamic Hydrochemical Environment of Lake Tiberias, Israel
- 11:15 Otake T, Wesolowski D, Anovitz L, Hayashi K & Ohmoto H:**
Magnetite Transformation to Hematite Under High H₂ Pressure at 150 Degree C
- 11:30 Wilson J, Cressey G, Cressey B, Ragnarsdottir V, Savage D, Cuadros J & Shibata M:**
The Effect of Iron on Bentonite Stability

Symposium S49 **Room: Agricultural Science 106**
**Microbial Mineral Transformations II: Microbially-Induced
Solid Phase Transformations**

Convenors: **Erin O'Reilly & Martial Taillefert**

- 08:30** **Geesey G, Gonzalez-Gil G, Amonette J, Romine M & Gorby Y:**
KEY Modification of Hematite Surfaces during Colonization by a Dissimilatory Fe(III)
Reducing Bacterium Under Controlled Hydrodynamic Conditions
- 09:00** **O'Reilly SE, Furukawa Y, Bickmore B, Kim J, Watkins J & Newell S:**
Dissolution, Precipitation, and Fe(III) Reduction in Experimental Systems with
Nontronite (NAu-1) and *Shewanella oneidensis* MR-1
- 09:15** **Benzerara K, Yoon T, Menguy N, Guyot F, Tylliszczak T & Brown, Jr. GE:**
Nanoscale Environments Associated with Bioweathering of a Mg-Fe-Pyroxene
- 09:45** **Rudolph D, Bates D, DiChristina T, Mizaikoff B & Kranz C:**
Scanning Electrochemical Microscopy (SECM) Studies on Microbial Metal
Respiration using Pt/Hg Amalgam Microelectrodes
- 10:00** **Bargar J, Fuller C, Webb S & Tebo B:**
KEY Nanoparticulate Bacteriogenic Manganese Oxides: Environmental Reactivity and
Structural Chemistry
- 10:30** **Li Y, Zhang CL, Vali H, Cole DR & Phelps TJ:**
Mössbauer Spectroscopy of Extracellular Tabular Magnetite Formed during
Microbial Iron Reduction
- 10:45** **Hansel CM & Fendorf S:**
The Fleeting (Bio)availability of Ferrihydrite
- 11:00** **Tobler NB, Hofstetter TB, Fontana D & Schwarzenbach RP:**
Coupling Biogeochemical Fe(III) Oxide Reduction and Contaminant
Transformation
- 11:15** **Weber K, Thieme J, Larese-Casanova P, Scherer M, Achenbach L & Coates J:**
Green Rust Formation Under Anaerobic Nitrate-Dependent Fe(II) Oxidizing
Conditions
- 11:30** **Quicksall A, Saalfield S, Renshaw C & Bostick B:**
Coupling Sulfide Production and Arsenic Release in Dynamic Systems
- 11:45** **Ginder - Vogel M, Wu W, Gu B, Carley J, Nyman J, Criddle C, Jardine P &
Fendorf S:**
In situ Biological Reduction of Uranium within Fractured Saprolite

Symposium S50 **Room: Albertson 102**
**Mineralogy and Geochemistry of Uranium and Transuranic
Elements**

Convenors: **Michael Schindler & Peter C. Burns**

- 09:30** **Xiaoyong Y, Wei S, Chiyang L, Ying T & Deliang L:**
Potential of Fluids and Migrations of Oil-Gas and Uranium in Ordos Basin,
Northwestern China
- 09:45** **Wellman D, Mattigod S, Arey B, Wood M & Forrester S:**
In situ Identification of Uranium Minerals in Concrete
- 10:00** **Pepper S, Hull L, Bottenus B & Clark S:**
The Interaction of Uranyl-Gluconate Complexes with Hydroxyapatite
- 10:15** **Xu H, Min M & Barton L:**
Uranium Enriched in Carbonised Wood: Role of Microbes on Uranium
Immobilization
- 10:30** **Hua B, Terry J, Deng B & Thornton E:**
Rates of Uranium(VI) Reduction by Hydrogen Sulfide in Aqueous Media: Effects
of Carbonate and pH
- 10:45** **Qafoku N, Zachara J & Liu C:**
Uranium(VI) Desorption from Long-Term Contaminated Sediments
- 11:00** **Sani R, Peyton B, Dohnalkova A & Amonette J:**
Reoxidation of Biologically Reduced Uranium with Fe(III)-(hydr)oxides under
Sulfate-Reducing Conditions
- 11:15** **Ilton E & Heald S:**
Reduction of Uranyl by Trace to Minor Structural Fe(II) in Phyllosilicates
- 11:30** **Fein J, Gorman-Lewis D, Soderholm L, Jensen M & Chiang M-:**
INV Surface Complexation Modeling of U(VI) and Np(V) Adsorption onto the Bacterial
Cell Wall of *Bacillus subtilis*
- 11:45** **Icopini G, Lack J, Hersman L & Neu M:**
The Influence of Metal Reducing Bacteria on Plutonium Speciation

(Symposium S50 continues on page 36)

Symposium S69

Room: Renfrew 112

Subduction Zone Metamorphism. 1. Processing of Geochemical Tracers

Convenors:

Robert King & Tomohiro Usui

22:am
29
08:30 **Iwamori H:**

KEY Forward Modeling of P-T-Deformation Paths of Regional Metamorphic Rocks at Convergent Plate Boundaries

08:45 **Feineman M, Ryerson F & DePaolo D:**

INV Pressure-Temperature Controls on Slab-Derived Fluid Chemistry

09:00 **Spandler C, Mavrogenes J & Hermann J:**

INV Fluid or Melt? Constraining the Slab Component of Arc Magmas using High-Pressure Hydrothermal Experiments on Subducted Sediment

09:15 **Lapen TJ, Johnson CM, Baumgartner LP & Beard BL:**

INV ²³⁸U-²⁰⁶Pb Geochronology of Eclogite-Facies Metamorphism, Monte Rosa Massif, Western Alps, Italy

09:30 **John T, Scherer EE, Haase K & Schenk V:**

INV Does Fluid-Induced Eclogitization of Slab Crust Generate Arc Signatures?

09:45 **Usui T & Nakamura E:**

Sr-Nd-Pb Isotopic Systematics of Basaltic Oceanic Crust Subducted into the Subarc Mantle

10:00 **Brueckner HK, Carswell DA, Griffin WL, Medaris, Jr. LG & Beyer EE:**

Mantle and Crustal Metasomatism of Garnet-Bearing Peridotite in the Western Gneiss Region of the Norwegian Caledonides

10:15 **Katayama I, Nakashima S, Yurimoto H & Maruyama S:**

INV Water Content in Eclogite from the Ultrahigh-Pressure Terrane

10:30 **Bebout G:**

KEY Trench to Subarc: Metamorphic Chemical Flux in Subduction Zones

10:45 **Zack T:**

INV On Fluid and Trace Element Mobility in Eclogite-Facies Rocks

Symposium S70

Room: Renfrew 112

Subduction Zone Metamorphism. 2. Fluids from the Slab to the Surface

Convenors:

Adam C. Simon & Thomas Pettke

11:00 **Grove T:**

KEY Volatile Fluxes from Subducted Lithosphere: Unraveling the Evidence Preserved in Primitive Arc Magmas

11:30 **Webster J, Sintoni MF & De Vivo B:**

INV Mass Transport in S- and Cl-Bearing Magmatic-Hydrothermal Fluids

11:45 **Simon A, Pettke T, Candela P, Piccoli P & Heinrich C:**

The Effect of Volatile Sulfur on Metal Partitioning at Magmatic Conditions

(Symposium S70 continues on page 38)

Symposium S74**Room: Albertson 101****The Geochemistry of Mercury****Convenors:****John Gray & Mark Hines****08:30 Krabbenhoft D:***KEY* Mercury Cycling in the Environment**08:45 Kolker A, Palmer C, Bragg L & Tewalt S:***INV* Mercury in Coal and its Impact on Utility Mercury Emissions**09:00 Gustin M, Engle M, Ericksen J, Xin M, Krabbenhoft D, Lindberg S, Olund S & Rytuba J:***INV* New Insights into Mercury Exchange between Air and Substrate**09:15 Lyons WB, Fitzgibbon TO, Welch KA & Carey AE:***INV* Mercury Geochemistry of the Scioto River, Ohio: Impact of Agriculture and Urbanization**09:30 Shanks W, Balistreri L, Rye R & Schwartz C:***INV* Hydrothermal Mercury in the Yellowstone Lake Ecosystem**09:45 Ridley I:***INV* The Isotopic Composition of Mercury as a Tool in Understanding the Natural and Anthropogenic Cycling of a Highly Toxic Element**10:00 Wiener J:***KEY* Methylmercury in Food Webs in Northern Midcontinental Lakes: Bioaccumulation, Adverse Effects, and Trends**10:15 Barkay T, Schaefer J, Poulain A & Amyot M:***INV* Microbial Transformations in the Mercury Geochemical Cycle**10:30 Hines M & Gray J:***INV* Mercury Transformations in Mine Wastes and Natural Habitats Adjacent to Abandoned Mercury Mines**10:45 Gray JE:***INV* Overview of Mercury Contamination Related to Mercury Mining and Small-Scale Gold Mining Worldwide**11:00 Lechler P:***INV* Sources, Transport, and Fate of Mercury at Some Representative Mining Sites**11:15 Bonzongo JC:***INV* Hydrologic Control on Mercury Biogeochemistry in a Closed River Basin: The Carson River System, Nevada**11:30 Feng X, Qiu G, Li G, Li P & Wang S:***INV* Mercury Emissions from Artisanal Zinc and Mercury Smelting in Guizhou, PR China**11:45 Hunerlach MP, Alpers CN & Marvin-DiPasquale M:***INV* Mercury and Methylmercury Distribution in Sediments Affected by Historical Gold Mining, Sierra Nevada, California

(Symposium S74 continues on page 46)

Symposium S75**Room: CNR 010****The Halogens and their Isotopes in Marine and Terrestrial Aqueous Systems****Convenors:****Glen Snyder & Jean Moran****08:30 Fabryka-Martin J:***KEY* Divergent Behaviors in Global Geochemical Cycling of Bromine and Chlorine**09:00 Mazor E:***INV* Formation Waters are Connate, Meteoric, Saline and their Cl / Br Disclosure Tagging by Brine-Spray on Land**09:15 Amachi S, Fujii T & Muramatsu Y:***INV* Iodide Oxidation and Iodate Reduction by Marine Bacteria**09:30 Hesse R:***INV* Chlorine Stable Isotopes from Passive and Active Continental Margins as Tracers of Advective Fluid Flow**09:45 Wei W, Kastner M & Spivack A:***INV* Chlorine Stable Isotopes in Two Subduction Zones: Nankai Trough and Mariana, and Implication for Fluid-Sediment Interactions and Fluid Flow**10:00 Cecil LD:***INV* Environmental Change Recorded in Mid-Latitude Ice Cores from Southern North America and Central Asia: Comparison of Chlorine-36 and Iodine-129 Profiles and the Implications for Stewardship of the Environment**10:15 Schnabel C, Olive V, Atarashi-Andoh M, Dougans A, Ellam R, Freeman S, Maden C, Stocker M, Synal H & Wacker L:***INV* The Development of $^{129}\text{I}/^{127}\text{I}$ Ratios in Scottish Sea Water**10:30 Rao U, Muramatsu Y, Kruege M & Elmore D:***INV* Incorporation of ^{129}I from Nuclear Sources into Lacustrine Sedimentary Organic Matter: a Case Study in the Great Lakes**10:45 Michel R, Klipsch K, Ernst T, Gorny M, Jakob D, Vahlbruch J, Synal H & Schnabel C:***INV* ^{129}I and ^{127}I in Northern Germany**11:00 Ridgley J & Snyder G:***INV* Duration of Microbial Gas Generation in Upper Cretaceous Reservoirs, Montana and Canada – Interpretation from $^{129}\text{I}/\text{I}$ Ratios**11:15 Fehn U:***INV* Sources of Methane in Continental Margins: ^{129}I Results from Gas Hydrate Systems and Fore Arc Fluids**11:30 Muramatsu Y, Fehn U & Snyder G:***KEY* Behavior of Stable and Radioactive Iodine in the Global Environment

(Symposium S75 continues on page 46)

Symposium S76

Room: Renfrew 126

The Land and Oceans as Regulators of Atmospheric CO₂

Convenors:

Abraham Lerman & Fred T. Mackenzie

08:30 Feely R, Takahashi T & Wanninkhof R:

KEY Sources and Sinks of Carbon Dioxide in the Surface Oceans

09:00 Falkowski P, Fennel K & Follows M:

KEY How the Coupling of the C, N and O Cycles Determines Atmospheric CO₂ and O₂ Concentrations

09:30 Archer D:

INV Fossil Fuel CO₂ in Geologic Time

09:45 White A:

INV Extrinsic versus Intrinsic Controls on Rates of Silicate Weathering and CO₂ Drawdown

10:00 Wallmann K:

INV Cenozoic Carbon Cycling and Climate Change

10:15 Probst JL:

INV The Role of Continental Erosion and River Transports in the Global Carbon Cycle

10:30 Guidry M, Arvidson R & Mackenzie F:

How Tightly Coupled are Seawater Spreading Rates and Seawater-Atmosphere Composition?

10:45 Probst JL & Brunet F:

$\delta^{13}\text{C}$ Tracing of Dissolved Inorganic Carbon Sources in Major World Rivers

22:am

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Symposium S78

Room: Agricultural Science 204

Vapor as a Medium for the Transport of Metals: Implications for Ore Deposit Modeling

Convenors:

A.E. Williams-Jones & Chris Heinrich

08:30 Williams-Jones A, Heinrich C & Migdisov A:

Vapor as a Medium for the Transport of Metals: Implications for Ore Deposit Modeling

08:45 Gonzalez-Hernandez G & Taran Y:

Transport of Elements by High-Temperature and Highly Oxidized Gases from Colima Volcano

09:00 Chaplygin I, Safonov Y, Mozgova N & Yudovskaya M:

New Type of Rare-Metal Mineralization: Deposition of Metals in High-Temperature Vapor System of Kudriavy Volcano, Iturup Island, Kuriles, Russia

09:15 Pokrovski G, Hazemann J, Testemale D, Roux J & Tella M:

KEY Transport of Metalloids by Low-Density Hydrothermal Fluids: Insights from X-Ray Absorption Spectroscopy

09:30 Barnes S, Peregoedova A & Baker D:

Transport of Au, Platinum-Group Elements, Ni and Cu in a S-Vapor

09:45 Rempel KU, Williams-Jones AE & Migdisov AA:

Molybdenum Solubility and Speciation in Water Vapor at Elevated Temperatures and Pressures

10:00 Andrew B:

Experimental Study of Silver Transport in Gaseous Hydrogen Sulfide at 300°C

10:15 Blaine F, Linnen R, Holtz F, Gagnon J & Bruegmann G:

Partitioning and Vapour Transport of Pt at Magmatic Conditions

10:30 Akinfiyev N:

KEY Distribution of Solutes between Coexisting Steam and Water: Test of the New Equation of State

10:45 Lüders V, Rickers K, Banks D & Meston L:

KEY Fluid Inclusion Evidence for Extreme Element Partitioning during Subcritical Phase Separation

11:00 Hanley J, Mungall J, Pettke T, Spooner E & Bray C:

Ore Metal Transport by Hydrocarbon Vapour in the Footwall of the Sudbury Igneous Complex, Canada

11:15 Chi G, Williams-Jones AE, Dube B & Williamson K:

Carbonic Vapor-Dominated Fluid Systems in Orogenic-Type Au Deposits

11:30 Landtwing M, Heinrich C, Pettke T & Halter W:

Bingham: a Mesothermal Cu-Au Deposit Dominated by Vapor Transport of Metals?

11:45 Geiger S, Driesner T, Heinrich C & Matthai S:

Coupled Heat and Salt Transport Around Cooling Magmatic Intrusions

(Symposium S78 continues on page 46)

Sunday May 22nd 2005: Morning Session

Symposium S80**Room: Renfrew 127****Water in the Terrestrial Planets****Convenor:****Michael J. Drake****08:30 Stimpfl M, Drake MJ, Deymier P & Lauretta DS:***INV* Origin of Planetary Water by Adsorption in the Accretion Disk**08:45 Lauretta D & Ciesla F:***INV* Origin of Water by Inward Migration of Phyllosilicates or Hydrous Asteroids**09:00 Krot A & Yurimoto H:***INV* Oxygen Isotopes and Water in the Inner Solar System**09:15 Owen T:***INV* The Contribution of Comets to Water on Mars and Earth**09:30 Brearley A:***INV* The Role of Water in Early Solar System Evolution: Insights from Primitive Chondritic Meteorites**09:45 Grinspoon D & Bullock M:***INV* The History of Water on Venus**10:00 Borg L & Drake M:***INV* Meteoritical Evidence for the Timing of Surface or Near-Surface Liquid Water on Mars**10:15 Treiman A:***INV* Li, Cl, and Br in Martian (Shergottite) Basalts: No Evidence of Water Loss**10:30 Elwood Madden M, Kring D & Bodnar R:***INV* Shock Devolatilization of Terrestrial Impactites: Loss of Fluid Inclusions due to Impact Processing**10:45 Robert F & Chaussidon M:***INV* Oceanic Temperatures Recorded by the Isotopic Compositions of Precambrian Cherts?**Symposium G01****Room: Albertson 102****Analytical Geochemistry****08:30 Parsi Z, Hartog N & Górecki T:**

Molecular Characterization of Natural Organic Matter using Non-Discriminating Flash Pyrolysis

08:45 Wallschläger D & Staley C:

Mass Spectrometric Investigation of Thioarsenate Formation in Waters

(Symposium G01 continues on page 47)

Symposium G02**Room: Renfrew 126****Atmospheric Geochemistry****11:00 Lavric JV, Barnola J, Chappellaz J, Leuenberger MC, Fischer H & Raynaud D:** $\delta^{13}\text{C}$ of Carbon Dioxide in Ancient Air from Ice Core Samples**Symposium G06****Room: Albertson 102****Crystal Chemistry****09:00 Neiva A & Neiva J:**

Geochemistry of Beryl from the Granitic Pegmatite at Namivo, Alto Ligonha, Mozambique

09:15 Rakovan J, Luo Y, Elzinga E, Pan Y, Lupulescu M & Hughes J:

Structural State of Th in Fluoroapatite Determined by Single Crystal XRD and EXAFS

(Symposium G06 continues on page 48)

Symposium S07 **Room: Agricultural Science 106**
Archaea in the Environment: Molecular Signatures Past and Present

Convenors: **Courtney Turich, Katherine H. Freeman & Richard Pancost**

- 14:45** **Pancost R:**
KEY How Widespread are Archaeal Lipids in Sedimentary Systems?
- 15:15** **Hansman R, Aluwihare L, Pearson A, Shah SR & Ingalls A:**
 Metabolic Capabilities of Prokaryotes in the Deep Ocean
- 15:30** **Kormas K, Meziti A, Daehlmann A & de Lange G:**
 Molecular Fingerprinting of Methanogens in Eastern Mediterranean Sea Mud Volcanoes
- 15:45** **Biddle J, Lipp J, Sturt H, Anderson R, Elvert M, Kelly T, Brenchley J, Hinrichs K & House C:**
INV Carbon Isotopic Characterization of Archaea Inhabiting Deeply Buried Sulfate/Methane Transition Zones
- 16:00** **Powers L, Werne J, Johnson T, Hopmans E, Sinninghe Damsté J & Schouten S:**
INV The Development of TEX86 for Continental Paleotemperature Reconstruction: Problems and Promise
- 16:15** **Turich C, Jones AD & Freeman K:**
 A Relationship between Archaeol/Caldarchaeol and Salinity
- Plenary Lecture by the Patterson Medalist** **Administration Auditorium**
- 16:40** **Bruland K:**
 The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

Symposium S09 **Room: Renfrew 111**
Basalt Geochemistry and Mantle Dynamics

Convenors: **Dennis Geist & Dominique Weis**

- 13:30** **Albarede F:**
KEY Help Yourself to Some More Mantle Components! No, Thanks, I'm Fine
- 14:00** **Hoernle K, Hauff F, van den Bogaard P, Werner R & Mortimer N:**
INV The Hikurangi Oceanic Plateau: Another Large Piece of the Largest Volcanic Event on Earth
- 14:15** **Arndt N:**
 The Magmatic Plumbing of Volcanic Plateaus: Petrogenetic and Economic Implications
- 14:30** **Panter K, Blusztajn J, Hart S, Finn C & Kyle P:**
 A HIMU Source in Metasomatised Continental Lithosphere
- 14:45** **Jourdan F, Bertrand H, Schärer U, Blichert-Toft J, Féraud G & Kampunzu H:**
 Geochemical and Sr, Nd, Pb, Hf Isotope Compositions of the Karoo Large Igneous Province in Botswana-Zimbabwe
- 15:00** **Cooper L, Reid M & Bryce J:**
 Pb Isotope Heterogeneity between Olivine-Hosted Melt Inclusions, Eastern Snake River Plain, Idaho
- 15:30** **Weis D, Rhodes JM, Garcia MO & Submarine Mauna Loa Science Team:**
 Isotopic Study of Mauna Loa's Submarine Southwest Rift Mile High Section: Hawaiian Mantle Plume Structure
- 15:45** **Garcia M, Norman M & Pietruszka A:**
INV Assessing Kilauea Volcano's Historical Parental Magma Compositional Variations
- 16:00** **Shimizu N, Kobayashi K, Nakamura E & Kurz M:**
INV Diversity and Evolution of Mantle Sources of the Kilauea Volcano, Hawaii
- Plenary Lecture by the Patterson Medalist** **Administration Auditorium**
- 16:40** **Bruland K:**
 The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

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22:pm

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Sunday May 22nd 2005: Afternoon Session

Symposium S22 **Room: Albertson 201**
Forensic Geochemistry: Current State-of-the-Practice

Convenors: **Richard Hurst & William Motzer**

- 13:30** **Motzer W:**
INV Current State-Of-The-Practice of Applied Forensic Geochemistry within the Environmental Engineering/Consulting Community
- 13:45** **Aggarwal J:**
INV Application of Heavy Stable Isotopes to Forensic Isotope Geochemistry
- 14:00** **Ericson J, Rinderknecht A, Chan T, Kleinman M & Miller G:**
KEY Enamel Biomarker for Assessing and Tracing Heavy Metal Exposure
- 14:15** **Sturchio N, Bohlke J, Gu B, Horita J, Brown G & Hatzinger P:**
INV Environmental Isotope Forensics of Perchlorate
- 14:30** **Johnson T, Bullen T, Ellis A, Sikora E & Kitchen J:**
INV Cr Isotopes as Indicators of Cr(VI) Reduction and Contaminant Sources
- 14:45** **Ball J, Izbicki J, Bullen T & Johnson T:**
 Tracing Sources, Movement, and Fate of Hexavalent Cr in Ground Water using Cr Stable Isotope Variations
- 15:00** **Moran J, Hudson B, Eaton G & Leif R:**
INV Using Tritium-Helium Groundwater Age to Assess Contamination Vulnerability in California
- 15:15** **Bruya J, Benson B & Johnson K:**
INV Fuel/Hydrocarbon Fingerprinting
- 15:30** **Hurst RW:**
INV Estimating the Age of Leaded Gasoline Releases using Stable Lead Isotopes: The ALAS Model
- 15:45** **Hurst R & Schmidt G:**
INV A Forensic Geochemical Technique for Estimating Release Dates of Petroleum Products
- 16:00** **Johnson G:**
KEY Identifying Polychlorinated Biphenyl Sources in Environmental Media
- 16:15** **Haddad R:**
INV Use of Alkylated PAH Source Parameters in Environmental Forensic Studies: Testing the Paradigm
- Plenary Lecture by the Patterson Medalist** **Administration Auditorium**
- 16:40** **Bruland K:**
 The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

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Symposium S29 **Room: Albertson 101**
Geochemistry and Biogeochemistry of Zero-Valent Metals

Convenors: **Brenda J. Little & Paul Tratnyek**

- 13:30** **Tratnyek PG, Nurmi JT, Johnson RL & Bandstra JZ:**
INV Consilience among Disciplines on the (Bio)geochemistry of Zero-Valent Metals
- 13:45** **Devlin JE, Allin KO & Odziemkowski M:**
 The Reactivity and Surface Chemistry of Granular Iron in Various Geochemical Settings
- 14:00** **Lee J, Ray R, Falster A & Little B:**
 Mineralogy of Ferrous Corrosion Products Formed in Natural Seawater
- 14:15** **Amonette J, Sarathy V, Linehan J, Matson D, Wang C, Nurmi J, Pecher K, Penn L, Tratnyek P & Baer D:**
INV Chemistry of Metallic Iron Nanoparticles
- 14:30** **Wilkin R, Su C, Ford R & Paul C:**
INV Long-Term Geochemical Behavior of a Zerovalent Iron Permeable Reactive Barrier for the Treatment of Hexavalent Chromium in Groundwater
- 14:45** **Van Nooten T, Bastiaens L & Springael D:**
 Presence and Impact of Micro-Organisms in Zero-Valent Iron Barriers
- 15:00** **Rebodos R & Vikesland P:**
 Effects of Co-Solutes on Bioaugmented Granular Iron Systems
- Plenary Lecture by the Patterson Medalist** **Administration Auditorium**
- 16:40** **Bruland K:**
 The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

(Symposium S29 continues on page 42)

Symposium S31 **Room: Agricultural Science 204**
Geochemistry of Gem Deposits

Convenors: **Andrea Cade & Lee A. Groat**

- 15:30** **Groat L & Neufeld H:**
Emerald in Canada
- 15:45** **Wise M:**
Distribution and Geochemistry of Gem Tourmaline-Bearing Pegmatites in Western Maine
- 16:00** **Peucat J, Ruffault P, Fritsch E, Simonet C, Lasnier B & Bouhnik-LeCoz M:**
INV A New Geochemical Tool to Separate Basaltic from Metamorphic Blue Sapphires
- 16:15** **Rossmann G, Naung S, Harlow G & Hunt J:**
Painite (CaZrBaAl₉O₁₈): a Second Source in Myanmar and Metasomatic Origins
- Plenary Lecture by the Patterson Medalist** **Administration Auditorium**
- 16:40** **Bruland K:**
The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

(Symposium S31 continues on page 43)

Symposium S33 **Room: Renfrew 125**
Geochronology of Tectonic Processes

Convenors: **Peter Reiners & Randy Parrish**

- 13:30** **Hodges K, Ruhl K, Wobus C & Boyce J:**
KEY Detrital Mineral Thermochronology in Active Fluvial Systems and the Evolution of Modern Orogenic Landscapes
- 14:00** **Cosca M, Mulch A & Putlitz B:**
INV UV-Laser Ablation ⁴⁰Ar/³⁹Ar Geochronology of Tectonic Processes
- 14:15** **Foster D & Gray D:**
INV Growth and Rate of Deformation of an Accretionary Thrust Wedge, Western Lachlan Orogen
- 14:30** **Reiners P, Campbell I, Nicolescu S, Allen C & Garver J:**
Continental-Scale Tectonics: Zircon He-FT-Pb Triple-Dating of Modern River Sediment
- 14:45** **Boyce J, Hodges K, Crowley J, Chatterjee N & Searle M:**
Laser Microprobe (U-Th)/He Thermochronometry of Monazite
- 15:00** **Hendriks B & Redfield T:**
Evidence for Underestimation of Long-Term FT Annealing in Apatite from Natural FT and (U-Th)/He Data
- 15:15** **Persano C, Stuart F, Barfod D, Bishop P & Brown R:**
Constraining Denudation in Scotland by using a Combination of Low Temperature Thermochronometers
- 15:30** **Shuster D, Farley K & Ehlers T:**
Timing of Accelerated Glacial Denudation Constrained by ⁴He/³He Thermochronometry
- 15:45** **Brandon M, Zattin M, Isaacson P, Braun J & Reiners P:**
INV Using Thermochrometry to Image Topographic Evolution in the Northern Apennines, Italy
- Plenary Lecture by the Patterson Medalist** **Administration Auditorium**
- 16:40** **Bruland K:**
The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

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22:pm

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Sunday May 22nd 2005: Afternoon Session

Symposium S50**Room: Albertson 102****Mineralogy and Geochemistry of Uranium and Transuranic Elements****Convenors: Michael Schindler & Peter C. Burns****13:30 Kelly S, Brooks S, Fredrickson J, Rasbury T, Spoetl C, Sturchio N & Kemner K:**

Uranyl-Calcium Coordination in Calcium Carbonate Systems

13:45 Ewing R:*KEY* Spent Nuclear Fuel: Research Needs**14:15 Fayek M, Utsunomiya S, Ewing R & Simmons A:***INV* Natural Uranium Getters in Near Surface Environments at the Nopal I Deposit, Peña Blanca, Mexico**14:30 Catalano J, Wang Z, McKinley J, Zachara J, Heald S & Brown G:***INV* Probing Uranium Speciation in Contaminated Hanford Sediments**14:45 Schindler M, Mandaliev P & Hawthorne F:**

Dissolution of Uranyl-Hydroxy-Hydrate Minerals

15:00 Fortner J, Finch R, Kropf J & Cunnane J:

Crystal Chemistry of Radionuclides in Spent Nuclear Fuel and its Alteration Products

15:15 Ziemann T, Burns P, Soderholm L & Skanthakumar S:

The Crystal Chemistry of Neptunium Sulfates and Phosphates

15:30 Klingensmith A & Burns P: Np^{5+} Incorporation into U^{6+} Phases that Form as Alteration Products of Spent Nuclear Fuel**15:45 Kubatko K & Burns P:***INV* The Crystal Chemistry of Uranyl Peroxide Nanospheres**16:00 Utsunomiya S & Ewing R:**The Epsilon Phase in the UO_2 of the Oklo Natural Reactors**16:15 Neymark L & Paces J:**

Unsaturated-Zone Water/rock Interaction and U-Series Isotope Mobility at Yucca Mountain, Nevada

Plenary Lecture by the Patterson Medalist Administration Auditorium**16:40 Bruland K:**

The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

(Symposium S50 continues on page 45)

Symposium S53**Room: CNR 010****Molecular Computer Simulations of Geological Materials and Processes****Convenor: Andrey Kalinichev****13:30 Sherman D:***KEY* Computational Molecular Modeling of Ions in Aqueous Solutions**14:00 Tunega D, Lischka H & Gerzabek M:***INV* *Ab Initio* Molecular Dynamics of Clay Mineral Surfaces and Interfaces**14:15 Rustad J, Rosso K & Felmy A:***INV* Electron Transfer Reactions in Solution and at Interfaces**14:30 Bylaska E, Valiev M, Bogatko S & Weare J:**

First-Principles Simulation of Solvation Structure and Deprotonation Reactions in Very Nonideal Solutions

14:45 Chialvo A & Horita J:

Isotopic Effect on Phase Equilibria of Pure Fluids and Mixtures: Molecular Simulation, Theory and Experiment

15:00 Stixrude L & Karki B:*INV* *Ab Initio* Molecular Dynamics Simulations of Silicate Liquids at High Pressure**15:15 Matsui M:***INV* Computer Modeling of the Equations of State of Crystals and Melts in the $\text{CaO-MgO-Al}_2\text{O}_3\text{-SiO}_2$ System**15:30 Garofalini S & Zhang S:***INV* Molecular Dynamics Simulations of the Structural and Kinetic Properties of Amorphous Intergranular Films in Alumina**15:45 Tsuchiya T, Tsuchiya J & Wentzcovitch R:***INV* MgSiO_3 Post-Perovskite at D' Conditions**16:00 Jahn S, Aguado A & Madden PA:**

Development of Transferable Interatomic Potentials for Oxides and Silicates using DFT Calculations

16:15 Tossell J & Horbach J:O Triclusters Revisited: Classical MD and Quantum Cluster Results for Glasses of Composition $(\text{Al}_2\text{O}_3)_2(\text{SiO}_2)$ **Plenary Lecture by the Patterson Medalist Administration Auditorium****16:40 Bruland K:**

The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

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Symposium S56

Room: Renfrew 127

New Results from the Robotic Exploration of Mars and Titan and their Implications on Planetary Environmental Conditions and Cosmochemistry

Convenors:

Dirk Schulze-Makuch & James Dohm

13:30 Raulin E, Israel G, Niemann H & Owen T:

KEY The Astrobiological Aspects of Titan: a New Vision from Cassini-Huygens

13:45 Schulze-Makuch D & Grinspoon D:

Biologically Enhanced Energy and Carbon Cycling on Titan?

14:00 Irwin L & Schulze-Makuch D:

Mars and Titan: Assessing the Plausibility of Life on Two Worlds with Similar Features and Exotic Differences

14:15 Baker V:

KEY Mars and Earth: Results of Recent Mars Missions

14:30 Hynek B & McCollom T:

The Past Geochemical Environment of Meridiani Planum, Mars, and its Implications for Astrobiology

14:45 Janes D & Boynton W:

Distribution of Some Elemental Abundances on Mars, Results from the Mars 2001 Odyssey Gamma Ray Spectrometer

15:00 Picardi G:

Subsurface Sounding in "Mars Advanced Radar for Subsurface and Ionosphere Sounding" (MARSIS)

15:15 Anderson R:

INV New Results from the Robotic Exploration of Mars

15:30 Dohm J:

The Tharsis and Elysium Corridor: a Marker for an Internally Active Mars?

15:45 Kargel J:

INV Results from Recent Mars Missions and their Implication to Possible Life

16:00 Aubrey AD, Cleaves HJ, Chalmers JH & Bada J:

Sulfate Minerals as Targets for Biomolecule Detection on Mars

16:15 Fink W, Dohm J, Tarbell M, Hare T & Baker V:

INV Next-Generation Robotic Planetary Reconnaissance Missions: a Paradigm Shift

Plenary Lecture by the Patterson Medalist

Administration Auditorium

16:40 Bruland K:

The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

Symposium S60

Room: Agricultural Science 204

Ore Deposits in their Temporal and Orogenic Framework: New Concepts and Perspectives

Convenors:

Holly Stein & Judith Hannah

13:30 Bingen B, Stein HJ, Corfu F, Hamilton MA, Hannah JL & Henderson IHC:

KEY Molybdenite Deposits: Time Markers for Orogenic Processes, Example from SW Scandinavia

14:00 Sun W, Arculus R, Kamenetsky V & Binns R:

INV Why Golden Fingers Point to the Arc?

14:15 Smithson D & Rowins S:

Reduced I-Type Magmatism and Porphyry Cu-Au Mineralization in the West Central Cascades, WA: The ca. 37 Ma North Fork Deposit

14:30 Stein H:

New Model for the Butte Cu-Mo Porphyry and Polymetallic Vein Deposits, and the Hosting Boulder Batholith, SW Montana, USA

14:45 Kelson C, Crowe D & Stein H:

Geochronology and Geochemical Study of Part of the Battle Mountain - Eureka Trend, Nevada

15:00 Phillips D & Miller J:

Testing Time for the Fool's Clock: $^{40}\text{Ar}/^{39}\text{Ar}$ Dating of Pyrite

15:15 von Quadt A, Peytcheva I, Bolz V & Heinrich C:

Cretaceous Magmatism and Cu-Au Mineralization in the Region of the Apuseni - Banat - Timok - Sredno-Gorie Belt - Constrains from U-Pb Zircon and Re-Os Molybdenite Dating

Plenary Lecture by the Patterson Medalist

Administration Auditorium

16:40 Bruland K:

The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

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22:pm

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Sunday May 22nd 2005: Afternoon Session

Symposium S62 **Room: Agricultural Science 106**
Proteins and Minerals: A Basis for Life-Rock Interaction

Convenors: **Carrick Eggleston & Roy Wogelius**

- 13:30 Oleson T & Sahai N:**
INV Phospholipid Self-Assembly at Oxide Surfaces
- 13:45 Cummings D, Swenson M, Tyler T & Magnuson T:**
INV Comparative Biochemistry of Acidiophilic and Neutrophilic Metal-Reducing Bacteria
- 14:00 Yushkin N:**
 Nonbiogenic Amino Acids in Natural Bitumens and Synthesis in Nature and in Experiments
- 14:15 Khare N, Eggleston CM & Lovelace DM:**
 Surface and Solution Structure of Mitochondrial Cytochrome c
- 14:30 Cervini-Silva J, Gilbert B, Fakra S & Banfield J:**
INV A Molecular Approach Towards Understanding the Biogenic Formation of CeO₂ and its Interactions with Biomolecules
- Plenary Lecture by the Patterson Medalist** **Administration Auditorium**
- 16:40 Bruland K:**
 The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

22:pm

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Symposium S70 **Room: Renfrew 112**
Subduction Zone Metamorphism. 2.
Fluids from the Slab to the Surface

Convenors: **Adam C. Simon & Thomas Pettke**

- 13:30 Marsh B:**
KEY The Island Arc Magmatic System
- 14:00 Pettke T, Kessel R, Schmidt M & Ulmer P:**
 High-P-T Fluids in Diamond Trap Experiments Analyzed Frozen with LA-ICPMS: The Technique
- 14:15 Kessel R, Schmidt M, Pettke T & Ulmer P:**
INV Fluid and Melt Compositions Coexisting with Eclogite at High Pressure and Temperature
- 14:30 Sanchez-Valle C, Sinogeikin SV & Bass JD:**
 Equations of State of H₂O and NaCl-H₂O Fluids from Brillouin Scattering in the Diamond Anvil Cell
- 14:45 Bureau H, Menez B, Valerie M, Somogyi A, Munoz M, Simionovici A, Massare D, Burchard M, Kubsy S & Shaw C:**
INV *In situ* Determination of the Partitioning of Pb, Rb, Sr between Hydrous Melts and Aqueous Fluids at High Pressure and Temperature
- 15:00 Harlov D:**
INV KCl Metasomatism in the Lower Crust: Nature and Experiment
- 15:15 Ague J:**
INV Channelization of Subduction Zone Fluids during Devolatilization
- 15:30 Liebscher A, Wunder B, Schmidt C, Romer R & Heinrich W:**
 Experimental Determination of the Geochemical Cycle of Boron and its Isotopes from the Slab to the Surface
- 15:45 Klemme S, Prowatke S, Hametner K & Günther D:**
INV Trace Element Partitioning between Rutile and Melt with Implications for Element Transfer in Subduction Zones
- 16:00 Ni P, Wang R, Ling H, Jiang S, Qiu J, Zhu X & Xu Q:**
 Fluid Inclusion Study on the Ore-Forming Fluid of Rutile Occurring in Eclogite from CCS D Main Hole
- 16:15 Mayanovic R, Anderson A, Bassett W & Chou I:**
 The Structure of Gd³⁺ Aqua and Chloro Complexes under Hydrothermal Conditions
- Plenary Lecture by the Patterson Medalist** **Administration Auditorium**
- 16:40 Bruland K:**
 The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal Upwelling Regimes

Sunday May 22nd 2005: Afternoon Session

Symposium G07 **Room: Albertson 101**
Environmental Geochemistry/Mineralogy

- 15:15** **Langmuir D, Apte M, King F, Arthur R & Kessler J:**
 Unlikelihood of Localized Corrosion of Nuclear Waste Packages Caused by
 Deliquescent Brines
- 15:30** **van Helvoort P, Griffioen J & Hartog N:**
 Reactivity of Heterogeneous Riverine Sediments to Molecular Oxygen
- 15:45** **Ojeda J, Romero-Gonzalez M, Banwart S, Worrall F, Collins J & Craig P:**
 Variation in Adsorption Parameters with Whole Soil Properties
- Plenary Lecture by the Patterson Medalist** **Administration Auditorium**
- 16:40** **Bruland K:**
 The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal
 Upwelling Regimes

(Symposium G07 continues on page 48)

Symposium G14 **Room: Renfrew 125**
Isotope Geochemistry

- 16:00** **Scoates J, Weis D, Franssens M, Mattielli N, Anell H, Frey F, Nicolaysen K & Giret A:**
 The Val Gabbro Plutonic Suite, Kerguelen Archipelago: Evolution of a Volcanic
 Feeder System in an Oceanic Island
- 16:15** **Blackburn T, Stockli D, Carlson R, Berendsen P, Walker D & Winters N:**
 New (U-Th)/He Age Constraints on the Emplacement of Kimberlite Pipes in North-
 Eastern Kansas
- Plenary Lecture by the Patterson Medalist** **Administration Auditorium**
- 16:40** **Bruland K:**
 The Role of Iron as a Micronutrient Influencing Phytoplankton in Coastal
 Upwelling Regimes

(Symposium G14 continues on page 50)

Symposium S09

Basalt Geochemistry and Mantle Dynamics

- 1 **Chen W, Chen P, Xu X & Zhang M:**
Geochemical and Isotopic Characteristics of Cretaceous Basalts in South China and Constraint on Pacific Plate Subduction
- 2 **Cordier C, Rannou E & Caroff M:**
A New Geochemical Approach to Model Periodically Replenished Magma Chambers: Application to the EPR Axis at 17-19°S
- 3 **Dasgupta R, Hirschmann M & Withers A:**
Near-Solidus Melt Compositions from Natural Carbonated Lherzolite
- 4 **Ferreira P, Murton B & Boulter C:**
Mixing Two Enriched and Distinct Mantle Sources beneath Lucky Strike Segment, 37° N on the Mid-Atlantic Ridge
- 5 **Font L, Pearson G, Davidson J, Macpherson C, Nowell G & Thompson B:**
Evaluating the Relative Roles of Hydrothermal Alteration and Crustal Contamination at a Single Crystal Scale: Sr Isotope Micro-Sampling Study of Eruptive and Intrusive Magmatic Rocks from Skye
- 6 **Hanano D, Weis D, Scoates J & Giret A:**
Small-Scale Heterogeneities in the Enriched Component of the Kerguelen Mantle Plume: Pb-Hf-Sr-Nd Isotopic Constraints from the Kerguelen Baie Charrier Section
- 7 **Henriques F, Weis D & Scoates J:**
Principle Component Analysis of Cenozoic Kerguelen Plume Basalts
- 8 **Huang S, Frey F, Blichert-Toft J, Fodor R & Xu G:**
Depleted Rejuvenated-Stage Source Component in Hawaiian Shield-Stage Lavas
- 9 **Humayun M, Qin L & Brandon A:**
Implications of Mantle Fe/Mn for Mantle Plumes
- 10 **Kheirkhah M & Emami M:**
Geodynamic and Geochemical Characteristics of Quaternary Basaltic Volcanism in the NW of Iran
- 11 **Luguet A, Macpherson CG, Pearson DG & Hickey-Vargas R:**
Re-Os and PGE Study of Philippine Sea Plate Ocean Island Basalts: Constraining Mantle Sources
- 12 **Luttinen A & Huhma H:**
Source Characteristics of Jurassic Ferropicrites from Dronning Maud Land, Antarctica
- 13 **Madureira P, Moreira M & Mata J:**
The Azores Hotspot: a Lower Mantle Origin for Terceira Magmas as Shown by Ne Isotopic Data
- 14 **Millet M, David K, Bosq C, Schiano P & Doucelance R:**
Assessing Shallow Level Interactions in OIB Geochemical Signature; Application to São Nicolau Island, Cape Verde
- 15 **Mukhopadhyay S & Lassiter J:**
Helium Isotopic Measurements from Raivavae and Rapa, Cook-Austral Islands: New Insights into the Nature of the HIMU Component

Posters

- 16 **Shafer J, Neal C & Brandon A:**
The Platinum Group Element and Re-Os Isotopic Composition of the Emperor Seamount Chain
- 17 **Siddiqui RH, Khan A, Jan Q & Haider N:**
Geochemistry of Late Cretaceous Lava Flows from a Neo-Tethyan Fossil Oceanic Island Arc: The Raskoh Arc, Balochistan, Pakistan
- 18 **Sunder Raju PV, Babu E & Mudholkar A:**
Petrography of Basalt between Lat 4deg.06' - 3deg.50' N from Carlsberg Ridge, Indian Ocean
- 19 **Xie G, Mao J, Hu R, Li R & Cao J:**
Secular Evolution of Cretaceous-Cenozoic Lithosphere Mantle beneath the Cathaysia Block: Geochemical Evidence for Temporal Variations in Basaltic Magmatism
- 20 **Xie X, Xu X, Zou H, Jiang S, Zhang M & Qiu J:**
Early J2 Basalts in SE China: The Incipience of Large-Scale Late Mesozoic Magmatism
- 21 **Xu G, Frey F, Clague D, Weis D & Beeson M:**
Petrogenetic Similarities of East Molokai and Younger Kea-Trend Hawaiian Volcanoes as they Migrate away from the Hotspot
- 22 **Zhao Z, Zhang H, Yu X, Mo X & DePaolo D:**
Cenozoic Kamafugite in West Qinling, China: Age and Geochemistry

Symposium S19

Posters

Dissolved Organic Matter and its Interaction with Trace Metals and Organic Pollutants in Natural Waters

- 23 **Fu P, Wu F & Liu C:**
Fluorescence Characterization of Dissolved Organic Matter in a City River of Southwestern China
- 24 **Grybos M, Gruau G & Davranche M:**
Mechanisms of Organic Matter and Rare Earth Element Release in Soils: Experimental Evidence
- 25 **Pourret O, Gruau G, Davranche M & Dia A:**
Organic Speciation of Rare Earth Elements in Natural Waters: Comparing Speciation Models and Ultrafiltration Experiments

(Symposium S19 continues on page 55)

Symposium S22**Posters****Forensic Geochemistry: Current State-of-the-Practice**

- 26 **Dória A, Guedes A & Noronha F:**
The use of micro-Raman Spectroscopy as a Fingerprint in a Forensic Investigation
- 27 **Schuster P, Krabbenhoft D, Naftz D, Cecil D, Olson M, DeWild J, Susong D & Green J:**
A 270-Year Ice Core Record of Atmospheric Mercury Deposition to Western North America: An Indicator of a Partial Success of the United States Clean Air Act of 1970

Symposium S25**Posters****Geochemical Evolution of Silicic Magma Systems**

- 28 **Badanina E, Thomas R & Syritso L:**
Evolution of Silicate Melts during Formation of the Granite-Pegmatite System of the Malkhany Pegmatite Field, Russia (A Case Study of Melt Inclusions in Quartz)
- 29 **Brunstad KA, Wolff JA & Watkinson AJ:**
Making Space for Magma beneath the Jemez Mountains Volcanic Field: Implications for Chemical Diversity
- 30 **Buchwaldt R, Tucker RD & Dymek RF:**
Geochemistry and Geochronology of a Miocene Volcanic Suite from Mt. Tsaratanana, Northern Madagascar
- 31 **Cathey H & Nash B:**
Polymodal Compositions in Large Volume Rhyolite Magmas of the Miocene Yellowstone Hotspot, USA
- 32 **Hickes H, Larson P, Wolff J & Vervoort J:**
Sr-Nd-Pb-O Isotope Geochemistry of a Quaternary, Caldera-Forming, Phonolitic Eruptive Sequence; the Diego Hernández Formation, Tenerife, Canary Islands (Spain)
- 33 **Jiang Y, Jiang S, Ling H & Dai B:**
An Enriched Mantle-Derived Adakitic Granite-Porphyry in the India-Tibet Continent Collision Setting
- 34 **Kemp T, Paterson B & Hawkesworth C:**
A Coupled Lu-Hf and O Isotope in Zircon Approach to Granite Genesis
- 35 **Liu Y, Anderson A, Wilson C, Davis A & Steele I:**
'Restitic' Quartz and its Melt Inclusions: A Record of Assimilation/Elting Processes
- 36 **Ren M, White J & Parker D:**
Comprehensive Alkali Feldspar/Melt Trace-Element Partitioning Models for Silicic Magmas
- 37 **Tirumala S:**
Three Dimensional Model in the Evolution of Cuddapah Alkaline Province Andhra Pradesh India-Geochemical Perspective

- 38 **Watanabe S, Widom E, Wallenstein N & Snyder D:**
The Evolution of Chemically Zoned Trachyte Deposits: Fogo Volcano, São Miguel, Azores
- 39 **Wolff J, Olin P & Knaack C:**
LA-ICPMS Studies of Microscale Trace Element Variations in Zoned Minimum-Melt Magma Systems

(Symposium S25 continues on page 55)

Symposium S29**Posters****Geochemistry and Biogeochemistry of Zero-Valent Metals**

- 40 **Bokermann C, Steiof M & Benedde M:**
Geochemical Dynamics in Fe(0)-PRB's: H₂ Evolution and Passivation
- 41 **Krupka K, Parkhurst MA, Arey B & Jenson E:**
Uranium Oxides Generated from Armored Vehicles Perforated by Ammunition Composed of Depleted Uranium Metal
- 42 **Phillips D, Watson D, Gu B, Roh Y & Choi S:**
Mineral Precipitation and Corrosion in a Long-Term Zero-Valent Iron Reactive Barrier

Symposium S30**Posters****Geochemistry and Geochronology of the Cascade Volcanic Arc**

- 43 **Evarts R:**
Cascade Volcanic Arc of Southern Washington: The Early Years
- 44 **Salisbury M, Bohrsen W & Clynne M:**
Geochemical Profiling, Nomarski Imaging, and Crystal Size Distribution Analysis of Mixed Magmas from Lassen Peak, CA
- 45 **Sherrod D & Conrey R:**
A 7400-Sample Geochemical-Geospatial Database for Oregon Cascade Range Volcanic Rocks
- 46 **van Soest M, Mariner R & Evans W:**
Helium Isotope Systematics in Geothermal Fluids of the Cascade Volcanic Arc
- 47 **Woods M, Streck M & Garnder C:**
Compositional Relationships between Mafic Inclusions and Host Andesite at Mount Hood (Oregon), Cascade Range, USA

(Symposium S30 continues on page 56)

Symposium S31

Geochemistry of Gem Deposits

- 48 **Cade A, Dipple G & Groat L:**
Geochemical Study of the Kimmirut Sapphire Occurrence, Baffin Island, Canada
- 49 **Gaillou E, Rondeau B, Fritsch E, Bouhnik-Le Coz M, Cornen G & Ostroumov M:**
Toward a Geochemistry of Opals
- 50 **Gunter M, Mabbutt W, Miura E & Rossman G:**
Asterism in the Idaho Star Garnet
- 51 **LeCheminant A, Groat L, Mortensen J, Gertzbein P & Rohtert W:**
Sapphires from Kimmirut, Baffin Island, Nunavut, Canada
- 52 **McManus C, De Lucia F, Harmon R, McMillan N & Whitmore R:**
Trace Element Geochemistry of Gem Beryl
- 53 **Turner D, Groat L & Wengzynowski W:**
Mineralogical and Geochemical Study of the True Blue Aquamarine Showing, Shark Property, Southern Yukon

Symposium S33

Geochronology of Tectonic Processes

- 54 **Boztug D, Jonckheere RC, Enkelmann E, Ratschbacher L & Wagner GA:**
Geodynamic Implications of Rapid Denudation of the Granitoids at about 50 and 20 Ma in the Eastern Pontides, Turkey: Apatite Fission-Track Results
- 55 **Chen W, Zhang Y & Sun G:**
Subduction Times of Oceanic Crust along the Jinshajiang Suture Zone, Tibetan Plateau, SW China
- 56 **Gao T, Tang J & Zheng Y:**
Ar-Ar Dating for Greenschist-Facies Metavolcanics in the Dabie Orogen: Implication for the Accretionary Wedge of Continental Subduction
- 57 **Han D, Chen W, Zhang Y & Wang Y:**
Ar-Ar Chronology Study of the Qiugemingtashi-Huangshan Ductile Shear Zone, Xinjiang, NW China
- 58 **Hourigan J, Reiners P, Brandon M & Plank T:**
Laser-Ablation ICP-MS Zonation-Dependent Alpha-Ejection Correction of Zircons in (U-Th)/He Chronometry
- 59 **Jin G, Chen W, Zhang Y & Sun G:**
Shear Deformation Ages of the Xianshuihe Fault Zone in SE Tibetan Plateau
- 60 **Karlsson C:**
Provenance of the Middle Jurassic Strata of the Tornquist Shear Zone in Southern Sweden

Posters

- 61 **Kudryashov N, Apanasevich E & Delenitzin A:**
U-Pb Zircon and Sm-Nd Data for Rocks of the Murmansk Domain (Kola Peninsula, NE Baltic Shield)
- 62 **MacPhee D, Bowring S & Reiners P:**
Combined (U-Th)/He and U-Pb Thermochronometry of Rift-Flank Exhumation in East-Central Africa
- 63 **Mahlen N, Skora S, Johnson C, Baumgartner L, Lapen T, Beard B & Pilet S:**
Lu-Hf Geochronology of Eclogites from Pfulwe, Zermatt-Saas Ophiolite, Western Alps, Switzerland
- 64 **McClelland W, Vervoort J, Oldow J, Watkinson AJ & Sha G:**
Grenville-Age Metamorphism on the Western Margin of Laurentia, Northern Idaho: Evidence from Lu-Hf Garnet Geochronology
- 65 **Shu L:**
Tectonic Basement of South China
- 66 **Stuart F, Persano C, Balestrieri ML & Bishop P:**
Apatite Fission Track and (U-Th)/He Thermochronometers Constraints on the Development of Two High Elevation Passive Margins
- 67 **Sun T, Zhou X, Wang Z, Chen P, Li H, Zhou H & Shen W:**
Petrogenesis of Mesozoic Strongly Peraluminous Granites in South China: Implication for Tectonic Domains Transform
- 68 **Tang J, Zheng Y, Wu Y & Gong B:**
SHRIMP Zircon U-Pb Dating for Impure Marbles in the Jiabei Terrane of East-Central China: Implication for its Tectonic Affinity
- 69 **Yudin D, Travin A, Khromykh S, Vladimirov A, Mekhonoshin A & Volkova N:**
Tectonothermal Evolution of Olkhonskaya Collision System: Constraints from $^{40}\text{Ar}/^{39}\text{Ar}$ Data on Granite Veins Sealed Inside Ultramafic Bodies
- 70 **Zhang X & Singer B:**
 $^{40}\text{Ar}/^{39}\text{Ar}$ Cooling Ages from a Vertical Transect Through the Patagonian Batholith 46° S, Chile
- 71 **Zheng Y, Wu Y & Li Y:**
Radiometric Dating for the Timescale of UHP Metamorphism in the Dabie Orogen of China
- 72 **Zhou L & Gao S:**
Geochemistry and Implications of Clastic Sedimentary Rocks of the Baiyun-Zhushui Subunit from the South Qinling Orogenic Belt
- 73 **Zhu W:**
Mesozoic-Cenozoic Exhumation History of North Tianshan, Northwest China: Constrains from Fission Track Analysis

Symposium S35**Posters****High-Precision Geochronology, Intercalibration, and Absolute Time-Markers in the Geologic Record and the EARTHTIME Project**

- 74 **Aciego S, DePaolo D, Kennedy B & Christensen J:**
U-Th/He Dating of Basalt
- 75 **Cai J, Chen W & Zhang Y:**
Study of the $^{40}\text{Ar}/^{39}\text{Ar}$ Age and Ar Isotope Distribution of Phengite in High Pressure Orthogneiss (the Surrounding Rock of the Qinglong-Shan Eclogite, East China)
- 76 **Deino A, Glen J, Kingston J & Hill A:**
INV Precessional Climatic Signal in the Plio-Pliocene Chemeron Formation, Central Kenya Rift
- 77 **Ericson JE, Rauch F & Dersch O:**
Quartz Hydration Dating: a New Mineral Geochronological Technique
- 78 **Krumrei T, Villa IM, Marks M & Markl G:**
Estimating $\lambda(^{40}\text{K})$ by U-Pb and $^{39}\text{Ar}/^{40}\text{Ar}$ Dating of the Peralkaline Ilímaussaq Complex, Greenland
- 79 **Ovtcharova M, Bucher H & Schaltegger U:**
Calibration of the Early Triassic Biotic Recovery: New U/Pb Zircon Ages from South China
- 80 **Parrish R, Monaghan A & Pringle M:**
New High Precision Zircon Ages from the Carboniferous of Scotland and their Implications for the Systematic Bias between U-Pb and $^{40}\text{Ar}/^{39}\text{Ar}$ Dating Techniques
- 81 **Pringle M & Chambers L:**
Paleocene Timescale Miscalibration: Fact or Fiction?
- 82 **Rotenberg E, Davis D & Amelin Y:**
Determination of the ^{87}Rb Decay Constant by ^{87}Sr Accumulation
- 83 **Schmitz M, Davydov V, Snyder W, Ramezani J & Bowring S:**
INV New ID-TIMS U-Pb Zircon Ages for the Carboniferous-Permian Boundary Sections of the Southern Urals, Russia, Kazakhstan
- 84 **Sierralta M, Melcher F & Frechen M:**
Characterising and U-Series Dating (TIMS) of Travertine from Hungary
- 85 **Smith M, Singer B & Carroll A:**
On the $^{40}\text{Ar}/^{39}\text{Ar}$ Age of Biotite in Green River Formation Ash: The Advantages of Incrementally Heating Single Crystals with a Laser
- 86 **Zhang Y, Chen W, Liu D, Ji Q & Song B:**
Ar-Ar and SHRIMP U-Pb Age Evidence of the Daohugou Fossil-Bearing Beds in Ningcheng, Inner Mongolia, NE China

(Symposium S35 continues on page 56)

Symposium S38**Posters*****In situ* Ancient Biomolecules and their Isotopic Signals: Clarkia and Beyond**

- 87 **Green Nylan N, Zinniker D, Denisevich P, Moldowan JM & Ingle JC:**
Molecular Records of Northern California Vegetation Change

(Symposium S38 continues on page 57)

Symposium S39**Posters****Interaction Along Mineral Grain Boundaries: Diffusion, Mass Transfer, and the Role of Fluids**

- 88 **Centeno J, Ramirez A, Colina A & Blanco A:**
Dissolution of Oil Well Cement in Presence of $\text{CO}_2/\text{H}_2\text{S}$ under HTHP
- 89 **Hua R, Zhang Z & Ji J:**
Geochemical Feature of Chlorites in No. 201 and No. 361 Uranium Deposits, South China

Symposium S43**Posters****Kinetics and Metamorphic Processes: A Session in Honor of the Dana Medalist Bill Carlson**

- 90 **Cherniak D:**
Yb and Y Diffusion in Grossular Garnet
- 91 **Goeke E, Foster CT & Baumgartner L:**
Garnet Grain Distribution along a Pelitic Eclogite to Amphibolite Path: Adula Nappe, Switzerland
- 92 **Labotka T, DeAngelis M & Cole D:**
Breakdown of Dolomite in H_2O -Rich Fluid: An Experimental Study
- 93 **Nabelek P, Labotka T, Helms T & Wilke M:**
Fluid-Mediated Mineral Consumption and Growth in Polymetamorphosed Metapelites of the Black Hills, South Dakota
- 94 **Tinkham DK & Pattison DRM:**
Equilibrium and Fractional Crystallization in Prograde Metamorphism Revisited

(Symposium S43 continues on page 57)

Symposium S50

Mineralogy and Geochemistry of Uranium and Transuranic Elements

- 95 **Bond D, Davis J & Zachara J:**
Chemical Factors Controlling U(VI) Mobility in a Hanford Aquifer
- 96 **Giesting P, Porter N & Burns P:**
Crystal Structure of Uranium Oxalates
- 97 **Solovitch-Vella N, Pourcelot L, Froidevaux P, Gauthier-Lafaye F, Stille P & Aubert D:**
Comparative Migration Behaviour of ¹³⁷Cs, ⁹⁰Sr, ²⁴¹Am and ²³⁹⁺ ²⁴⁰Pu in Soils: Examples of Forest Soil of Vosges and Wetland of Mercantour Areas (France)
- 98 **Wang X, Tuo J, Li Z & Yan H:**
Distribution of Radioactive Uranium and Radon in Sedimentary Environments

Symposium S60

Ore Deposits in their Temporal and Orogenic Framework: New Concepts and Perspectives

- 99 **Dayal A:**
Geochemistry of Banded Iron Formation from Vanivilas Sagar, Karnataka, India
- 100 **Drona SS & Subramanian NC:**
Epigenetic Gold Mineralisation in BIFs, Gadag Schist Belt, Western Dharwar Craton, South India
- 101 **Gregory M, Keays R, Wilde A & Schaefer B:**
Preliminary Re-Os Dating of the Mt Isa Copper Ores, NW Queensland
- 102 **Hannah JL, Stein HJ & Bekker A:**
Atmospheric Evolution and Metallogenesis: Cycling of Redox-Sensitive Metals
- 103 **Harris C, Pettke T, Rosu E, Seghedi I & Heinrich C:**
Magma Genesis and Cu-Au Ore Formation (Apuseni Mountains, Romania) in Light of Pb, Sr and Nd Isotopic and Chemical Trends
- 104 **Karami Z & Houshmandzade A:**
Epithermal Gold District in Southeast Iran
- 105 **Lentz D:**
Mineral Stabilities during Deformation-Induced Mass Transfer: Implications for Alteration and Sulfide Parageneses and Saturation in Auriferous Shear Zones
- 106 **Li Z, Wang J, Li B, Liu W & Shi Z:**
Carbon, Oxygen, and Strontium Isotope Investigation of MVT Pb-Zn Deposits in Kangdian Area, China: Implication for Ore Genesis
- 107 **Mikulski S, Markey R & Stein H:**
The First Re-Os Ages of Auriferous Sulfides from European Variscides

Posters

- 108 **Ponomarchuk V, Sotnikov V & Gimon V:**
Geochronological Heterogeneity of Porphyry Rocks from the Triassic and Jurassic Cu-Mo Deposits of Siberia and Mongolia
- 109 **Wang J, Li Z & Li C:**
The La-La Iron-Oxide (Cu-Au-REE) Deposit, China: REE Mineralization
- 110 **Wang Y, Mao J, Feng J, Yang F & Li H:**
Structural Constraints on the Genesis of Dashankou Gold Deposit in the Southwest Tianshan, Xinjiang, NW China

Symposium S72

The Bacterial Surface and its Role as a Reactive Interface

- 111 **Dohnalkova A, Kennedy D, Marshall M, Gorby Y, Elias D & Fredrickson J:**
Imaging and Analysis of Biominerals and Nanostructures Associated with Bacterial Membranes
- 112 **Ginn B & Fein J:**
Metal Adsorption onto Bacterial Cell Walls: Testing Universal Adsorption Behavior over a Wide Range of Bacterial Diversity
- 113 **Lalonde S, Konhauser K & Owttrim G:**
The Electrochemical Variability of Cyanobacterial Surfaces
- 114 **Larese-Casanova P, Leonardo M & Scherer M:**
Fe(II) Adsorption at the Cell-Water Interface: From Macroscopic Observations to Spectroscopic Measurements
- 115 **Mishra B, Kelly S, Fein J, Boyanov M, Kemner K & Bunker B:**
Cd Adsorption onto *Bacillus subtilis* Bacterial Cell Walls: Integrating Isotherm and EXAFS Studies
- 116 **Ngwenya B:**
Stimulation of Cell-Surface Catalysed Cr(VI) Reduction by DOC during Microbial Cell Lysis
- 117 **Omoike A & Chorover J:**
Depth Profiling Adsorption of Extracellular Polymeric Substances (EPS) from *Pseudomonas aeruginosa* (PAO1) onto Hematite: A Variable Angle ATR-FTIR Spectroscopic Approach
- 118 **Phoenix V & Beveridge T:**
Bacterial Surface Charge Heterogeneity: Implications for Cell-Metal/Mineral Interaction
- 119 **Reed D, Rittmann B & Songkasiri W:**
Biosorption of Neptunium (IV) and Neptunium (V) on Soil Bacteria

(Symposium S72 continues on page 90)

Symposium S74**The Geochemistry of Mercury**

- 120 Al T, MacQuarrie K, Fox D & Maprani A:**
Mercury Loss from Stream Water by Evasion and Sedimentation
- 121 Gustin M, Chavan R, Stamenkovic J, Erickson J, Brown S, Saito L, Dennett K, Marchand E & Donaldson S:**
The Potential for Methyl Mercury Production in Constructed Wetlands and a Riparian Setting
- 122 Hissler C & Probst J:**
Mercury Dynamic in a Mountainous Catchment Polluted by Chlor-Alkali Activity (Alsace, France)
- 123 King S, Krabbenhoft D, Nordstrom DK, Striegl R & Hinman N:**
Mercury Speciation in Water and Microbial Mats of Yellowstone National Park Hot Springs
- 124 Kritek K, Klaue B, Blum J & Barkay T:**
Biological Mercury (Hg) Isotope Fractionation
- 125 Neumann K & Bonzongo J:**
Mercury in the Wabash River, Indiana: a Preliminary Assessment
- 126 Shaw S, Al T & MacQuarrie K:**
Mercury Mobilization to the Aquatic Environment from Cyanide-Rich Gold Mine Tailings
- 127 Telmer K & Spence J:**
Dissolved, Adsorbed, Organic Bound and Mineral Bound Mercury Transport by Rivers, British Columbia, Canada: The Role of Rock Weathering

Symposium S75**The Halogens and their Isotopes in Marine and Terrestrial Aqueous Systems**

- 128 Aldahan A, Alfimov V & Possnert G:**
The ¹²⁹I Anthropogenic Budget: Sources and Sinks
- 129 Atarashi-Andoh M, Schnabel C, Cook G, Dougans A, Ellam R, Freeman S, MacKenzie A, Maden C, Olive V & Sheng X:**
¹²⁹I/¹²⁷I Ratios in Surface Waters of the English Lake District
- 130 Brown C, Geiszler K & LeGore V:**
Extraction and Quantitative Analysis of Iodine in Solid Matrices
- 131 Doi T, Muramatsu Y, Matsumoto R, Takeuchi R, Tomaru H & Fehn U:**
Depth Profile of Iodine and Bromine in Pore Waters Collected from the Nankai Trough

Posters

- 132 Fehn U, Snyder G & Dickens G:**
The Marine Iodine System as a Proxy for Global Deposition of Organic Carbon
- 133 Fitoussi C, Raisbeck G & Lunney D:**
Extraction of Microgram Quantities of Iodine for ¹²⁹I/¹²⁷I AMS Measurements in Marine Sediments
- 134 Gieskes J:**
Halide Systematics in Pore Waters of Hydrothermal Sediments Some Observations
- 135 Lu Z, Fehn U & Tomaru H:**
Pore Water Iodine Concentrations and ¹²⁹I/I Ratios of the Hydrate Ridge (ODP 204): Implication for the Origin of Gas Hydrates
- 136 Lyons WB, Dowling C, Welch KA, Synder G, Poreda RJ, Doran PT & Fountain A:**
INV Dating Water and Solute Additions in Ice-Covered Antarctic Lakes
- 137 Moran J, Hu Q, Nelson E & Zhao P:**
Experimental Results from Iodine Speciation and Transport Studies
- 138 Schwehr K, Santschi P, Moran J & Elmore D:**
Near-Conservative Behavior of ¹²⁹Iodine in the Orange County Aquifer System, California
- 139 Shaw G, Hudson GB, Moran J, Nimz G & Conklin M:**
Age-Dating Groundwater Discharge in the Merced River Basin, California using Noble Gasses and Chlorine-36
- 140 Tomaru H, Fehn U, Snyder G & Matsumoto R:**
Iodine Distribution in Pore Fluids Associated with Methane Plumes in the Sea of Japan

Symposium S78**Vapor as a Medium for the Transport of Metals: Implications for Ore Deposit Modeling**

- 141 Voronin M, Akinfiyev N & Zotov A:**
Solubility of Chlorargyrite AgCl_{cr} in Low Density Aqueous Fluid at 400 - 425°C; and 50 - 1000 bar
- 142 Nikolaeva I & Bychkov A:**
Experimental Study of Boron Transport in Vapor Phase to 200°C
- 143 Yudovskaya M, Distler V, Chaplygin I & Mokhov A:**
Extreme Fractionation of REE and Some Transition Metals in the Natural High-Temperature Vapor Systems

Posters

Symposium S83**Posters****Kinetics of Water-Rock Interactions - Bridging Time and Length Scales**

- 144 **Pierce E, Reed L, Shaw W & Icenhower J:**
Effect of Al/B Ratio on the Dissolution of Nepheline Glass, $\text{Na}_3(\text{Al}, \text{B})_{1-4}\text{Si}_4\text{O}_{16}$
- 145 **Washton N, Brantley S & Mueller K:**
Dissolution Rate Dependence on Reactive Surface Sites
- 146 **Zhao Z, Zheng Y & Wei C:**
Kinetics of Oxygen Isotope Exchange between Water and Minerals from Mesozoic A-Type Granites in China

Symposium S84**Posters****Effects of Metasomatism**

- 147 **Beccaluva L, Bianchini G, Bonadiman C, Nowell G, Pearson G, Siena F & Wilson M:**
The Metasomatic History of the Lithospheric Mantle beneath NE Spain
- 148 **Coltorti M, Bonadiman C, Hill PG, Paludetti L & Upton BGJ:**
Metasomatic Processes of Paleozoic Lithospheric Mantle of Scotland Terranes
- 149 **Gaspar M, Knaack C, Meinert L & Ottonello G:**
REE Distribution in Grandites from the Crown Jewel Gold Skarn Deposit: a LA-ICP-MS Study
- 150 **Linhoff B, Schmitz M & Shirey S:**
Geochemistry and Petrogenesis of a South African Diamondiferous Eclogite
- 151 **Matsumoto T:**
Tracing Metasomatic Agents by Noble Gas Isotopes
- 152 **Sreenivas B & Padmakumari VM:**
Effects of K-Metasomatism on the REE Compositions of Precambrian Aravalli Paleosols, Northwestern India
- 153 **Tomlinson E, De Schrijver I, De Corte K, Van Haecke F & Moens L:**
A Synthesis of Diamond and Inclusion Trace Element Studies
- 154 **Zhao K-, Jiang S-, Nakamura E, Moriguti T, Jiang Y- & Ling H-:**
The Behavior of Boron in Hydrothermal Alterations of Granites

Symposium G01**Posters****Analytical Geochemistry**

- 155 **Delaney J, Dyar MD, Gunter M, Sutton S & Lanzirotti A:**
Geometric Constraints of *in situ* Synchrotron micro-XANES Determinations of Oxidation State
- 156 **Dyar MD, Delaney J, Gunter M, Sutton S & Lanzirotti A:**
Transmission and Fluorescence Mode MicroXAS Analysis of Oriented Mineral Grains
- 157 **Frei D, Harlov D, Dulski P & Rønso J:**
Apatite from Durango (Mexico) – A Potential Standard for *in situ* Trace Element Analysis of Phosphates
- 158 **Kieffer B, Weis D, Maerschalk C, Barling J, Dietrich-Sainsaulieu E, Williams G, Hanano D, Mahoney JB, Friedman R & Pretorius W:**
High-Precision Sr, Nd, Pb and Hf Isotopic Characterization of USGS Reference Materials by MC-ICPMS and TIMS
- 159 **Kim K, Lee S, Yang M & Chun S:**
Preparation of Korean Granite Reference Material (KG1): Its Homogeneity, Major and Rare Earth Element Composition
- 160 **Kusakabe M & Matsuhisa Y:**
SMOW-Scale for Isotopic Ratios of NBS-28 Quartz and Some Other Reference Silicate Minerals
- 161 **Martin A:**
Standardless XRF Analysis for LOI-Rich Rock Samples by Scatter Fundamental Parameter Method
- 162 **Tuttas D, Bouman C & Schwieters J:**
Total Sample Evaporation of ng-Sized Li Samples using the Finnigan TRITON Thermal Ionization Mass Spectrometer in Static Mode
- 163 **Wills J, Hamester M & Rottmann L:**
ELEMENT XR: Increased Linear Dynamic Detection Range Sector Field ICP-MS for Geological Applications
- 164 **Yan B, McJunkin T, Stoner D & Scott J:**
Mineral Identification in Basalts using Automated Mass Spectral Data Analysis

Symposium G03

Posters

Biogeochemistry

- 165 **Chambers N & Baham J:**
Fe Isotope Geochemistry in Coastal Dune Pore Waters and Associated Seeps
- 166 **Flores G & Childers S:**
Microbial Oxidation of Arsenite in Geothermal Waters
- 167 **Kim Y, Ueda S, U.Go C, Kawamura Y & Katase T:**
Relationship between Sediment and Lavers Isotope Ratios $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) and Recent Decline of Biological Productivity in Ariake Sea, Japan
- 168 **Lengke M, Fleet M & Southam G:**
Bioaccumulation of Gold by Filamentous Cyanobacteria at 25-200 C
- 169 **Plymale A, Fredrickson J, Zachara J, Kennedy D, Kukkadapu R & Dohnalkova A:**
Biogeochemical Redox Transformations of Technetium-99 in Hanford and Oak Ridge Sediments
- 170 **Shao S & Zheng B:**
Biogeochemistry of SE in Hexi Corridor, Northwestern China
- 171 **Shuxun S & Baoshan Z:**
Biogeochemistry of Selenium in Hexi Corridor, Gansu Province, Northwest China
- 172 **Suchi E & Ostertag-Henning C:**
A Palaeozoic Nitrogen Isotope Record

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Symposium G05

Posters

Crystallography

- 173 **Deore S, Mazeina L, Navrotsky A, Fakra S & Tamura N:**
Size-Structure Relationship of β -Akaganeite
- 174 **Gatta GD, Nestola F & Boffa Ballaran T:**
Elastic and Structural Behaviour of Analcite at High Pressure
- 175 **Nasdala L, Glinnemann J, Harris JW, Brenker F & Hofmeister W:**
Strain Patterns and Growth Textures around Inclusions in Diamond

Symposium G06

Posters

Crystal Chemistry

- 176 **Abre P, Cingolani C, Zimmermann U & Cairncross B:**
Chromites from Upper Ordovician Strata of the Precordilleran Terrane as Tracer of Pre-Ordovician Oceanic Crust in Central Argentina
- 177 **Princivalle F, Halenius U, Lenaz D & Skogby H:**
MgCr₂O₄ - MgFe²⁺O₄ Characterisation: Single Crystal XRD, Mössbauer and Optical Absorption Spectroscopy and Electron Microprobe Analyses

Symposium G07

Posters

Environmental Geochemistry/Mineralogy

- 178 **Chen T, Xu H, Peng S & Fan M:**
Intercalation of Dye Anion in Mg/Al-LDH: a Novel Method of Wastewater Treatment
- 179 **Choi S, Amistadi MK, O'Day P & Chorover J:**
Desorption of Contaminant Cs and Sr from Clay Systems after Weathering in Caustic Waste Solutions
- 180 **Das S, Routh J & Roychoudhury A:**
Trace Metals in the Water Column and Sediments from Zeekoevlei South Africa
- 181 **Dias I, Gouveia A, Araujo F, Freitas C, Prudencio I & Marques P:**
Trace Element Monitoring in the Vicinity of a Solid Waste Disposal
- 182 **Farber E, Vengosh A, Gavrieli I, Marei A, Bullen T, Mayer B, Holtzman R, Segal M & Shavit U:**
The Relationships between Groundwater Discharge and the Lower Jordan River
- 183 **Finkelnburg D, Morra M, Toevs G & Borek V:**
Alkalinity Measurement in Mining-Impacted Wetland Sediments using Gas Chromatography
- 184 **Hinman N, Burton S, Cho H, Tenesch A, Kotler J & Strumness L:**
Silicon - Aluminum MAS-NMR TRAPDOR of Natural Silica Minerals
- 185 **Hoskin P, Sutherland L & Browne P:**
Gas-Streaming in Trachyte Lava, Mount Melbourne, Antarctica

- 186 Ishikawa T:**
Investigation of Cadmium Pollution Caused by Drainage from Kamioka Mine, Japan – For Zero Emission
- 187 Li Q, Kumar P, Babu P, Kalinichev A & Kirkpatrick J:**
Structure and Dynamics of Citrate Ions in Mg/Al Layered Double Hydroxide: ¹³C NMR and Molecular Dynamics Simulation Studies
- 188 Mashal K, Cetiner Z, Flury M & Harsh J:**
Colloid Formation and Cesium Mobility in Hanford Sediment Columns Leached with Simulated Tank Waste
- 189 Nadimikeri J:**
Trace Element Geochemistry of Tambaraparni Deltaic Sediments, East Coast of India
- 190 Prudencio I, Gonzalez I, Dias I, Galan E, Ruiz F, Duplay J, Gueddari F & Ahmed R:**
Geochemistry, Mineralogy and Micropaleontology of Sediments from El Meleh Lagoon, Tunisia
- 191 Shikazono N & Igarashi C:**
The Composition and Characteristics of Sound Producing Sand in Miyagi Prefecture, Japan
- 192 Shikazono N & Ohtani H:**
Elemental Mobility during Chemical Weathering of Volcanic Soil Profile in Kanto Area, Japan
- 193 Strap J, Colwell F & Crawford R:**
Characterization of Archaeal Diversity Associated with Planktonic and Biofilm Subsurface Communities from the Snake River Plain Aquifer
- 194 Strawn D, Ryser A, Marcus M, Johnson-Maynard J, Moller G & Gunter M:**
Micro-Spectroscopic Investigation of Selenium Speciation in Reclaimed Mine Soils from Southeastern Idaho
- 195 Tallant B & McKibben M:**
Arsenic Mineral Kinetics: Arsenopyrite Oxidation
- 196 Thornton E, Zhong L, Oostrom M & Deng B:**
Vadose Zone Remediation by *in situ* Gaseous Reduction
- 197 Yue L, Wu F & Liu C:**
Seasonal and Vertical Variability of Molecular Weight of Dissolved Organic Matter (DOM) in Lake Hongfeng Water Column

Symposium G09

Posters

Geochronology

- 198 Gong B & Zheng Y:**
O Isotope Constraints on Radiometric Dating for UHP Eclogite and Granitic Gneiss at Taohang in the Sulu Terrane of East-Central China

- 199 Halpin J, Gerakiteys C, Clarke G, Belousova E & Griffin W:**
In situ U-Pb Geochronology and Hf Isotope Analyses of the Rayner Complex, East Antarctica
- 200 He Y, Sun Y, Chen L, Zhao G & Sun M:**
Archean to Paleoproterozoic Record in the Southern Part of the Western Block, North China Craton
- 201 Kaygusuz A, Aslan Z, Akpınar I & Kaygusuz K:**
Geochemistry and Geochronology of Tertiary-Aged Volcanic Rocks of South of Ilica (Erzurum), NE-Turkey
- 202 Liu X, Zhang Y & Chen W:**
Preliminary Study on the Separation of Diagenetic Illite from the Detrital Minerals in Sedimentary Rocks
- 203 Luo Y, Sun M, Zhao G, Li S & Xia X:**
LA-ICP-MS U-Pb Zircon Geochronology of the Yushulazi Formation in the North China Craton
- 204 Zhao G, Wilde SA, Sun M, Li S & Zhang J:**
SHRIMP U-Pb Zircon Geochronology of the Hengshan-Wutai-Fuping Mountain Belt, North China Craton

Symposium G10

Posters

Geomicrobiology

- 205 Hughes K & Southam G:**
Epi- and Endo-Lithic Bacterial Colonisation of Aeolian Sandstone on the Colorado Plateau
- 206 Lin L, Wang P, Yu H, Cheng T, Song S & Wang C:**
Microbial Metabolic Diversity in Deep Sedimentary Rocks of a Foreland Basin, Taiwan
- 207 Power I & Southam G:**
Carbon Dioxide Sequestration through Enhanced Weathering of Chrysotile Mine Tailings and Subsequent Microbial Precipitation of Magnesium Carbonates
- 208 Thota GR & Naqvi SM:**
Cyanobacteria Fossils from Neo-Archaeal Chitradurga Schist Belt: Evidence of a Bioherm
- 209 Wanger G & Southam G:**
Structural and Chemical Characterization of a Natural Fracture Surface from 2.8 Kilometers Below Land Surface

(Symposium G10 continues on page 60)

Symposium G14

Isotope Geochemistry

- 210 Badmatsyrenova R & Orsoev D:**
Isotopic Geochemistry of the Arsentyev Gabbro-Syenite Massif
- 211 Chen J & Guo X:**
Mantle Input Event in Southeastern China at Late Jurassic: Evidence from High ϵ_{Nd} Granitoids
- 212 Duck LJ, Glikson M, Golding S & Webb R:**
Early Archaean Carbonaceous Material from the Pilbara, Western Australia: Its Nature, Characteristics and Possible Sources
- 213 Fang J, Chan O, Uhle M, Bartlett D & Kato C:**
Fractionation of Carbon Isotopes in Biosynthesis of Piezophilic Bacteria
- 214 Hart G, Christiansen E & Kowallis B:**
Eruptive Source of Volcanic Ash in Jurassic Morrison Formation Suggested by Pb Isotopic Composition of Sanidine
- 215 Jourdan AL, Vennemann T & Mullis J:**
Trace Element and Oxygen Isotope Zonations in Growth Sectors of Natural Quartz Crystals
- 216 Li S, Zhao G, Sun M, Han Z & Zhao G:**
Nd Isotopic Characteristics of the South and North Liaohe Groups and Tectonic Implications
- 217 Mackie R, Scoates J, Weis D, Maerschalk C & Peck D:**
Trace Element and Hf-Nd Isotopic Profiling of Crustal Contamination Across the Marginal Zone of the Muskox Intrusion, Nunavut
- 218 Malich KN:**
Os-Ir-Ru Alloys and Ru-Os Sulfides from Clinopyroxenite-Dunite Complexes: A Combined EMPA, LA MC-ICP-MS and N-TIMS Study
- 219 Mao J & Li X:**
He, Ar, S, O and H Isotopic Data and their Implications for Deposit Genesis of the Daduhe Gold Deposits along the Eastern Margin of the Tibetan Plateau, Northwest China
- 220 Meng Q, Widom E, Mo X, Yu X & Zhao Z:**
Origin of Yunnan Potassic Rocks: Re-Os Isotope Evidence
- 221 Remusat L, Palhol F, Robert F, Derenne S & France-Lanord C:**
Compound Specific D/H Isotopic Composition of Orgueil and Murchison Insoluble Organic Matter
- 222 Sheng X, Chen J, Yinag J, Chen Y & Ji J:**
Stable Isotopic Composition of Pedogenic Carbonates in Chinese Loess Sequences: Information for Paleo-Summer Monsoon Strength
- 223 van Geldern R & Suckow A:**
Correction Strategies in Deuterium Analysis using Chromium Reduction
- 224 Von Blanckenburg F & Schoenberg R:**
Stable Cr Isotope Ratio Measurements using a Double-Spike Method and High-Resolution MC-ICP-MS

Posters

- 225 Wieser M:**
The Determination of Atomic Weights by New Analytical Techniques
- 226 Williams G, Scoates J & Weis D:**
Pb Isotopic Variability in Leached and Non-Leached Magnetic Fractions of Plagioclase from the Laramie Anorthosite Complex, Wyoming
- 227 Zhang S, Zheng Y & Wu Y:**
Zircon Hf Isotope Evidence for the Existence of Early Archean Crust in the Yangtze Craton of China
- 228 Zhang Z, Mao J, Li X, Wang R & Wang Z:**
C, H, and O Isotope Characteristics of the Shuangwang Gold Deposit, West China
- 229 Zhou X, Yin J, Wang F, Zhang L & Zhang Y:**
Isotopic Constraints on the Timing and Source Characteristics of Late Mesozoic Mafic Volcanism in the Da Hinggan Mountains, NE China

Symposium G19

Organic Geochemistry

- 230 Cai J, Bao Y, Yang S, Wang X, Fan D, Xu J & Wang A:**
Preservation and Enrichment Mechanisms of Organic Matter in Muddy Sediment and Mudstone
- 231 Hay M, Deshmukh A & Myneni S:**
Local Structure of Carboxylic Acid Groups in Natural Organics
- 232 Marques M & Suárez-Ruiz I:**
Geochemistry of Coals from Peñarroya Basin (Spain)
- 233 Seki O, Nakatsuka T, Shibata H & Kawamura K:**
Hydrogen Isotopic Compositions of Long-Chain N-Alkanes in the Doro River Basin, Hokkaido Island, Japan

Posters

Monday May 23rd 2005: Morning Session

The Plenary Session

- 8:30** **Opening Remarks**
- 8:40 **Geochemical Society Presidential Address**
James I. Drever, University of Wyoming
Silicate weathering: where have we come in 50 years?
- 9:10** **Geochemical Society Medals**
- The Clarke Medal**
James van Orman, Case Western Reserve University
Citationist: Tim Grove
- The Patterson Medal**
Ken Bruland, University of California, Santa Cruz
Citationist:
- The Treibs Medal (Organic Geochemistry Division)**
Jaap Sinninge-Damsté, Royal Netherlands Institute for Sea Research
- Distinguished Service Medal**
Gunter Faure, Ohio State University
Citationist: Berry Lyons
- The Goldschmidt Medal**
E. Bruce Watson, Rensselaer Polytechnic Institute
Citationist: Mark Harrison
- 10:00 **Goldschmidt Medal Address**
Crystallization temperatures of Hadean zircons: Plate tectonics at 4.35 Ga?
- 10:30** **Dana Medal (MSA)**
William Carlson, University of Texas at Austin
Citationist: W. Gary Ernst
- 10:40** **European Association of Geochemistry Medals and Fellows**
- Houtermans Medal**
Mark Hodson, University of Reading
Citationist:
- Urey Medal**
Alexandra Navrotsky, University of California at Davis
Citationist: Alex Halliday
- 11:00** **Presentation of GS-EAG Fellows**
Nicholas Arndt, Stein Jacobsen, Stuart Wakeham, Lynn Walter
- 11:15** **Geochemistry Journal Award (GSJ)**
Awardees:
Takeshi Nakatsuka, Keiko Ohnishi, Toshihiko Hara, Akihiro Sumida, Daisuke Mitsuishi,
Naoyuki Kurita and Shigeru Uemura
Citationist: Simon R. Poulson
Presented by: Dr Jun-ichi Matsuda
- 11:25** **The Gast Lecture**
Eric Oelkers, Laboratoire de Geochimie, Toulouse
Mineral surface reactivity from the global to the atomic scale

Monday May 23rd 2005: Morning Session

Goldschmidt 2005

CONFERENCE PROGRAMME

Tuesday May 24th 2005

Symposium S06**Room: Albertson 102****Apatite: Bridging Geology, Biology, and Materials Science****Convenors: Brigitte Wopenka, Eva Valsami-Jones & Jill Pasteris**

- 08:30 Fleet M:**
KEY X-Ray Structures of Carbonate Apatite
- 09:00 Tacker C:**
INV Complexity in the Carbonate v_3 Domain in Fluorapatite
- 09:15 Luo Y, Rakovan J, Hughes J & Pan Y:**
 Investigating the Site Preference of U and Th in Cl, F, Sr Apatites using Single Crystal X-Ray Diffraction
- 09:30 Oelkers E, Kohler S, Harouiya N & Chariat C:**
KEY The Role of Apatite in Controlling the REE Composition of Natural Waters
- 10:00 Wright J & Conca JL:**
INV Geochemistry of Anthropogenic Lead Stabilization by Apatite IITM
- 10:15 Cama J, Oliva J, Cortina JL, Ayora C & de Pablo J:**
 The Dissolution of Apatite II
- 10:30 Harrison W, Wendlandt R, Charnock J & Henderson CMB:**
 Spectroscopic Investigations of the Adsorption of As onto Bovine Bone
- 10:45 Elliott J, Wilson R & Dowker S:**
KEY Comparison of Mineral, Biological and Precipitated Carbonate Apatites
- 11:15 Robinson C, Connell S, Kirkham J & Smith A:**
INV Regular Nano-Domains in Apatite Crystals from Developing Enamel: Implications for Crystal Assembly from Subunits and Protein Binding Sites for Growth Modulation
- 11:30 Kohn M:**
INV Stable Isotope Chemistry of Fossil Bone Apatite as a New Paleoclimate Indicator
- 11:45 Blickstein J, Lei C, Blackwell B & Skinner A:**
 Geochemical Analyses in Fossil Tooth Apatites: Determining U Uptake Processes and Paleoenvironmental Conditions for Diagenetic Alteration

(Symposium S06 continues on page 68)

Symposium S17**Room: Administration Auditorium****Cosmogenic Nuclides and Surface Process Research: New Developments and Applications****Convenors: Bill Phillips, Gary Landis & Steve Binnie**

- 08:30 Desilets D & Zreda M:**
 Improving the Accuracy and Precision of Scaling Factors for *in situ* Cosmogenic Geochronometers: New Measurements of Cosmic-Ray Neutrons in India and Hawaii
- 08:45 Denoncourt C, Licciardi J, Stone J & Finkel R:**
 Calibrating the Production Rate of Cosmogenic ³⁶Cl from Postglacial Lava Flows in Iceland
- 09:00 Moreira M & Madureira P:**
 Cosmogenic Helium and Neon Extracted by Crushing: a Technique for Discriminating between Mantle and Cosmogenic Helium
- 09:15 Matmon A, Bierman P, Larsen J, Southworth S, Pavich M, Finkel R & Caffee M:**
INV Grain Size Dependency of ¹⁰Be Concentrations in Alluvial Sediments in the Great Smoky Mountains
- 09:30 Granger D:**
KEY Perspectives on Dating with Multiple Cosmogenic Nuclides
- 10:00 Dunai T, Gonzalez-Lopez G, Juez-Larre J & Carrizo D:**
KEY Preservation of (Early) Miocene Landscapes in the Atacama Desert, Northern Chile
- 10:30 Ackert R & Mukhopadhyay S:**
 Constraining Landform Erosion and Ages from Surface Exposure Age Distributions on Old Patagonian Moraines
- 11:00 Staiger J & Gosse J:**
 Glacial Erosion and Till Dispersion using the Source and the Sink: a New Cosmogenic Nuclide Application
- 11:15 Gosse J, Baker S, Pazzaglia F, Brandon M, Karlstrom K, Pederson J & Finkel R:**
INV Five Ways to Examine What Isn't in There with Cosmogenic Isotopes
- 11:30 Lu Z:**
INV ⁸¹Kr-Dating: from Dream to Practice
- 11:45 Schaefer JM, Marchant D, Herzog G, Ivy-Ochs S, Korschinek G, Knie K, Schluechter C, Serefidin F, Wieler R & Kubik P:**
INV News from the Oldest Ice on Earth Buried in Antarctica and a New Cosmogenic Tool

(Symposium S17 continues on page 70)

Symposium S19

Room: Agricultural Science 204

Dissolved Organic Matter and its Interaction with Trace Metals and Organic Pollutants in Natural Waters

Convenors:

Fengchang Wu, Katsumi Hirose & Scott Smith

08:30 Leenheer J & Wershaw R:

KEY Solubility Controls that Determine Dissolved Organic Matter Composition of Surface- and Ground-Waters

09:00 Hatcher P, Hockaday W, Grannas A & Caccamise S:

KEY A New Understanding of Reactivity and Composition of Humic Substances using Modern NMR and Electrospray Ionization Mass Spectrometry

09:30 Kramer J, Bell R & Smith S:

INV Sulfide Ligands in Natural Organic Matter (NOM)

09:45 Cabaniss S:

INV Stochastic Synthesis of DOM: Predicting Cu(II) Complexation from Precursor Structures

10:00 Playle R:

INV Modelling Metal-Gill Interactions and Metal Toxicity to Fish: The Influence of Natural Organic Matter Source

10:15 Hirose K:

INV Metal-Organic Matter Interaction: Ligands as a Functional Group in Oceanic DOM

10:30 Dia A, Morin E, Pourret O, Gruau G, Davranche M & Henin O:

Organo-Colloidal Control on Trace-Element Distribution in Shallow Groundwaters: Fingerprinting by Ultracentrifugal Cells

10:45 Nurmi JT, Bae B & Tratnyek PG:

Understanding the Redox Properties of Georgetown NOM

11:00 Wu F:

INV Metal Distribution in Different Molecular Size Fractions of Dissolved Organic Matter in Stream Waters by HPSEC and ICPMS

11:15 Smith S:

INV Metal Binding to NOM Determined using Component Resolution and Multiresponse Modelling

Symposium S25

Room: Renfrew 111

Geochemical Evolution of Silicic Magma Systems

Convenors:

Ilya Bindeman & John Wolff

08:30 Anderson A & Davis A:

KEY Enigmatic Evolution of Rhyolitic Magma, The Bishop, Calif. Tuff

09:00 Simon J, Reid M & Young E:

New Isotopic Measurements of Zircon and Feldspar Constrain the Magmatic Evolution at Long Valley Caldera

09:15 Gualda G & Anderson A:

Magnetite Clusters on Vesicle Walls: Evidence for Pre-Eruptive Bubbles in the Early-Erupted Bishop Tuff, CA

09:30 Ramos F, Wolff J & Gill J:

INV Open-System Processes and Rhyolites: What Isotope Systems can we Trust, and for What?

09:45 Vazquez J & Reid M:

INV Dating Compositional Zoning in the Youngest Toba Tuff Magma

10:00 Schmitt A:

INV Crystal Provenance in Volcanic Rocks Related to the Geysers Plutonic Complex, California

10:15 Costa F & Chakraborty S:

INV Time Scales of Mafic-Silicic Magma Interactions

10:30 Leeman W & Bonnicksen B:

KEY Overview of Silicic Volcanism of the Snake River Plain - Yellowstone (SRPY) Province

11:00 McCurry M & Ganske R:

Genesis of Quaternary High-K, 'A-Type' Rhyolites along Part of the Yellowstone-Snake River Plain Hot Spot Track

11:15 Semple A, Gregg T, Bonnicksen B & Godchaux M:

The Reynolds Creek Rhyolite Flow: a Large-Volume Evolved Flow

11:30 Olin P, Wolff J & Edgar C:

Scales of Chemical Heterogeneity in Felsic Magmas: The Fasnja Member, Tenerife, Canary Islands

11:45 Troll V, Donaldson C & Emeleus H:

INV Petrogenesis of Voluminous Mixed Rhyodacite-Basalt Ash-Flows of the Tertiary Rum Igneous Centre, NW-Scotland

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24:am

Tuesday May 24th 2005: Morning Session

Symposium S30 **Room: Renfrew 112**
Geochemistry and Geochronology of the Cascade Volcanic Arc

Convenors: Andrew Calvert, Richard Conrey & Thomas Sisson

- 08:30** **Tepper J, Ponzini C & Gustafson J:**
Temporal and Spatial Variations in Cascade Arc Magmatism: The 35 Ma Plutonic Record
- 08:45** **Conrey R, Evarts R & Fleck R:**
Location of the Miocene-Pleistocene Cascade Arc Volcanic Front in the Portland Basin
- 09:00** **Muffler P & Clynne M:**
Overlapping Calc-Alkaline and Tholeiitic Magmatism in the Southernmost Cascade Range
- 09:15** **DeBari S, Taylor D & Sisson T:**
Basalts and high-Mg Andesites from the Northern Cascade Arc (Glacier Peak, Washington): Insights into Mantle and Crustal Processes
- 09:30** **Schmidt M, Grunder A & Chesley J:**
Geochemistry and Geochronology of North Sister Volcano, Oregon Cascade Range, USA
- 09:45** **Calvert A, Fierstein J & Hildreth W:**
High-Precision Argon Dating at Young Arc Volcanoes: Understanding the Past 40 kyr at Middle Sister, OR
- 10:00** **Sisson T & Vallance J:**
Magma Storage and Ascent at Mount Rainier from 2600 to 2200 ybp
- 10:15** **Clynne M, Wolfe E, Calvert A, Pallister J, Champion D, Lanphere M & Evarts R:**
Eruptive History of Mount St. Helens, Washington – A Summary with New Data
- 10:30** **Pallister J, Thornber C, Clynne M, Cashman K & McGee K:**
Field Geology and Petrology of the 2004-2005 Mount St. Helens Dome
- 10:45** **Rutherford M & Devine J:**
The Nature and Origin of the MSH 2004 Eruption from Sample Petrology and Experiments
- 11:00** **Kent A, Rowe M & Thornber C:**
LA-ICP-MS Trace Element and Pb-Isotope Analysis of Mt St Helens Dome Material from 1981-1985 and 2004-2005 Eruptive Episodes
- 11:15** **Rowe M, Thornber C & Kent A:**
Petrology and Geochemistry of Mount St. Helens Ash Before and during Continuous Dome Extrusion
- 11:30** **Cooper K, Reid M, Donnelly C & Reagan M:**
U-Series Crystal Ages in Mt St Helens Lavas, 2000 ybp-2004 AD
- 11:45** **Streck M, Thornber C, Clynne M & Pallister J:**
INV Plagioclase Zoning in Dacites of the Current Mt. St. Helens Eruption

Symposium S35 **Room: Renfrew 125**
High-Precision Geochronology, Intercalibration, and Absolute Time-Markers in the Geologic Record and the EARTHTIME Project

Convenors: Paul Renne, Randy Parrish & Sam Bowring

- 08:30** **Bowring S, Erwin D, Parrish R & Renne P:**
EARTHTIME: a Community-Based Effort Towards High-Precision Calibration of Earth History
- 08:45** **Kuiper K, Deino A, Hilgen F, Krijgsman W, Renne P & Wijbrans J:**
KEY Intercalibration of Astronomical and Radioisotopic Time
- 09:15** **Farley K, Shuster D, Clark M & Maheo G:**
INV Dating Erosion Events using $^4\text{He}/^3\text{He}$ Thermochronometry
- 09:30** **Singer B:**
INV Calibration of a Pleistocene Geomagnetic Instability Time Scale (GITS) using $^{40}\text{Ar}/^{39}\text{Ar}$ -Dated Lavas
- 09:45** **Heizler M:**
INV Evaluating Intercomparability Amongst Several $^{40}\text{Ar}/^{39}\text{Ar}$ Laboratories
- 10:00** **Kamo S:**
KEY The Role of U-Pb TIMS Dating in Resolving the Causes of Mass Extinction Events
- 10:30** **Mattinson J:**
INV U-Pb Inter-Laboratory Calibrations using Zircon Samples: Application of the New CA-TIMS Technique
- 10:45** **Condon D:**
INV Progress Report on the U-Pb Interlaboratory Experiment
- 11:00** **Creaser R, Selby D & Kendall B:**
INV High-Precision Re-Os Shale Geochronology
- 11:15** **Mundil R & Palfy J:**
INV Triassic-Jurassic Time Scale and Mass Extinction: Current Status and New Constraints
- 11:30** **Ramezani J, Bowring S, Pringle M, Winslow F & Rasbury T:**
The Manicouagan Impact Melt Rock: a Proposed Standard for the Intercalibration of U-Pb and $^{40}\text{Ar}/^{39}\text{Ar}$ Isotopic Systems
- 11:45** **Renne P, Mundil R, Min K & Ludwig K:**
Intercalibration of the U-Pb and $^{40}\text{Ar}/^{39}\text{Ar}$ Geochronometers: Status, Prognosis, and Prescription

Symposium S38**Room: Agricultural Science 106*****In situ* Ancient Biomolecules and their Isotopic Signals:
Clarkia and Beyond**

Convenors:

Derek Briggs & Hong Yang

08:30 Yang H:*In situ* Biomolecules and Isotopic Signals from *Clarkia* Plant Fossils**08:45 Collinson M, Rember B, Finch P, Brain T, Gupta N & Pancost R:***KEY* Morphological, Anatomical, Ultrastructural and Macromolecular Preservation of Leaves from the Miocene of Clarkia, Idaho, USA**09:00 Leng Q & Yang H:***INV* Tertiary Metasequoia Leaves: a Case Example of Paralleled Preservation at Biomolecular and Morphological Levels**09:15 Wang X & Dilcher D:**

The Preservation of Cytoplasm in Fossil Plant Cells

09:30 Gupta N:*INV* Experimental Simulation of Organic Fossilisation**09:45 Pancost R:**

The Effect of a Basalt Flow on the Chemical Composition of Sedimentary Organic Matter

10:00 Stankiewicz A & van Bergen P:*INV* A Short Story About Preservation – From Living Organisms to Fossils**10:15 Nguyen Tu TT, Derenne S, Largeau C, Bardoux G & Mariotti A:***KEY* Diagenesis Effects on Specific Carbon Isotope Composition of Plant N-Alkanes**10:30 Pagani M & Tipple B:***INV* The Influence of C4 Photosynthesis during the Miocene**10:45 Smith F, Wing S & Freeman K:***INV* Using Carbon and Hydrogen Isotope Ratios of Terrestrial Organic Matter to Understand Climate Change at the PETM**11:00 Pedentchouk N & Pagani M:***INV* Hydrogen Isotopic Composition of N-Alkanes from Leaf Waxes: An Empirical Evaluation of Environmental Controls**11:15 Poinar H:***INV* DNA from Fossils: Lake Embedded Plant and Sediment Remains**11:30 Lai X & Qi S:***INV* DNA Preservation in Late Pleistocene Materials from China**11:45 Briggs D & Yang H:**The Miocene *Clarkia* Deposit of Idaho: New Uses for Old Molecules**Symposium S43****Room: Renfrew 126****Kinetics and Metamorphic Processes: A Session in Honor of
the Dana Medalist Bill Carlson**

Convenors:

C. Tom Foster, David M. Hirsch & Barb Dutrow

08:30 Hirsch D:

A Brief Retrospective of Bill Carlson's Work on Metamorphic Disequilibrium and Kinetics

08:45 Valaas E & Valley J:

Oxygen Isotope Speedometry in the Biwabik Iron-Formation

09:00 Bowman J & Huang S:Effects of Reaction Kinetics on Mixed Volatile (CO₂-H₂O) Decarbonation Reactions in Contact Aureoles**09:15 Pattison D, Tinkham D & Yang P:**

Unreactivity of Garnet in Low Pressure Metapelites

09:30 Dutrow B, Foster CT, Gable CW & Travis BJ:

Heat and Mass Transport Modeling and Rates of Metamorphic Processes

09:45 Baxter E:*INV* Comparing Natural Reaction Kinetics for Isotopic Exchange and Net-Transfer Reactions**10:00 Eberl D & Kile D:**

Crystal Growth Rate Law Identified from Changes in Variance of Crystal Size Distributions

10:15 Prior D, Seward G, Pond B & Wheeler J:*INV* Nucleation and Growth Mechanisms in Phase Transformations: Insights from Dynamic Experiments**10:30 Baumgartner L & Foster C:***INV* Application of a Continuum Diffusion Controlled Growth Model to Metamorphic Crystallization**10:45 Skora S, Mahlen N, Baumgartner L, Johnson C & Pilet S:**

Garnet Zoning Pattern, Growth Mechanisms and the Development of Lu-Depleted Halos in Eclogites

11:00 Farver J & Yund R:*INV* Intergranular Diffusion Rates in Mineral Aggregates: Where are we and Where do we Go from Here?**11:15 Ketcham R:***INV* Can Competitive Porphyroblast Growth Lead to Size-Time Correlation?**Presentation by the Dana Medalist****11:30 Carlson W:**

Rates and Mechanisms of Metamorphic Processes from Natural Occurrences

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24:am

Tuesday May 24th 2005: Morning Session

Symposium S46**Room: CNR 010****Marine Geochemical Records of Glacial Events****Convenors:****Gregory E Ravizza & Mitchell Lyle****08:30 Huber M & Brinkhuis H:**

Likely and Unlikely Ocean Feedbacks on Global Climate during the Eocene-Oligocene Transition

08:45 Lyle M, Olivarez Lyle A, Rea D & Backman J:

The Stuttering Greenhouse and Cenozoic Carbonate Compensation Depth

09:00 Ziegler C, Murray R, Plank T & Hemming S:

Tracing Paleoceanographic Sources of Fe to the Central Equatorial Pacific Ocean

(Symposium S46 continues on page 73)

Symposium S51**Room: Albertson 201****Mineral Surface Reactivity****Convenors:****Kevin Rosso & Paul Meakin****08:30 DeYoreo J, Chernov A, Zepeda-Ruiz L, Wasylenki L, Elhadj S, Orme C, Gilmer G & Dove P:***INV* A Kink-Site Limited Model for Growth and Inhibition of Biominerals**08:45 Kerisit S & Parker S:**

Free Energy of Adsorption of Molecules and Ions at the Calcite-Water Interface

09:00 Jamteit B, Hammer O, Mark B, Simon D, Dag D & Jens F:*KEY* Travertine Formation and Other Pattern Forming Processes on Sloping Surfaces**09:30 Murakami T & Ohnuki T:**

Field and Laboratory Evidence of Formation of Uranyl Phosphates within Leached Layers of Dissolving Apatite in Undersaturated Solutions

09:45 Fenter P, Zhang Z, Park C, Sturchio N, Hu X & Higgins S:*INV* Probing the Reactivity of the Dolomite-Water Interface using High Resolution X-Ray Reflectivity**10:00 Finch K, Stark A, Wincott P, Warren M, Collins I & Vaughan D:**Investigating the Effect of Calcium on Barite (001) and (210) Surfaces using *in situ* Atomic Force Microscopy**10:15 Parker S, Cooke D, Kerisit S & Marmier A:***INV* Non-Stoichiometric Mineral Surfaces: *Ab Initio* Phase Diagrams**10:30 Floersheimer M, Kruse K, Klenze R & Fanghaenel T:**Observing the Chemical Composition and the Point of Zero Charge of Mineral Surfaces *in situ* Under Water by Nonlinear Optics**10:45 Ushakov S, Dalalo N & Navrotsky A:**

Gas Adsorption Microcalorimetry: Probing Energetics of Oxide Surfaces

11:00 Vaughan D, Cutting R & Wincott P:*INV* The Surfaces of Iron-Bearing Minerals: Key Reactive Substrates in Earth Systems**11:15 Trainor T, Eng P, Chaka A, Lo C, Tanwar K, Ghose S, Brown G, Catalano J, Waychunas G & Templeton A:***INV* Structure and Reactivity of Hydroxylated Hematite Surfaces: Application of Surface X-Ray Diffraction and Spectroscopy**11:30 Wang J & Rustad J:**

Hematite (012) Surfaces and Interaction with Water by Molecular Modeling

11:45 Eggleston C, Khare N & Lovelace D:*INV* Interaction of Cytochromes with Oxide Surfaces: Adsorption-Induced Conformation Change?

(Symposium S51 continues on page 64)

Symposium S61

Room: CNR 010

Oxidation-Reduction Reactions in Marine Sediments

Convenors:

Allan H. Devol & Ellery Ingall

- 09:15 Reimers C, Girguis P, Westall J, Newman D, Stecher H, Howell K & Alleau Y:**
KEY Using Electrochemical Methods to Study Redox Processes and Harvest Energy from Marine Sediments
- 09:30 Dolor M & Helz G:**
The Mechanism of Re Fixation in Reducing Sediments
- 09:45 Staubwasser M & von Blanckenburg F:**
Ferric Fe-Isotopes in the Early Marine Diagenetic Cycle
- 10:00 McManus J, Siebert C, Poulson R, Nägler T, Berelson W & Severmann S:**
INV Molybdenum and Molybdenum Isotope Diagenesis in Continental Margin Settings: Geochemical Balance and Paleoproxy Implications
- 10:15 Scott C & Lyons T:**
Defining an Uniquely Euxinic Molybdenum Signal
- 10:30 Jahnke R, Rao A, Richards M & Jahnke D:**
KEY Unexpected Denitrification in Oxidic Shelf Sands: a Consequence of Redox Dynamics?
- 10:45 Vance-Harris C & Ingall E:**
Denitrification Pathways and Rates in the Sandy Sediments of the Georgia Continental Shelf
- 11:00 Altabet MA, Agnihotri R, Tierny J, Higgins SM & Herbert TD:**
INV A Tale of two Margins: a Comparison of Redox and Productivity Paleo-Proxies in Sediments off Oman and Peru
- 11:15 Chang B, Devol A & Christensen J:**
Oxygen Consumption Rates in the Shelf and Slope Sediments of the Western Arctic
- 11:30 Hartnett H, Devol A, Brandes J & Chang B:**
Oxygen Isotope Fractionation during Respiration in Marine Sediments

(Symposium S61 continues on page 76)

Symposium S67

Room: Albertson 101

Speciation of Metals and Metalloids in the Environment: Control by Mineral Structures and Surface Processes

Convenors:

Alain Manceau & Jim Kirkpatrick

- 08:30 Helz G & Neuberger C:**
Stabilities of Metal-Thioarsenite Complexes; Testing Some Theoretical Predictions
- 08:45 Xie L & Giammar D:**
Dissolution Rate of the Lead Phosphate Mineral Pyromorphite
- 09:00 Rouff A, Elzinga E, Reeder R & Fisher N:**
Effect of Aging on Pb(II) Sorption at the Calcite-Water Interface
- 09:15 Lanson B & Manceau A:**
Structure Determination of Natural and Synthetic Nanocrystalline Phyllosulfates
- 09:30 Boonfueng T, Axe L & Xu Y:**
Sequestration of Pb by Hydrous Manganese Oxide-Coated Clay
- 09:45 Peacock C & Sherman D:**
Sorption of Ni by Marine Fe-Mn Nodules and Crusts: Surface Complexation and Structural Incorporation of Ni in Birnessite
- 10:00 Gaillot A:**
INV Relation between Cis- or Trans-Vacant Character of 1 M Illite and Crystal Morphology. Implications for Metal Sorption
- 10:15 Schlegel M & Manceau A:**
Nucleation and Epitaxial Growth of Zn Phyllosilicate on Montmorillonite
- 10:30 Jacquat O, Voegelin A & Kretzschmar R:**
Zinc Speciation in Contaminated Soils in Relation to Soil Type
- 10:45 Manceau A, Schlegel M, Rihs S & Marcus M:**
Natural Speciation of Mn, Ni and Zn at the Micrometer Scale in a Clayey Paddy Soil using X-Ray Fluorescence, Absorption, and Diffraction
- 11:00 Génin J:**
The Partially Deprotonated FeII-III Hydroxycarbonate Green Rust Fougèrite Mineral and Biogeochemistry of the Cycles of Iron, Carbon and Nitrogen in Hydric Soils
- 11:15 Templeton A, Trainor T, Brown G & Tebo B:**
KEY Distribution and Speciation of Metals and Metalloids at Microbe/Mineral Interfaces
- 11:45 Utsunomiya S:**
INV Identification of Trace Metal Speciation in Environment using Z-Contrast Imaging

(Symposium S67 continues on page 66)

Symposium G03**Room: Agricultural Science 204****Biogeochemistry**

- 11:30** **Liang X, Zhou G, Zhu J, Zheng Y, Wang M, Wei Z & Zhao Y:**
The Influence of Extracellular Enzyme and Protein to Organic Matter Degradation
in Lake Erhai Sediments

Symposium G10**Room: Agricultural Science 204****Geomicrobiology**

- 11:45** **Korenevsky A, Stukalov O, Dutcher J & Beveridge T:**
Preferential Adhesion of Rough Phenotypes to Iron Oxides from Heterogeneous
DMRB Populations

Symposium S01

Room: Renfrew 126

Accessory Mineral Geochemistry I: Igneous Petrogenesis and Crystal Chemistry

Convenors:

John M. Hanchar & Paul W. O. Hoskin

13:30 **Bea F:**

KEY Accessory Minerals as Petrogenetic Markers: a Few Applications

14:00 **Magloughlin J, Merkel I & Koenig A:**

Chemistry and Textures of Magmatic Epidote and Muscovite in a Tonalite Pegmatite, North Cascades, USA

14:15 **Liebscher A, Franz G, Frei D & Munker C:**

INV Magmatic Zoisite from High-Pressure Pegmatites, Münchberg Massif, Germany: a Potential P,T,t,x Indicator

14:30 **Ayers J & Zhang L:**

INV Zircon Aqueous Solubility and Partitioning Systematics

14:45 **Poitrasson F:**

INV Experimental Studies of the Stability of Monazite in Aqueous Solutions

15:00 **Tollari N, Toplis M & Barnes S:**

Predicting Phosphate Saturation in Silicate Magmas: An Experimental Study of the Effects of Melt Composition and Temperature

15:15 **Frei D, Liebscher A, Wittenberg A & Shaw C:**

Crystal Chemical Controls on Rare Earth Element Partitioning between Epidotes and Melts: An Experimental and Theoretical Study

15:30 **Bellis A & Canil D:**

Ferric Iron in Perovskite as an Oxygen Barometer for Kimberlitic Magmas

15:45 **Crowley J, Bowring S & Searle M:**

INV U-Th-Pb Systematics of Monazite, Xenotime, and Zircon from Pleistocene Leucogranites at Nanga Parbat (Pakistan Himalaya)

16:00 **Stockli D, Farley K, Walker JD & Blackburn T:**

INV He Diffusion and (U-Th)/He Thermochronometry of Monazite and Rutile

16:15 **Zack T, Moraes R & Kronz A:**

INV Empirical Calibration of a Zr in Rutile Thermometer

(Symposium S01 continues on page 67)

Symposium S03

Room: Agricultural Science 106

Bridging the Technology Gap in Geomicrobiology: Novel Research Approaches in Extreme Environments

Convenors:

Liane Benning & Sherry Cady

13:30 **Kemner K, Kelly S, Boyanov M, Lai B, Glasauer S, Langley S, Kulpa C, Beveridge T & Neilson K:**

KEY X-Ray Microprobe Investigations of Mineral-Metal-Microbe Interfaces

14:00 **Sup Z, Arce FT, Avci R, Spangler B, Schweitzer MH, Thielges K, Wittmeyer J & Boyd R:**

INV Fishing at the Nanoscale

14:15 **Conrad P, Lane A, Bhartia R & Hug W:**

INV Optical Detection of Organic Molecules in Extreme Environments

14:30 **Scott J, Yan B & Stoner D:**

Interaction of Amino Acids and Peptides with Minerals to Produce Biosignatures Observable by Laser Desorption Fourier Transform Mass Spectrometry

14:45 **Benning LG, Mortimer RGJ & Steele A:**

DGT, Microsensor and Molecular Genetic Characterization of Biogeochemical Processes in an Extreme Arctic Environment

15:00 **Stedman K:**

INV Viruses from Extreme Environments

(Symposium S03 continues on page 68)

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24:pm

Tuesday May 24th 2005: Afternoon Session

Symposium S11 **Room: Agricultural Science 106**
Biom mineralization Models and Mechanisms

Convenors: **Nita Sahai & Peter Voice**

- 15:15** **DeYoreo J & Dove P:**
INV Stereochemical Recognition Revisited: a Step-Specific Model for Shape Control
- 15:30** **Becker U & Biswas S:**
INV Dynamic Simulations of Polypeptide Networks to Form Ca-Carbonate Seed Crystals
- 15:45** **Wolfgang S, Erika G, Rolf N, Thomas P & Uwe B:**
 Brachiopod Shell Biomineralization – Structural and Chemical Characteristics
- 16:00** **Sahai N & Delak K:**
 Amorphous Oligomer Nucleation and Aggregation Mechanism for Biomineralization
- 16:15** **McConnaughey T:**
 Dinoflagellate Toxins Stimulate Coral Calcification and Cause Bleaching

(Symposium S11 continues on page 69)

Symposium S15 **Room: Renfrew 111**
Chemistry and Physics of Igneous Processes: Feedback Relations and the Fate of Magma

Convenors: **Alan Whittington & Kelly Russell**

- 13:30** **Ghiorso M:**
KEY Thermodynamic Models of Mantle Melting to Very High Pressures: Objectives, Motivations and Sources of Data
- 14:00** **Holness M, Martin V & Pyle D:**
 Petrographic Clues to Overturn and Eruption of Open-System Magma Chambers: Santorini, Greece
- 14:15** **Russell K & Nicholls J:**
 Calorimetric Glass Transition Temperatures and Magmatic Processes
- 14:30** **Spera F, Cutler I & Nevins D:**
INV Thermodynamic Models of Mantle Melting to Very High Pressure: Molecular Dynamics and the Macroscopic Scale
- 14:45** **Asimov P, Langmuir C & Science Party KM0:**
 Effect of Water on Magma and Crustal Density: Highly Fractionated Lavas in the Lau Basin and Other Wet Spreading Centers
- 15:00** **Whittington A:**
 Physical and Chemical Controls on the Viscosity of Crystallizing and Degassing Magma
- 15:15** **Papale P:**
KEY Feedback Relationships between Magma Properties and Volcanic Eruption Dynamics
- 15:45** **Mangan M:**
INV Laboratory Investigations into the Causes of Explosive Volcanic Eruptions
- 16:00** **Webster J:**
INV Consequences of Exsolution of H₂O-, CO₂-, SO₂-, Cl-Bearing Volatile Phases on the Physical and Chemical Properties of Magma
- 16:15** **Blundy J, Berlo K & Cashman K:**
INV Lithium Transport by a Magmatic Volatile Phase beneath Mount St. Helens Volcano

(Symposium S15 continues on page 70)

Symposium S26

Room: Renfrew 112

Geochemical Evolution of the Mesozoic Continental Margin of the Northwestern United States and Canada

Convenors:

Bob Fleck & Reed Lewis

13:30 Lund K, Aleinikoff J, Unruh D, Yacob E & Fanning M:

KEY Evolution of the Salmon River Suture and Continental Delamination in the Syringa Embayment

14:00 Fleck R & Wooden J:

The Western Idaho Suture Zone: Mesozoic Crustal Boundary

14:15 Snee L, Unruh D & Kuntz M:

INV Tectonics of the Salmon River Suture Zone Near Orofino, Idaho

14:30 Schmidt K & Lewis R:

INV Age, Chemical, and Isotopic Complexity in Magmatic Belts along the Orofino Segment of the Western Idaho Suture Zone (WISZ)

14:45 Lee R, Larson P & Vervoort J:

Genesis of a Tonalite-Trondhjemite Suite within the Accreted Terrane, North-Central, Idaho

15:00 King E, Beard B, Johnson C & Valley J:

INV Strontium and Oxygen Isotopic Evidence for Strike/slip Motion along the Continental Margin in the Idaho Batholith

15:15 Kuntz MA, Snee LW & Unruh DM:

INV Temporal, Compositional, and Structural Development of the Idaho Batholith near McCall, Idaho

15:30 Lewis R:

Sodic and Potassic Suites of the Cretaceous Idaho Batholith

15:45 Frost T & Lewis R:

INV Eocene Plutonic Rocks of North-Central Idaho

16:00 Foster D, Mueller P, Vogl J, Mogk D, Wooden J & Heatherington A:

INV Basement Influence on Phanerozoic Tectono-Magmatic History of the Northern Rocky Mountains

16:15 Canil D, MacKenzie J, Charnell C, Mihalynuk M, Johnston S & English J:

First Evidence for Exhumation of UHP Garnet Peridotite in the North American Cordillera

Symposium S28

Room: CNR 010

Geochemical Tracers in the Atmosphere: Source Characterization, Transport and Paleo Reconstructions

Convenors:

Kimi Kawamura & Maureen H. Conte

13:30 Church T & Veron A:

KEY Stable Lead Isotopes as Geochemical Tracers in Remote Air of the Atlantic

14:00 Kuji M, Yamanaka N & Hayashida S:

Retrieval of Asian Dust Amount over Land using ADEOS-II / GLI Near UV Data

14:15 Liu L, Chen J, Ji J & Chen Y:

Low-Latitude Influence on the East Asian Monsoon Variation: Geochemical Evidence from Chinese Loess Deposits

14:45 Conte M & Weber J:

Plant Leaf Wax Aerosols as Estimators of Terrestrial Photosynthetic Isotopic Discrimination of Carbon Dioxide on Large Regional Space Scales

15:00 Kawamura K & Watanabe T:

Stable Carbon Isotopic Composition of Water-Soluble Dicarboxylic Acids in the Remote Marine Aerosols over the Western and Central Pacific

15:15 Hernes P & Benner R:

Terrigenous Organic Matter in Suspended Marine Particulates: The Link between Aerosols and Sediments?

15:30 Dayal A:

Geochemistry of Proterozoic Shales from the Vindhyan Basin, Rajasthan: Source Area and Weathering

15:45 Huang S, Popp C, Arimoto R & Martin R:

INV Haze and Pollution Sources over the Grand Canyon and Canyonlands National Parks

16:00 Chen Y, Chen J, Liu L, Ji J & Lu H:

Use of Zr/Rb Ratios in Chinese Loess Sequences to Trace Paleo-Winter Monsoon Winds Strength

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24:pm

Tuesday May 24th 2005: Afternoon Session

Symposium S47**Room: Renfrew 125****Mass-independent Isotope Variations in the Geological Record****Convenors:****James Farquhar & Uwe Wiechert****13:30 Thiemens M:***KEY* A Survey of Mass Independent Isotope Effects in Nature**14:00 Bao H:***INV* Oxygen-17 Anomaly in Terrestrial Minerals: An Update**14:15 Michalski G, Rech J & Thiemens M:***INV* The Onset of Hyper-Aridity in the Atacama Desert: Nitrate $\Delta^{17}\text{O}$ as a Tracer of Soil Moisture**14:30 Boering K:***KEY* The Mass-Independent Oxygen Isotope Anomaly in CO_2 : From Single Collision Experiments to Global Climate Change**15:00 Lyons J:***INV* Isotopic Mixing of Stratospheric CO_2 **15:15 Alexander B:***INV* Progress and Challenges in using Global Climate Models to Interpret the $\Delta^{17}\text{O}$ Sulfate Geological Record**15:30 Pavlov A, Mills M & Toon O:***INV* Mystery of the Volcanic Mass-Independent Sulfur Isotope Fractionation Signature in the Antarctic Ice-Core**15:45 Thomassot E, Cartigny P, Lorand J, Harris J & Chaussidon M:***INV* Coupled Isotopic Study ($\delta^{33}\text{S}$, $\delta^{34}\text{S}$, $\delta^{15}\text{N}$, $\delta^{13}\text{C}$) of Sulfide-Bearing Diamonds (Jwaneng, Botswana)**16:00 Bekker A, Ono S & Rumble D:***INV* Low Atmospheric pO_2 in the Aftermath of the Oldest Paleoproterozoic Glaciation**16:15 Ono S, Beukes N, Sumner D, Eigenbrode J, Wing B, Johnston D, Farquhar J & Rumble D:***INV* Before the Rise of Oxygen: Multiple Sulfur Isotope Systematics in the Late Archean Basins in South Africa and Australia

(Symposium S47 continues on page 73)

Symposium S51**Room: Albertson 201****Mineral Surface Reactivity****Convenors:****Kevin Rosso & Paul Meakin****13:30 Brantley S, Jang J, Liermann L, Tien M, Ruebush S & Mathur R:***INV* Surface Reactivity, Bacteria, and Metal Isotope Fractionation**13:45 Yanina S, Rosso K & Meakin P:**

Defect Distribution and Dissolution Morphologies on Low-Index Surfaces of Alpha-Quartz

14:00 Meakin P, Rosso K & Yanina S:

Fast Kinetic Monte Carlo Models for Defect Controlled Dissolution of Multiple Etch Pits

14:15 Dove P, Han N & De Yoreo J:*KEY* Classical Nucleation Theory Predicts Dissolution Kinetics of Silica**14:45 Du Z & de Leeuw N:**

Hydration and Dissolution of Nano-Particulate Silicate Surfaces

15:00 Dickinson T:*INV* Tribochemical Studies at the Nanometer Scale: Synergisms of Mechanical and Chemical Forces**15:15 Al-Abadleh H, Mifflin A, Voges A & Geiger F:**

Interaction of Cr, As, and U-Containing Pollutants with Mineral-Water Interfaces Studied by Second Harmonic and Sum Frequency Generation

15:30 Lee SS, Nagy KL, Fenter P & Sturchio NC:*In situ* X-Ray Reflectivity Study of the Mica-Fulvic Acid Interface**15:45 Aldushin K, Jordan G & Schmahl WW:***In situ* AFM Study of Vermiculite and Hydrobiotite Interface Reactions

(Symposium S51 continues on page 73)

Symposium S52

Room: Agricultural Science 204

Molecular and Isotopic Indicators of Petroleum Processes from Source to Trap

Convenors:

Mike Lewan & Ronald Hill

13:30 Moldowan J, Dahl J & Chen Z:

KEY Burgeoning Technologies Contribute to Understanding of Oil and Gas Habitat

14:00 van Aarssen B, Murray A & Barber C:

KEY Applications of Aromatic Hydrocarbons in Crude Oils: Unravelling Multiple Processes

14:30 Cruse A & Lewan M:

INV Experimental Investigations of the Kinetics of Bitumen Generation

14:45 Barbanti S & Moldowan M:

Source, Age and Taxon-Specificity of Biomarker Parameters Tested on a Large Diverse Oil Set

15:00 Sessions A:

INV Controls on the D/H Composition of Individual Petroleum Hydrocarbons

15:15 Bennett B, Aitken C, Jones M & Larter S:

Indicators of Anaerobic Hydrocarbon Degradation in Petroleum Reservoirs

15:30 Hill R, Jarvie D, Wei Z, Dahl J & Moldowan M:

INV Recognition of Oil-Condensate Mixtures: Implications for Basin Scale Petroleum Processes

15:45 Tang Y & Schoell M:

INV A New Genetic Scheme for Natural Gas Formation and Isotopic Evidence for Oil Cracking

16:00 Niemann M, Whiticar M & Ryan B:

INV Stable Isotope Systematic of Coalbed Methane

16:15 Fan M, Huang J & Cheng Q:

The Application of Thermal Simulating Experiment in Gas-Source Correlation

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Symposium S55

Room: Administration Auditorium

Nearly Nano-Compositional Imaging at the Sub-Micrometer Scale using Ion Beam Mass Spectrometry to Study Earth and Planetary Issues

Convenors:

Edward Vicenzi & Scott Messenger

13:30 Zinner E:

KEY Isotopic Analysis of Presolar Dust Grains with the NanoSIMS

14:00 Hoppe P, Mostefaoui S & Stephan T:

INV O- and S-Isotope Imaging of Primitive Solar System Materials with the Mainz NanoSIMS

14:15 Messenger S:

Distinguishing Solar and Extrasolar Origins of Submicrometer Grains in IDPs

14:30 Hutcheon I, Weber P, Fallon S & Krot A:

INV NanoSIMS Mg Isotope Analyses of Refractory Inclusions in Metal-Rich CB Chondrites

14:45 Busemann H, Alexander C & Nittler L:

INV Microscale D/H and C/H Imaging of Meteorites and IDPs – Calibration of ion Microprobe Data with Terrestrial Analogues and Meteoritic Residues

15:00 Stephan T:

KEY TOF-SIMS – A Tool for Sub-Micrometer Analysis in Geo- and Cosmochemistry

15:30 Vicenzi E & Rost D:

Hyperspectral Data Analysis of Martian Meteorite Alteration: a Tool for Constraining Surface Processes on Mars?

15:45 Rost D & Vicenzi E:

INV Carbonate-Silicate Assemblages in the Lafayette Martian Meteorite

16:00 Cliff J, Gaspar D, Bottomley P & Myrold D:

INV Microbial C and N Assimilation in Soils and Model Systems as Revealed by ToF-SIMS

16:15 Fahey A, Mahoney C & Gillen G:

INV Applications of SIMS Microanalysis at NIST

Symposium S65**Room: Albertson 102****Soft X-Ray Spectroscopy and Microscopy of Transition Metal Precipitates****Convenors:****Klaus Pecher & Tolek Tyliszczak****13:30 Myneni S:***KEY* Studying Ligands, Metals and their Complexes in Aqueous Systems using Soft X-Ray Spectroscopy**14:00 Loomer D, Al T, Weaver L & Cogswell S:***INV* Quantification of Mn Valence in Minerals at the Nanoscale using Electron Energy-Loss Spectroscopy**14:15 Yoon TH, Borch T, Benzerara K, Fendorf S, Tyliszczak T & Brown Jr. GE:***INV* Soft X-Ray Spectromicroscopy Study of Chemical Heterogeneities in Iron Precipitates Formed at or Near Bacterial Cells**14:30 Frazer BH, Xu H, Waychunas GA & De Stasio G:***INV* Quantitative Mapping of the Ferrous to Ferric Ratio on a Sub-Micron Scale using Synchrotron Spectromicroscopy**14:45 Tyliszczak T, Nilsson H, Werme L & Shuh D:***INV* Prospects for Actinide STXM**15:00 Chambers S:***KEY* Soft X-Ray Absorption and Emission Spectroscopies as Probes of Metal Dopants and Clusters**15:30 Pecher K, Baer DR, McCready D, Engelhard M, Lopatin S & Browning N:***INV* Spectroscopic Characterization of Nano-Magnetite: Facts and Mystery About an Illusive Mineral Phase**15:45 Lawrence J, Dynes J, Hitchcock A, West M, Leppard G, Swerhone G, Tyliszczak T & Araki T:***INV* Mapping of Metal Species in Biofilms using Scanning Transmission X-Ray Microscopy**16:00 Rehr J:***INV* Simulation and Theoretical Modeling of L-Edge XANES of Transition Metals**16:15 Bagus PS & Ilton ES:***INV* Rigorous Theoretical Determination of L-Edge Soft X-Ray Absorption Spectra for Transition Metal Complexes**Symposium S67****Room: Albertson 101****Speciation of Metals and Metalloids in the Environment: Control by Mineral Structures and Surface Processes****Convenors:****Alain Manceau & Jim Kirkpatrick****13:30 Somot S & Demopoulos GP:**

Hydrogeochemical Signature of Various Amorphous AsV-FeIII Phases

13:45 Thorat S, Rose J, van Geen L, Garnier J, Chapon V, Hazeman JL, Heulin T & Bottero J:

Oxidation of Natural Groundwater from Bangladesh: Arsenic Speciation Evolution Assessed by XAS

14:00 Moldovan B, Hendry MJ, Jiang D & Harrington G:

Geochemical and Mineralogical Controls on Arsenic Release from Uranium Mine Tailings

14:15 Donahoe R, Yang L & Lanzirotti A:Speciation and Surface Complexation of As on Hydrous Ferric Oxide in Soils Modified by *in situ* Chemical Fixation**14:30 Andrade CF, Jamieson HE, Walker SR, Lanzirotti A, Praharaj T & Fortin D:**

Transformation of Arsenic Species in Solids and Porewaters from Yellowknife Bay, NWT, Canada

14:45 Toevs G, Polizzotto M, Morra M, Strawn D, Fendorf S & Bostick B:

Arsenic Mobilization in Mine-Impacted Sediments

15:00 Saalfeld S, Quicksall A, Renshaw CE & Bostick BC:

Reductive Mechanisms of Arsenic Mobilization from Contaminated Sediments

15:15 Beauchemin S & Kwong J:

Transformation of As Species in Wetlands Historically Used for Mine Tailings Disposal (Ontario, Canada)

15:30 Zachara J, McKinley J, Liu C, Wang Z, Catalano J & Brown G:*KEY* Molecular Speciation, Mineral Residence, and Geochemical Behavior of U in Contaminated Subsurface Sediments**16:00 Korshin G, Chang H, Wang Z & Zachara J:**

Speciation of Uranyl Adsorbed on Gibbsite: a Time-Resolved Laser-Induced Fluorescence Spectroscopic Study

16:15 Ginder-Vogel M, Borch T & Fendorf S:

Reduction and Retention Processes within Arid Subsurface Environments

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Symposium S01

Posters

Accessory Mineral Geochemistry I: Igneous Petrogenesis and Crystal Chemistry

- 1 **Bayanova T & Mitrofanov F:**
Alkaline Plume Processes from Arhaean to Paleozoic Time in Geological History of the NE Baltic Shield
- 2 **Guo J:**
Petrogenesis and Geochemical Characteristics of Autochthonous-Parautochthonous Granitic Batholithes in Eastern Qinling Caledonian Orogenic Belt, Central China
- 3 **Hu H, Wang R, Zhang A & Xu S:**
Magmatic-Hydrothermal Evolution of Pollucite from No.3 Rare Metal Pegmatite Dyke, Koktokay, China
- 4 **Kebede T, Hidaka H, Horie K & Terada K:**
Zircon 'micro-Vein' in Gneissic Peralkaline Granite
- 5 **Kiseleva V, Sotnikov V & Ponomarchuk V:**
⁸⁷Sr/⁸⁶Sr - Ratio of Sphene and Apatite in Cu-Mo Porphyry Deposits as Indicators of Material Sources and Dynamics of the Ore-Forming Processes
- 6 **Kowallis BJ, Christiansen EH & Barth AP:**
Titanite as a Tool in Tephra Provenance Studies: An Example from the Late Jurassic
- 7 **Möller A & Nelson D:**
Influence of Matrix Effects on U-Th-Pb Dating of Monazite by Ion Microprobe
- 8 **Morisset C, Scoates JS & Weis D:**
Exsolution Origin for Zircon Rims Around Hemo-Ilmenite in Magmatic Fe-Ti Oxide Deposits
- 9 **Qin X, Du Y, Tian S, Lee HK, Yin J & Kim SJ:**
Discovery of Pyrrhotite-Chalcopyrite Bearing Amphibole Megacrysts in Tongling Area, Anhui Province
- 10 **Vazquez J & Reid M:**
Chronologies of Magmatic Evolution from Compositional Zoning in Allanite
- 11 **Xia X, Sun M, Zhao G & Luo Y:**
Basement Nature of the Ordos Terrane, Western Block of the North China Craton: Detrital Zircon Age and Hf Isotope Study on Khondalites from Wulashan Complex
- 12 **Xie L, Wang R & Wang D:**
Accessory Minerals as Indicators of Peralkaline and Aluminous A-Type Granites in the Coastal Area of Eastern China
- 13 **Zhang L & Ayers J:**
Investigation of Baddeleyite (ZrO₂) Solubility in Aqueous Alkaline Solutions

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Symposium S02

Posters

Accessory Mineral Geochemistry II: Metamorphic Petrogenesis and Tectonics

- 14 **Bingen B, Davis WJ & Osmundsen P:**
INV Titanite and Monazite U-Pb Dating of High-Grade Metamorphism and Extensional Denudation in the mid-Scandinavian Caledonides
- 15 **Catlos E, Dubey C, Marston R & Harrison M:**
INV Monazite Records of Deformation within the Himalayan Main Central Thrust Shear Zone, NW India
- 16 **Goffe B, Janots E, Brunet F, Bollinger L, Grevel K, Cemic L & Negro F:**
Natural and Thermochemical Stability of Monazite in Low-Grade Metapelites
- 17 **Isbrodin I & Ripp G:**
Nature of Metamorphosed High-Aluminum Rocks of Southwest Transbaikalia, Russia
- 18 **Koenig A & Magloughlin J:**
Systematics and Controls on REE Zoning in Metamorphic Garnet
- 19 **Kohn M:**
Monazite Chemistry and Chronology Reveal Diachronous Movement of the Main Central Thrust, Central Nepal
- 20 **Martins L & Janasi V:**
Trace-Element Zonation in Monazite from Garnet-Bearing Migmatites and Associated Granites, SE Brazil: Implications for Crustal Anatexis
- 21 **Pyle J & Spear F:**
Thermal Evolution of High-Grade Crust in the Acadian/Alleghenian Orogens, Central New England: Comparing Numeric Models with Insights from Monazite Paragenesis in LPHT Metamorphic Rocks
- 22 **Ramos R & Ribeiro M:**
Lithochemical Studies in Terrains Affected by Overthrust of Tectonic Nappes (Variscan Belt- Northern Portugal)
- 23 **Seydoux-Guillaume A, Montel J & Wirth R:**
TEM Study of Thorite Inclusions in Monazite: a Different Behaviour to Natural Irradiation
- 24 **Tomkins H & Pattison D:**
Monazite Petrogenesis in the Nelson Contact Aureole, Southern British Columbia
- 25 **Wang R, Wang S, Qiu J & Ni P:**
Rutile in the UHP Eclogites from the Sulu Terrane, China: An Electron Microprobe Study
- 26 **Wu Y, Zheng Y & Zhang S:**
Zircon U-Pb Geochronology of Migmatite in the Dabie Orogen of China: Evidence for a Genetic Link between Migmatitization and Granitic Magmatism

(Symposium S02 continues on page 80)

Symposium S03**Posters****Bridging the Technology Gap in Geomicrobiology: Novel Research Approaches in Extreme Environments**

- 27 **Banerjee N, Furnes H, Chacko T, Muehlenbachs K, Staudigel H & De Wit M:**
A Mechanism for Preservation of ~3.5 Billion-Year-Old Microbial Alteration
Textures in Pillow Basalts from the Barberton Greenstone Belt
- 28 **Higy Schweitzer M, Wittmeyer J, Horner J & Avcı R:**
Dinosaur Soft Tissues
- 29 **Kawarabayasi Y:**
Direct Detection and Discovery of Gene Resources from the Environment

Symposium S04**Posters****Advances in Experimental and Theoretical Methods for Characterization of Mineral-Fluid Interfaces**

- 30 **Ghose S, Eng P & Trainor T:**
Sorption and Structural Properties of Aqueous-Mineral Surfaces Interfaces: Surface
X-Ray Techniques
- 31 **Machesky M, Wesolowski D, Fenter P, Zhang Z & Kubicki J:**
Modeling Zn^{2+} Adsorption at the Rutile-Water Interface to Hydrothermal Conditions
- 33 **Ridley M, Machesky M & Hackley V:**
Surface Charge Development at the Interface of Nanocrystalline-Anatase and
Aqueous Solutions
- 34 **Smith C, Lee M, MacKenzie M & Hodson M:**
Weathering of Feldspar – A FIB and TEM Investigation
- 35 **Stack A, Rustad J & Casey W:**
Molecular Modeling of Water Exchange on Aluminum Clusters: Identifying
Reaction Mechanisms in Complex Systems
- 36 **Turner B & Fein J:**
A Derivative Method for Analysis of Surface Potentiometric Titration Data and
Model Optimization
- 37 **Wagstaff J, McKay G & Lofgren G:**
Observation of Contact Electrification between Silicate Melt/Pt and Mineral/Pt
Phase Interfaces
- 38 **Zhang Z, Fenter P, Kelly S, Catalano J, Kubicki J, Bandura A, Wesolowski D,
Machesky M, Sturchio N & Bedzyk M:**
Structure of Zn^{2+} at Rutile TiO_2 (110)-Aqueous Solution Interface

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Symposium S06**Posters****Apatite: Bridging Geology, Biology, and Materials Science**

- 39 **Allen C, Tailby N & Campbell IH:**
Dating Mineral Containing a Significant Common Pb Component – The Benefits of
in situ LA-ICP-MS Analysis
- 40 **Barwood H:**
Determination of Hydroxylapatite (HAP) Crystallite Orientation in Fossil Bones and
Teeth using Polarized Light Microscopy (PLM)
- 41 **Bengtsson Å, Lövgren L, Sjöberg S & Persson P:**
A Comparative Study of the Dissolution of Hydroxyapatite and Fluorapatite in the
Absence and Presence of Organic Ligands
- 42 **Drouet C, Carayon M & Rey C:**
Exchange of Biologically Relevant Ions on Nanocrystalline Apatites
- 43 **Erika G, Bernd B, Wolfgang S & Reinhart J:**
Micro-Raman Spectroscopy as a Non-Destructive Method for Quantitative
Measurement of Conodont Diagenetic Alteration
- 44 **Helean K & Moore R:**
Sequestration of Radionuclides and Heavy Metals by Hydroxyapatite Doped with Fe,
Cu and Sn
- 45 **Heywood B & Ray A:**
Molecular Partnerships as a Tool for Engineering the Morphology of Hydroxyapatite
- 46 **Matson SD & Fox DL:**
Can Fossil Turtle Bone Apatite be Used to Reconstruct Paleoclimates?
- 47 **McIntyre D:**
Historic Perspective: Victor M. Goldschmidt and Apatite
- 48 **Pasteris J & Wopenka B:**
Bioapatite: Where Structure Meets Composition
- 49 **Schofield P, Valsami-Jones E, Sneddon R, Wilson J, Kirk C, Terrill N, Martin C,
Lammie D & Wess T:**
Nucleation and Growth of Nano-Apatite: Applications to Biomineralisation
- 50 **Straight W, Karr J, Eberth D & Barrick R:**
Taphonomy, Geochemistry, and Diagenesis of Bone Accumulations in the Lower
Horseshoe Canyon Formation, Alberta, Canada
- 51 **Tecklenburg M, Awonusi A, Dennis S & Sirbescu M:**
Ion-Substituted Apatites: Standards for Raman Analysis of Bone
- 52 **Valsami-Jones E, Wilson J, Cressey G, Collins M, Manning D, Wess T, Younger P
& Woodgate S:**
Understanding Biomineralisation of Bone Apatite for Applications to Toxic Metal
Remediation: Preliminary Results
- 53 **Wopenka B, Zinner E & Pasteris J:**
Secondary Ion Mass Spectrometry of Hypermineralized Bioapatite: Human Enamel,
Whale Rostrum, and Whale Bulla
- 54 **Wright J:**
From Conodonts and Ancient Oceans to Fish Bones and Metal Contaminant
Stabilization
- 55 **Zhou C & Pasteris J:**
Preliminary Study of Fish Bone using Raman Spectroscopy

Symposium S08

Posters

A-Type Granites and Related Rocks Through Time

- 56 **Anthony E, Ren M, Omenda P & White J:**
QIIF Equilibria for Trachytes and Pantellerites from the Kenya Rift
- 57 **Barnes C, Li Y & Barnes M:**
Grenville U-Pb Zircon Ages of Surface and Subsurface Samples from Texas and Southern New Mexico
- 58 **Boztug D, Harlavan Y & Arehart GB:**
K-Ar Age and Stable Isotope Geochemistry of A-Type Granitoids in the Divrigi-Sivas Region, Turkey
- 59 **Costi HT, Dall'Agnol R, Rämö OT & Pichavant M:**
Petrogenesis of the Peralkaline, Cryolite-Tin-Mineralized Albite Granite from Pitinga, Brazil
- 60 **Elliott B, Peck W, Ramo T, Vaasjoki M & Nironen M:**
Oxygen Isotopes in Zircon from A-Type Granites in Southern Finland: An Indicator of Separate Terrains?
- 61 **Larin A, Kotov A, Salnikova E, Glebovitsky V & Kovach V:**
Kalar Complex (Siberian Craton) – The Oldest Example of the Anorthosite-Mangerite-Charnockite-Granite (AMCG) Association
- 62 **Li Z, Hu R, Peng J & Bi X:**
Helium and Sulfur Isotopic Geochemistry of Furong tin Deposit in Hunan Province
- 63 **Oliveira DC, Dall'Agnol R & Almeida JAC:**
Magmatic Zoning in Amazonian Paleoproterozoic A-Type Granites
- 64 **Tajbakhsh G, Emami M & Monsef R:**
Mylonitic Granites in NW of Iran: Characteristic, Genesis and Tectonomagmatic Implications
- 65 **Vernikovskaya A & Vernikovskiy V:**
Neoproterozoic Collisional and Anorogenic A-Type Granites of the Yenisey Ridge Orogen (Southwestern Framing of the Siberian Craton)

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Symposium S11

Posters

Biom mineralization Models and Mechanisms

- 66 **Biswas S & Becker U:**
Interaction of Mineral Surfaces with Oligopeptides as Organic Templates: An Insight into Biom mineralization
- 67 **Elhadj S, Dove P, De Yoreo J, Salter E & Wierzbicki A:**
Polyaspartate as a Stereochemical Switch for Controlling the Growth and Morphology of Calcite
- 68 **Kovalevskii AL, Kovalevskaya OM & Prokochuk SI:**
Mechanisms of Formation of Plants Bioliths
- 69 **Voice P:**
Biom mineralization Mechanisms: a Novice Biom mineral Enthusiast's Perspective
- 70 **Wasylenki L, Dove P & De Yoreo J:**
Effects of Temperature and Transport Conditions on Magnesium Contents in Calcite

Symposium S14

Posters

Cenozoic Magmatic Evolution of the Western U.S.

- 71 **Blondes M & Reiners P:**
Systematic Geochemical Variations in Single Eruptions of Primitive Basalts: Tectonic Implications
- 72 **Brady S & Hughes S:**
Mineralogy and Geochemistry of Table Legs Butte and Quaking Aspen Butte, Eastern Snake River Plain (ESRP), Idaho
- 73 **Brueseke M & Hart W:**
Mid-Miocene Basalt Driven Volcanic Field Development in the Pacific Northwest, USA
- 74 **Gilfillan S, Ballentine C & Holland G:**
The Noble Gas Character of Mantle Fluids Associated with Cenozoic Volcanism in the SW USA
- 75 **Vetter S, Shervais J & Hanan B:**
Geochemistry of Basaltic Volcanism in and around the Bruneau-Jarbridge Eruptive Center, Southwest Idaho
- 76 **Wright H & Cashman K:**
Shevlin Park Tuff: Welding Features of an Intermediate Composition Ash-Flow Tuff
- 77 **Zhang M, Hu P, Wang X, Liu G & Ye X:**
The Fluid Compositions of Lherzolite Xenoliths in Eastern China and Western American

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Symposium S15**Posters****Chemistry and Physics of Igneous Processes: Feedback Relations and the Fate of Magma**

- 78 **Bohrson W & Spera F:**
Feedback between Physical and Chemical Characteristics of an Evolving Open-System Magma Body
- 79 **Espejel-Garcia V, Anthony E & Ren M:**
Reverse Zoned Feldspars in Suswa Volcano, Kenya Rift: Evidence for Magma Mixing and Eruptions Triggered by Recharge
- 80 **Gonnermann H & Manga M:**
Nonequilibrium CO₂-H₂O Exsolution and Obsidian Formation
- 81 **Mondal S & Mathez E:**
Origin of UG2 and Other Chromitite Layer of the Bushveld Complex
- 82 **Moretti R, Gambardella B, Marini L & Métrich N:**
Effects of Sulfur Degassing and Sulfide Separation in Some Products of Mt. Etna Volcano (Sicily, Italy)
- 83 **Petrini R, Slejko FF, Forte C & D'Antonio M:**
Identification of the Hydrous Environments in Volcanic Glasses
- 84 **Peytcheva I, von Quadt A, Frank M, Georgiev N, Ivanov Z & Heinrich C:**
How Gabbro Zircons Contain more U than Zircons from the Co-Mingled Granodiorite – Lessons from U-Pb and Hf-Zircon Isotope Investigations
- 85 **Veksler I, Jakobsen JK, Dorfman A, Danyushevsky L, Dingwell DB & Leshner CE:**
Element Partitioning between Ferrobasalt-Rhyolite Immiscible Liquids

Symposium S16**Posters****Computer Modeling of Reactive-Transport in the Near-Surface Environment**

- 86 **Duan Z, Sun R & Hu J:**
A Model for Calculating the Solubility of Gases (CO₂, H₂S...) Used for the Sequestration of Global Warming Gases

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Symposium S17**Posters****Cosmogenic Nuclides and Surface Process Research: New Developments and Applications**

- 87 **Dunai T:**
CRONUS-EU Cosmic Ray Produced Nuclide Systematics – The European Contribution
- 88 **Li Y, Harbor J, Fabel D & Stroeven A:**
Interpreting Cosmogenic Nuclide Concentrations in Areas with Complex Exposure-Burial Histories Under Ice Sheets: How Sensitive are Results to Variations in the Ice Cover Proxy Curve?
- 89 **Lifton N, Bieber J, Clem J, Duldig M, Evenson P, Humble J & Pyle R:**
Solar Modulation and Scaling *in situ* Cosmogenic Nuclide Production Rates
- 90 **Phillips W, Barham L & Kubik P:**
Dating Alluvial Sediments with Cosmogenic Nuclides
- 91 **Pigati JS, Lifton NA & Desilets D:**
Integrating Geomagnetic Records and Cosmogenic Nuclide Production
- 92 **Schaefer J & CRONUS-Earth Steering Committee 1:**
The CRONUS-Earth (Cosmic-Ray prOduced NUclide Systematics on Earth) Initiative
- 93 **Schnabel C, Reinhardt L, Bishop P, Davidson A, Fifield LK, Freeman S, Maden C & Xu S:**
Inter-Comparison in ¹⁰Be Analysis Starting from Pre-Purified Quartz
- 94 **Zreda M, Desilets D, Li Y, Bradley E & Anderson KM:**
ICRONUS Meets CRONUS-Earth: Improved Calculations for Cosmogenic Dating Methods-From Neutron Intensity to Previously Ignored Correction Factors

Symposium S18

Posters

Diffusion-Reaction Systems in the Earth Sciences: New Characterization and Modeling Approaches

- 95 **Cavé L & Al T:**
TEM/EELS Measurement of Fe³⁺/ΣFe in Biotite Near a Fracture
- 96 **Coogan L, Kaseman S & Chakraborty S:**
Lithium-Gesopedometry: Quantifying Rapid Geological Processes
- 97 **Goutelard F, Charles Y & Tevissen E:**
Influence of Temperature on HTO and ³⁶Cl Diffusion in Bentonite and Callovo-Oxfordian Clays
- 98 **Guichet X, Schott J, Oelkers EH, Vincent B, Magnier C & Brosse E:**
Reactive Transport Experiments and Modelling of CO₂ Sequestration in Deep Aquifers
- 99 **Hofmann A, Van Beinum W, Kretzschmar R & Meeussen JCL:**
A Donnan Diffusion Model for the Description of Sr Adsorption Kinetics to Hydrated Ferric Oxide
- 100 **Redden G, Fujita Y, Delwiche M, White T, Roney T, Versteeg R, Fox D & Palmer C:**
Mixing Solutions, Precipitation and Changing Permeability in Porous Media
- 101 **Steeffel C, Brantley S, Navarre A & Hu Q:**
Rate Control in Low Porosity Diffusion-Reaction Systems

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Symposium S20

Posters

Earth Materials and Human Health

- 102 **Li X, Zheng B1, Wang Y & Wang X:**
A Survey of the Radon Level and the Risk to Radon Exposure in Underground Working Places in Capitals in China
- 103 **Nelson B, Wood S & Gunter ME:**
Dissolution of Tremolite: An Experimental Study Simulating Conditions in the Human Lung
- 104 **Ragnarsdottir K & Hawkins D:**
Trace Metals in Soils and their Relationship with Scrapie Occurrence
- 105 **Valentim B, Guedes A & Flores D:**
Characterization of Fly Ash by SEM/EDS and Raman Spectroscopy
- 106 **Werner M, Nico P & Anastasio C:**
Chromium Speciation and Transformation in Atmospheric Aerosol Particles

Symposium S21

Posters

Energetic Considerations for the Emergence and Proliferation of Life in Extreme Environments

- 107 **LaRowe D & Helgeson H:**
Thermodynamic Analysis of Microbial Metabolism in Hydrothermal Systems
- 108 **McCullom T:**
Energetic Constraints on Subsurface Biomass Production within the Igneous Ocean Crust
- 109 **Schulte M & Rogers K:**
Organic Sulfur Compounds in Extremophile Metabolisms

(Symposium S21 continues on page 87)

Symposium S23

Posters

Fractionation Mechanisms in Non-Traditional Stable Isotopes

- 110 **Amelin Y, Davis D & Davis B:**
Decoupled Fractionation of Even- and Odd-Mass Isotopes of Pb in TIMS
- 111 **Asael D, Matthews A, Bar-Matthews M, Halicz L, Ehrlich S & Teplyakov N:**
Redox Fractionation of Copper Isotopes in Sedimentary Conditions
- 112 **Clayton R, Hudson-Edwards K & Houghton S:**
Isotopic Effects during Cu Sorption onto Goethite
- 113 **Crosby H, Johnson C, Beard B & Roden E:**
Mechanisms of Fe Isotope Fractionation during Dissimilatory Fe(III) Reduction (DIR)
- 114 **De Laeter J, Rosman K & Schediwy S:**
Isotope Fractionation of Cadmium on the Moon
- 115 **Frost CD, von Blanckenburg F, Schoenberg R, Frost BR & Swapp SM:**
Preservation of Fe Isotope Compositions of Iron Formation during Contact Metamorphism
- 116 **Fujii T, Suzuki D, Watanabe K & Yamana H:**
Mass-Independent Isotope Effect in the Chemical Exchange Reaction of Chromium(III) using a Crown Ether
- 117 **Irisawa K & Hirata T:**
Isotope Fractionation of Tungsten on Geochemical Samples using ICP-Mass Spectrometry
- 118 **Ono S, Scott J, Rumble D, Wing B, Johnston D, Farquhar J & Voight J:**
Multiple Sulfur Isotope Constraints on Sulfur Cycle in the Seafloor Hydrothermal Systems
- 119 **Petrini R, Slejko FF, Ottonello G, Marini L, Vetusch Zuccolini M & Accornero M:**
Chromium Isotopic Fractionation during Cr(VI) Reduction in Groundwaters
- 120 **Teng F, McDonough W, Rudnick R & Walker R:**
Lithium Isotopic Fractionation in Pegmatites
- 121 **Wiederhold JG, Kraemer SM, Teutsch N, Halliday AN & Kretzschmar R:**
Iron Isotope Fractionation during Goethite Dissolution by Oxalate

(Symposium S23 continues on page 82)

Symposium S40

Posters

Interfacial Biogeochemical Processes

- 122 **Abd El-Fatah S, Cetiner Z, Williams T & Childers S:**
Microbial Diversity and Geochemical Heterogeneity within Siliceous Sinters
- 123 **Auffan M, Rose J & Bottero J:**
Effects of Maghemite Nanoparticles on the Toxicity of Arsenic within Cultured Human Fibroblasts
- 124 **Balogh Z, Keller CK, Stevens F & Dickinson JT:**
Rapid Ectomycorrhizal Channel Development on Biotite in Liquid Culture Experiments
- 125 **Boyanov M, O'Loughlin E, Kelly S, Roden E, Fein J & Kemner K:**
Reduction of U by Adsorbed vs. Surface-Precipitated Fe(II) at Model Cell Surfaces
- 126 **Goodhue L, Hamilton S & Southam G:**
The Geomicrobiology of Surficial Geochemical Anomalies
- 127 **Haack E & Maurice P:**
Examining the Nature of Siderophore-Montmorillonite Interactions
- 128 **Jeon B, Zachara J, Liu C, Kukkadapu R & Alice D:**
Abiotic Tc(VII) Reduction by Fe(II)
- 129 **Kraemer S, Frazier S & Kretzschmar R:**
The Effect of Bacterial and Plant Siderophores on Uranium (IV) Oxide Dissolution
- 130 **Lindegren M, Loring J, Redden G & Persson P:**
Citrate Adsorption at the Water-Goethite Interface: a Spectroscopic Evaluation of Surface Complexes
- 131 **Mueller B & Defago G:**
Effects of the Interaction between Vermiculite and the Bacterium *Pseudomonas fluorescens* Strain CHA0 and its Genetic Derivatives
- 132 **Turick C, Ekechukwu A & Lowy D:**
Electrochemical Analysis at the Microbe/Mineral Interface
- 133 **Wolff-Boenisch D & Traina S:**
Siderophore and Oxalate Mediated Desorption of Uranyl from Goethite

(Symposium S40 continues on page 83)

Symposium S46

Posters

Marine Geochemical Records of Glacial Events

- 134 **Olivarez Lyle A & Lyle M:**
Climate Change and Organic Carbon Deposition in Eocene Marine Sediments

Symposium S47

Posters

Mass-independent Isotope Variations in the Geological Record

- 135 **Bindeman I, Eiler J & Sarna-Wojcicki A:**
Oxygen-17 Excesses in Products of Stratospheric Volcanic Eruptions and Depletion of the Ozone Layer
- 136 **Cooney K, Farquhar J & Fogel M:**
Fractionation of Isotopes in Maryland Precipitation Nitrate
- 137 **Ewing S, Michalski G, Amundson R & Thiemens M:**
Effect of Precipitation on Anomalous Oxygen in Soil Nitrate and Sulfate
- 138 **Golding S & Young E:**
Multiple Sulfur Isotope Evidence for Dual Sulfur Sources in the 3.24 Ga Sulphur Springs VHMS Deposit
- 139 **Jamieson J, Wing B, Hannington M & Farquhar J:**
Isotopic Disequilibrium in Sulfide Mineral Pairs from Multiple Sulfur Isotopes
- 140 **Ohmoto H, Watanabe Y & Ikemi H:**
The Absence of Mass Independent Fractionation of Sulfur Isotopes in Archean Sedimentary Rocks: An Insignificant Phenomenon?
- 141 **Wang P, Rumble D, Ono S, Scott J & Steele A:**
Multiple Sulfur Isotope Fractionation of Microbial Sulfate Reduction
- 142 **Wing B, Lyons J, Ono S, Farquhar J, Jonasson I & Kaufman A:**
Reconciling Isotope Effects of SO₂ Photolysis with the Archean Record of Sulfur Multiple Isotopes

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24:PO

Symposium S51

Posters

Mineral Surface Reactivity

- 143 **Anovitz L, Riciputi L, Cole D & Fayek M:**
“Hydration” of Rhyolitic Glasses: Comparison between High- and Low-Temperature Processes
- 144 **Borda M, Paul K, Kubicki J & Sparks D:**
Effect of Drying on Mineral Surface Chemistry using ATR-FTIR Spectroscopy and Quantum Mechanical Modeling
- 145 **Chernyshova I:**
Mechanism of Redox Processes on Iron Oxides. A Spectroscopic Study
- 146 **Cochiara S & Phillips B:**
Fluoride Sorption onto Kaolinite: NMR Spectroscopic Studies
- 147 **Dowding C, Fey M, Borda M & Sparks D:**
A Possible Mechanism for Mn Release when Soils are Dried
- 148 **Fedortchouk Y, Semenets E & Canil D:**
Kinetics of Diamond Oxidation at Various Oxygen Fugacities
- 149 **Goncalves M & Figueiras J:**
Adsorption of Cu onto Illite Surfaces: The Effects of Ionic Strength and Organic Acids
- 150 **Hammer Ø & Dysthe DK:**
Travertine Terrace Growth Dynamics
- 151 **Hobson E, Wincott P, Vaughan D & Patrick R:**
An Investigation on the Extreme Silver Enrichment at Tennantite Surfaces in Alkaline Solutions: An XPS-Based Study
- 152 **Liu X & Lu X:**
Monte Carlo Simulation of Surface Energetic Heterogeneity of Goethite
- 153 **Lo C, Chaka A & Trainor T:**
Structures of the Clean and Hydroxylated Hematite (0001) and (1102) Surfaces: A Density Functional Theory Investigation
- 154 **Singer D, Catalano J & Brown G:**
Calcium Oxalate Surface Interactions with Lead

Tuesday May 24th 2005: Poster Session

Symposium S52

Posters

Molecular and Isotopic Indicators of Petroleum Processes from Source to Trap

- 155 **Hu W, Cao J, Zhang Y, Zhang Y & Gao X:**
Trace-Element of Calcite Cement in Reservoir Rocks as a Useful Tool Defining Hydrocarbon Migration Pattern, Junggar Basin, China

Symposium S53**Posters****Molecular Computer Simulations of Geological Materials and Processes**

- 156 Abidin Z, Matsue N & Henmi T:**
Molecular Orbital Study on Dissolution of Allophane with Dilute Alkali Solution
- 157 de Leeuw N & Du Z:**
The Effect of the Sizes of Alkali Cations on Structural Variations in Layered Silicate Materials
- 158 Kalinichev A & Kirkpatrick J:**
Molecular Dynamics Simulation of the Water/ α -Quartz Interface
- 159 Valiev M, Bylaska E, Tsemekhman K, Bogatko S & Weare J:**
New Developments of Fast Computational Methods for First Principles Geochemical and Geophysical Simulations

Symposium S54**Posters****Nanogeoscience**

- 160 Antony J, Sharma A, Pendyala S, Meyer D, Nutting J, R. Baer D, Wang C, McCready D, Engelhard M & Qiang Y:**
Iron-Iron Oxide Core Shell Nanoparticles for Contaminant Underground Water Treatment
- 161 Bomati-Miguel O, Veintemillas-Verdaguer S & Navrotsky A:**
Thermodynamics of High Temperature Iron Oxide Nanoparticles Obtained by Laser Pyrolysis
- 162 Jianjin C, Ruizhong H & Guiqing X:**
Migration of Geogas-Carrying Gold Nanoparticles in Quaternary Sediments
- 163 Jun Y-S & Martin ST:**
Effects of Cobalt on Oxide Film Formation on Manganese Carbonate
- 164 Makus KE & Vikesland P:**
Reduction of Halogenated Groundwater Contaminants by Nano-Sized Magnetite
- 165 Mazeina L, Deore S & Navrotsky A:**
Thermochemistry of Bulk and Nano Akaganeite
- 166 Parthasarathy G, Haggerty S & Kunwar A:**
Nano-Crystalline Osbornite from Carbonados: Spectroscopic Studies
- 167 Simonic P & Armbruster T:**
Incorporation of Guest-Molecules into Natural Zeolite Mordenite
- 168 Xie Q, Chen T, Xu H, Ji J & Chen J:**
Genesis and Mineralogical Characteristics of Hematite in Loess-Paleosol Sequences of China
- 169 Xu H, Chen T & Wang Y:**
Mechanical, Chemical, Magnetic, Transport, and Electronic Properties Changes at the Nanometer Scale

(Symposium S54 continues on page 83)

Symposium S57

Posters

NOM-Metal Complexation and the Mobility of Metals

- 170 **Bednar A, Medina V & Larson S:**
Effects of Natural Organic Matter on the Speciation of Uranium
- 171 **Bloom P, Khwaja A & Brezonik P:**
Hg²⁺ Bonding in Soil Humic Acid and Equilibrium Partitioning in Suspension
- 172 **Franke K & Kupsch H:**
Multielement and Rare Earth Element Profiles in an Ombrotrophic Peat from Germany
- 173 **He Z, Ohno T, Erich MS & Honeycutt CW:**
Impacts of Iron and Aluminum Ions on Solubility of Phosphates Associated with Natural Organic Matter
- 174 **Mulbachova G, Contin M & De Nobili M:**
Complexation of Pb and Zn by Humic Substances in Contaminated Soils

(Symposium S57 continues on page 84)

Symposium S59

Posters

Organic-Inorganic Interactions in Petroleum Hydrocarbon Systems

- 175 **Cao J, Yao S, Zhang Y, Wang X & Tao G:**
Integrate Organic and Inorganic Geochemical Approaches to Reconstructing Oil-Filling History, NW Junggar Basin (NW China)
- 176 **Cheng J, McIntosh J, Xie X & Jiao J:**
Hydrogeochemistry of Formation Water in the Northern Songliao Basin, China
- 177 **Das Sharma S:**
Surface Geochemical Methods for Oil and Gas Prospecting in Rice Fields – Some Constraints
- 178 **Lu X, Liu Q, Liu X, Zhang L & Hou Q:**
Variation in Surface Energy Heterogeneity of Crude Oil-Smectite Complexes with Different Content of Organic Matter
- 179 **Mingram B, Lueders V, Krooss B & Hoth P:**
Carboniferous Shales – A Source of Nitrogen in Gas Accumulations of the North German Basin?
- 180 **Shuichang Z, Guangyou Z, Jinxing D, Ying X & Yingbo L:**
TSR and Sour Gas Accumulation: A Case Study in the Sichuan Basin, SW China
- 181 **Tuo J, Wang X & Zhang M:**
The Roles of Inorganic Minerals on the Oil and Gas Generating Processes
- 182 **Xie X, Lu Y, Cheng J & Xie Y:**
Expulsion of Overpressure Fluid Flow along Faults: Geochemical Evidence of Pore Water in the Yinggehai Basin, South China Sea
- 183 **Zhu D, Hu W, Jin Z, Zhang X & Zhang J:**
Effects of Hydrothermal on Organic Matters in Oil/Gas-Bearing Basins

(Symposium S59 continues on page 89)

Symposium S61**Posters****Oxidation-Reduction Reactions in Marine Sediments**

- 184** **Chen Y, Jiang S, Ling H & Yang J:**
REE Geochemistry of Phosphate Nodules from the Lower Cambrian Black Shale Sequence in the Mufu Mountain of Nanjing, Jiangsu Province, China
- 185** **Chun C & Delaney M:**
Mn Enrichment Factors, Changes in Paleo-Redox or Source Material at Nazca Ridge (ODP Site 1237)
- 186** **Devol A, Chang B & Christensen J:**
Denitrification and Sulfate Reduction in Arctic Continental Margin Sediments
- 187** **Harnmeijer J, Orcutt B, Devol A & Joye S:**
Quantifying the Role of Manganese in Biotic and Abiotic Nitrogen Cycling
- 188** **Ingall E & Sannigrahi P:**
Effect of Bottom Water Oxygen on Phosphorus Composition and Diagenesis in Marine Sediments
- 189** **Ku T, Browne E, Kay J, Martini A, Peters S & Chen M:**
Elemental Cycling in Coastal Tropical Sediments, Saint Lucia, Lesser Antilles: Results from Multiple Pore Water Sampling Techniques (Dialysis, Centrifugation, DET, and DGT)
- 190** **Morford J, Martin W, Kalnejais L, Francois R & Karle I:**
Geochemical Cycling of U, Re and Mo in Coastal Sediments

Symposium S64**Posters****Recent Developments in Microbeam Cathodoluminescence with Applications to Mineralogy**

- 191** **Nishizawa S, Okumura T, Nishido H & Ninagawa K:**
Temperature Quenching Effect on Cathodoluminescence (CL) of Ca-Mg Series Carbonate Minerals
- 192** **Okumura T, Nishido H & Ninagawa K:**
Temperature Quenching Effect on Cathodoluminescence of Quartz from High Pressure Metamorphic Rocks

(Symposium S64 continues on page 89)

Symposium S66**Posters****Soils as the First Factor in Ground-Water Chemistry**

- 193** **Nichols E, Asmerom Y, Roback R & Jones C:**
Examining Water-Rock Interaction at the Idaho National Engineering and Environmental Laboratory using Uranium and Strontium Isotopes as Natural Environmental Tracers
- 194** **Watanabe K, Ochi A & Matsumoto I:**
Characteristics of River Sediment in the Light of the Environmental Quality Standard Value of Japan – A Case Study at the Tama, the Tsurumi, the Hino and the Kamo Rivers in Japan

(Symposium S66 continues on page 90)

Symposium S67

Posters

Speciation of Metals and Metalloids in the Environment: Control by Mineral Structures and Surface Processes

- 195 **Arai Y, Bargar J & Davis J:**
Effects of Monomeric Silicate Anion on Uranyl Adsorption and Surface Speciation at the Hematite-Water Interface
- 196 **Armstrong C & Wood S:**
Adsorption of Neodymium onto Goethite in the Presence of Fulvic Acid at 25°C
- 197 **Chaurand P, Rose J, Bottero J & Domas J:**
Speciation of Cr and V within Leached BOF Steel Slag
- 198 **Das S & Koretsky C:**
Adsorption of Lead on Single and Mixed Mineral Assemblages
- 200 **Kotler J, Hinman N & Tenesch A:**
Laser and Optical Chemical Imaging of Diagenesis in Iron-Oxide Deposits
- 201 **Lee Y, Elzinga E & Reeder R:**
Zinc Sorption on Hydroxyapatite: Systematic Uptake and EXAFS Studies
- 202 **Lopano C, Heaney P, Post J & Brantley S:**
Determination of Cation Exchange Rates in Synthetic Birnessite using Time-Resolved X-Ray Diffraction
- 203 **Matera V, Le Hécho I & Laboudigue A:**
Arsenic Speciation and Mobility in Contaminated Soils: Comparison of Column and Batch Extraction Experiments
- 204 **Mengistu H, Haas J & Koretsky C:**
Improved Thermodynamic Equilibrium Constants of Phosphate Adsorption onto HFO
- 205 **Ndengu S & Koretsky C:**
Investigating Ni Partitioning in a Contaminated Aquifer
- 206 **Pandey D, Tripathi JK, Mehta P & Rajamani V:**
Chemical Speciation Study of Amphibolite Weathering under Different Climatic Setup of Mysore Plateau, Southern India
- 207 **Panfili F, Manceau A, Sarret G, Laboudigue A, Bert V & Marcus M:**
Changes in Zn Speciation in the Rhizosphere of Gramineous Plants Induced by Phytostabilization of a Contaminated Sediment
- 208 **Pascua C, Asai A & Sato T:**
Cocprecipitation of As(III) with Synthesized Phyllosilicates and Hydrotalcite-Like Phases
- 209 **Post J, Heaney P & Hanson J:**
Temperature-Resolved Synchrotron X-Ray Diffraction Study of Dehydration of Birnessite-Like Phases
- 210 **Rihs S, Gaillard C & Manceau A:**
Interaction of U(VI) with Birnessite: a Solution Chemistry and EXAFS Study
- 211 **Wojnar A, Manecki M & Bajda T:**
Bioaccessibility of As(V) and Pb(II) from Mimetite
- 212 **Yadav P & Wallschläger D:**
Interaction between Arsenic Oxyanions and Iron-Sulfide Minerals

- 213 **Yin L, Zhao B & Li Z:**
Effects of Brucite on Ozonation Treatment of Dye Wastewater

Symposium S81

Posters

Watershed Scale Geochemistry

- 214 **Chaky D, Bopp R & Chillrud S:**
An Approach to Interpreting Contaminant Deposition Fluxes from Dated Sediment Cores
- 215 **Chen J & Zhang DD:**
Factors Controlling Tufa Deposition at Waterfall Sites
- 216 **Govil P:**
Soil Contamination of Heavy Metals in Katedan Industrial Area, Hyderabad, Andhra Pradesh, India
- 217 **Hellstern D, Ferguson K & Gregory R:**
Measurements of Oxygen and Hydrogen Isotopes in the Skagway River Catchment, Alaska
- 218 **Hilton R, Galy A & Hovius N:**
Riverine Particulate Organic Carbon from the Western Southern Alps, New Zealand
- 219 **McIntosh J & Walter L:**
Geochemical Evolution of Pleistocene Glacial Meltwaters within Regional Carbonate Aquifer Systems, Midcontinent U.S
- 220 **Murthy N:**
High Concentrations of Uranium and Thorium in Residual Soils of Wailpalli Watershed, Nalgonda District, Andhra Pradesh, India
- 221 **Yuan F & Miyamoto S:**
Identifying Sources of Total Dissolved Solids (TDS) in the Pecos River, USA

(Symposium S81 continues on page 85)

Symposium S82**Posters****Mineralogy and Geochemistry of Acid Mine Drainage and Metalliferous Minewastes**

- 222 **Bamforth S, Singleton I, Manning D, Younger P & Johnson K:**
The Role of Minerals in Catalysing Manganese Removal from Mine Water
- 223 **Chen C & Jiang W:**
Water Mixing and Precipitation of Arsenic-Bearing Iron Sulfate in the Chinkuashih Acid-Mine-Drainage Area, Northern Taiwan
- 224 **Davidson L, Benning L, Shaw S & Terrill N:**
The Effect of Arsenic on the Nucleation and Growth of Schwertmannite: An *in situ* SAXS Study
- 225 **Forray F & Navrotsky A:**
Thermochemistry of Arsenic Minerals
- 226 **Gomes M & Favas P:**
Mineralogical Controls on Mine Drainage, Ervedosa Mine, Northern Portugal
- 227 **Jiang W & Chen C:**
Formation and Transformation of Schwertmannite in Acid-Mine-Drainage Deposits of the Chinkuashih Mining Area, Northern Taiwan
- 228 **Maest A, LeJeune K, Lipton J, Cacela D & Atkins D:**
Baseline Water Quality at the Yanacocha Mine, Peru
- 229 **Nordstrom DK & Verplanck P:**
Pre-Mining Ground-Water Quality at Molycorp's Questa Molybdenum Mine, Red River Valley, New Mexico

(Symposium S82 continues on page 85)

Symposium G13**Posters****Igneous Geochemistry**

- 230 **Badmatsyrenov M & Ripp G:**
Geochemical Features of Oxide Minerals in Carbonatites of Northern Transbaikalia
- 231 **Bea F, Montero P, Molina JF, Ortega M, Scarrow J & Talavera C:**
Use and Abuse of the Term Shoshonitic: Shoshonites versus Vaugnerites, and Minettes
- 232 **Boudreau A:**
Modeling C-O-H-S Fluids and Sulfides in Igneous Systems
- 233 **Chen X, Zhao M, Wang R & Jiang S:**
Two Kinds of Plagioclases with Discontinuous Zoning in the Basalt from Okinawa Trough and their Tectonic Significance
- 234 **Demaiffe D, Femenias O & Berger J:**
Variscan Moho beneath the French Massif Central: a Xenolith Perspective from Puy Beaunit

- 235 **Hegazy H:**
Geochemistry and Mechanic Emplacement of Late Proterozoic Dyke Swarms, Eastern Desert, Egypt
- 236 **Heyworth Z, Nicholls I & Schaefer B:**
Intraplate Hypersthene Bearing Trachyandesites: Evidence for Multiple Magma Sources in the Newer Volcanic Province, Australia
- 237 **Orejana D, Villaseca C & Billström K:**
A PREMA Asthenospheric Component for the Permian Alkaline Dykes of the Spanish Central System
- 238 **Pretorius W, Scoates J, Weis D & Mattielli N:**
Siderophile Element Geochemistry of Restitic and Cumulate Xenoliths from the Southeast Province of the Kerguelen Archipelago
- 239 **Solá AR, Montero P, Ribeiro ML, Neiva AMR, Zinger T & Bea F:**
Pb/Pb Zircon Age of Carrascal Massif, Central Portugal
- 240 **Vinha G. Silva MM:**
Strontium and Oxygen Isotope Compositions from Redondo and Reguengos de Monsaraz Plutons, Southern Portugal
- 241 **Wu R, Zheng Y & Wu Y:**
Recycling of Juvenile Crust in Neoproterozoic Granodiorite from South Anhui of China: Zircon U-Pb Age, Element and O Isotope Evidence
- 242 **Wulff A:**
Difficulties Obtaining Geochemical Fingerprints of Tuffs Associated with Early Hominin Sites, Solo Basin, Java

Symposium G16**Posters****Marine Geochemistry**

- 243 **Amakawa H, Nomura M, Sato M, Oura Y & Ebihara M:**
Precise Determination of Sc in Natural Waters by INAA Coupled with Preconcentration of Sc
- 244 **Faul K, Paytan A & Gray E:**
The Sulfur Isotopic Composition of Seawater from Marine Barite during the Paleocene Eocene Thermal Maximum (~55 Ma)
- 245 **Gouveia A, Corredeira C, Araújo F & Jouanneau J:**
Sources of REE in Fine Sediments of the Portuguese Shelf: Origin and Dispersal Pathways
- 246 **Tazoe H, Obata H, Amakawa H & Gamo T:**
Cerium and Neodymium Isotopic Compositions in the Northwestern Pacific and its Adjacent Seas
- 247 **Yamamoto K, Itoh N, Matsumoto T, Tanaka T & Adachi M:**
REE Composition of Circa 3.4 Ga Seawater Deduced from that of Precambrian Carbonate Intercalated in Pillows

Goldschmidt 2005

CONFERENCE PROGRAMME

Wednesday May 25th 2005

Symposium S01**Room: Renfrew 126****Accessory Mineral Geochemistry I: Igneous Petrogenesis and Crystal Chemistry****Convenors: John M. Hanchar & Paul W. O. Hoskin****08:30 Valley J & Lackey JS:***KEY* Magmatic Zircon, Titanite, and Garnet: Oxygen Isotope Disequilibrium is Good**09:00 Palin M:**

Zircon Chronochemistry of the Mesa Falls Tuff (Yellowstone, USA): Progressive Remelting of a Felsic Source by Underplated Mafic Magma

09:15 Miller C, Lowery L & Bea F:*INV* Zircon and Zr/Hf Ratios: Assessing Magmatic Fractionation in the Crust**09:30 Nasdala L:***INV* High-Resolution Spectroscopy of Radiation-Damaged Zircon**09:45 Hroie K, Hidaka H & Gauthier-Lafaye F:**

U-Pb Geochronology and Geochemistry of Zircon from the Franceville Series at Bidoudouma, Gabon

10:00 Harlov D, Prochazka V & Förster H:

Monazite-Zircon-Fluorapatite Associations in the Melechov Granite Massif, Czech Republic

Symposium S02**Room: Renfrew 126****Accessory Mineral Geochemistry II: Metamorphic Petrogenesis and Tectonics****Convenors: Joe Pyle & Matt Kohn****10:15 Seydoux-Guillaume A:***KEY* Nanometrical Study of Polyphasic and Discordant Monazites**10:45 Crowley J, Chatterjee N, Bowring S, Sylvester P, Myers J & Searle M:**

U-(Th)-Pb Dating of Monazite and Xenotime by EMPA, LA-ICPMS, and IDTIMS: Examples from the Yilgarn Craton and Himalayas

11:00 McFarlane C:

Monazite Thermochronology Applied to the Challenger Mine, S. Australia

11:15 Tomkins H & Ross G:*INV* Biogenic and Metamorphic Monazite in a Neoproterozoic Turbidite Sequence, Windermere Supergroup, Southern B.C.**11:30 Gleadow A, Raza A, Kohn B & Spencer S:**

The Potential of Monazite for Fission-Track Dating

11:45 Penniston-Dorland S & Ferry J:

Coupled Dichotomies of Apatite and Fluid Composition in Contact Metamorphosed Siliceous Carbonates

(Symposium S02 continues on page 86)

Symposium S04 **Room: Administration Auditorium**
Advances in Experimental and Theoretical Methods for
Characterization of Mineral-Fluid Interfaces

Convenors: **Andrew Stack, Paul Fenter & Steve Higgins**

- 08:30 Hiemstra T, Rahnemaie R & van Riemsdijk W:**
 The Structure of the Double Layer Near Goethite in the Presence of Mono and Bivalent Electrolyte Ions
- 08:45 Chaka A, Lo C & Trainor T:**
 Predicting the Impact of the Environment on the Structure and Chemistry of Metal Oxide Surfaces
- 09:00 Cooke D, Kerisit S, Marmier A & Parker S:**
 Atomistic Simulation of the Mineral-Water Interface in Contact with Charged Surfaces
- 09:15 Sahai N & Anseau M:**
INV Identification of Active Site and Reaction Mechanism for Epitaxial Apatite Nucleation at the Pseudowollastonite Bioceramic-Bone Interface
- 09:30 Zakaznova-Iakovleva V, Harmer S, Nesbitt W, Bancroft M, Tse J & Skinner W:**
 High Resolution Valence Band Spectra of Silicates
- 09:45 Jordan G, Aldushin K & Schmahl WW:**
INV Kinematics of Interlayer Reactions
- 10:00 Hunger S, Benning LG & Tarasov KA:**
 Greigite – Now you see it now you Don't: An *in situ* ED-XRD Study
- 10:15 Park C, Fenter P, Sturchio N & Regalbutto J:**
INV Resonant Anomalous X-Ray Reflectivity: a New Structural and Spectroscopic Probe of Metal Adsorption at Mineral-Water Interfaces
- 10:30 Kendall T & Martin S:**
 Spatially-Resolved Ion Mobility on Carbonates
- 10:45 Boily J:**
 Calibration of Surface Complexation Reactions with Zeta Potentials
- 11:00 Allen H, Liu D & Ma G:**
INV Water and Organic Adsorption and Structure at Alumina and Silica Surfaces
- 11:15 Kirkpatrick J, Reinholdt M & Kalinichev A:**
 Amino Acid - Mineral Interaction: Experimental NMR and Computational MD Investigation of Glutamate-Intercalated Hydrotalcite
- 11:30 Konec C, Musorrafiti M, Voges A, Al-Abadleh H & Geiger F:**
INV Tracking Interfacial Acidities, Charge Density, Potential, and Energy Density at Carboxylic Acid-Functionalized Silica/Water Interfaces using Second Harmonic and Sum Frequency Generation
- 11:45 Phillips B & Lee Y:**
INV NMR Spectroscopic Techniques for the Study of Organic Ligand Interaction with Calcite Surfaces

Symposium S14 **Room: Renfrew 112**
Cenozoic Magmatic Evolution of the Western U.S.

Convenors: **Anita Grunder & Rick Carlson**

- 08:30 Farmer L, Bailey T & Knox K:**
INV Reassessment of the Sources and Space-Time Patterns of Late Cretaceous and Younger Magmatism, Colorado
- 08:45 Christiansen RL:**
KEY Post-Laramide Tectonomagmatics of the U.S. Cordillera
- 09:00 Glazner A, Farmer L, Walker D, Carlson R & Bowers T:**
KEY The Curious Decoupling of Cenozoic Magmatism and Plate Tectonics in Western North America: a NAVDAT Analysis
- 09:15 Gans P:**
INV Puzzling Aspects of Cenozoic Cordilleran Magmatic Activity: Do we Need a New Paradigm?
- 09:30 Christiansen E:**
INV Miocene Magmatic Transition in the Northern Basin and Range Province, Western United States
- 09:45 Hooper P, Camp V, Reidel S & Ross M:**
 The Columbia River Basalts
- 10:00 Reidel S:**
 Heterogeneity in Columbia River Basalt Group Dikes and the Flows they Feed: Implications for Significance and Time Scale of Magma Processes
- 10:15 Camp V, Ross M & Hooper P:**
INV The Calc-Alkaline Paradox of the Inland Pacific Northwest
- 10:30 Hart W, Brueseke M, Shoemaker K & Bondre N:**
INV Revisiting the Tectonomagmatic Implications of Oregon Plateau Basaltic Volcanism
- 10:45 Leeman W:**
INV Lithospheric vs. Asthenospheric Contributions to Basaltic Magmatism in the Snake River Plain - Yellowstone (SRPY) Hot-Spot Track
- 11:00 Reid M, Graham D, Cooper L & Lassak T:**
INV On the Enigmatic Basalts of the Eastern Snake River Plain, Idaho
- 11:15 Hughes S:**
 Geochemical Evidence for Multiple, Chemically-Evolved Mafic Magma Reservoirs beneath the Eastern Snake River Plain (ESRP)
- 11:30 Nash B & Perkins M:**
INV The Yellowstone Hotspot in Space and Time: Evidence from Silicic Volcanism
- 11:45 Morgan LA, Pierce KL & McIntosh WC:**
INV Patterns of Rhyolitic Volcanism along the Track of the Yellowstone Hotspot

Symposium S18**Room: CNR 010****Diffusion-Reaction Systems in the Earth Sciences: New Characterization and Modeling Approaches****Convenors:** Carl I. Steefel, Philippe Van Cappellen & Sumit Chakraborty

- 08:30** **Jamtveit B & Malthe-Sorensen A:**
KEY Fracturing-Assisted Reactive Transport
- 09:00** **Cole D, Labotka T, Larson P, More K, Kenik E, Fayek M, Stadermann F & Riciputi L:**
Mineral Reaction Interfaces and Associated Porosity Generation
- 09:15** **Navarre A, Steefel C & Brantley S:**
Conversion of Rock to Saprolite: a Study of Weathering Rinds
- 09:30** **Liu C, Majors P, Zachara J & McKinley J:**
INV Microscopic Reactive Diffusion of U(VI) in Subsurface Sediments: Characterization and Modeling
- 09:45** **Hu Q, Ewing R, Steefel C, Tomutsa L & Hudson B:**
INV Multiple Approaches to Studying Diffusion Processes in Geological Media
- 10:00** **Felmy A, Liu C & Straatsma T:**
The Importance of Diffusion at the Microbe-Mineral Interface: Electrical Double Layer Effects and the Impact on Precipitation/Dissolution
- 10:15** **Kang Q & Lichtner P:**
INV Lattice Boltzmann Pore-Scale Model for Coupled Multi-Component Flow, Diffusion, and Reaction
- 10:30** **Boudreau B:**
KEY Bubble Growth in Soft Sediments: Diffusion Meets Solid Mechanics
- 11:00** **Jourabchi P, Regnier P & Van Cappellen P:**
INV Quantitative Interpretation of pH Distributions in Aquatic Sediments: a Reaction-Transport Modeling Approach
- 11:15** **Bolton EW & Berner RA:**
INV Oxygen Diffusion and Consumption in Eroding Black Shales: a Control on Long-Term Atmospheric Oxygen
- 11:30** **Maerki M, Müller B & Wehrli B:**
INV Mineralization Pathways in the Sediments of Lake Baikal – A Microsensor and Modeling Study
- 11:45** **DePaolo D & Smith M:**
Isotopic Effects in Reactive Fluid-Rock Systems with Fracture-Dominated Flow and Matrix Diffusion

(Symposium S18 continues on page 87)

Symposium S23**Room: Renfrew 125****Fractionation Mechanisms in Non-Traditional Stable Isotopes****Convenors:** Alan Matthews & Albert Galy

- 08:30** **Johnson C, Roden E, Beard B & Crosby H:**
Fractionation of Fe Isotopes during Biogenic Mineral Formation by Dissimilatory Fe(III) Reduction (DIR)
- 08:45** **Schauble E:**
KEY Modeling Stable Isotope Fractionation in Crystals
- 09:15** **Tossell J:**
Calculating the Partitioning of the Isotopes of Mo between Oxidic And Sulfidic Species in Aqueous Solution
- 09:30** **Polyakov Y, Mineev S & Clayton R:**
INV Iron and Tin Isotope Equilibrium Fractionation Factors from Mössbauer and Synchrotron Radiation Data
- 09:45** **Williams L & Hervig R:**
Probing Crystal Growth Mechanisms with Non-Traditional Isotopes
- 10:00** **Schuessler J, Schoenberg R, Behrens H & von Blanckenburg F:**
Experimental Calibration of the Fe Isotope Fractionation between Pyrrhotite and Silicate Melt
- 10:15** **Bain D & Bullen T:**
INV Chromium Isotope Fractionation during Oxidation of Cr(III) by Manganese Oxides
- 10:30** **Maher K & Larson P:**
Copper Isotope Fractionation at High Temperature: Investigating Copper Mineralization at Corocohuayco, Perú
- 10:45** **Galy A:**
KEY Distinguishing between Kinetic and Equilibrium Isotopic Fractionations using 3 Isotopes
- 11:00** **Carder E, Galy A, McKenzie J, Vasconcelos C & Elderfield H:**
Magnesium Isotopes in Bacterial Dolomites: a Novel Approach to the Dolomite Problem
- 11:15** **Dessert C, Galy A & Elderfield H:**
Mechanisms of Mg Isotopes Fractionation during CaCO₃ Biomineralisation
- 11:30** **Tipper E, Galy A & Bickle M:**
Process-Related Covariation in Mg and Ca Isotopes in the Riverine Dissolved Load
- 11:45** **Farquhar J, Johnston D, Wing B, Ono S, Canfield D & Habicht K:**
INV Multiple Isotope Effects Associated with Biogeochemical Networks

Symposium S40 **Room: Agricultural Science 106**
Interfacial Biogeochemical Processes

Convenors: **James Frederickson, Javiera Cervini & Stephan Kraemer**

- 08:30 Hering J:**
KEY Sorption and Surface Precipitation as Controls on the Reactivity and Bioavailability of Sorbates and Sorbents
- 09:00 Johnson K & Fein J:**
Bacterial Adsorption Controls on Mineral Solubility
- 09:15 Campbell K, Malasarn D, Saltikov C, Newman D & Hering J:**
Effect of Sorbed Arsenic Species on Bacterial Reduction of HFO
- 09:30 Roden E:**
INV A General Rate law for Bacterial Fe(III) Oxide Reduction
- 09:45 Eggleston C, Khare N & Lovelace D:**
INV Direct Electrochemistry of Cytochrome C on Oxide Electrodes
- 10:00 Behrends T & Van Cappellen P:**
Transformation of Hematite into Magnetite – How do Bacteria Contribute?
- 10:15 Scherer M, Larese-Casanova P & Williams A:**
INV Fe(II) Adsorption at the Oxide-Water Interface: From Macroscopic Observations to Spectroscopic Measurements
- 10:30 Peiffer S & Gade W:**
Does Surface Acidity of Ferric (oxy)hydroxides Affect Reactivity Towards H₂S?
- 10:45 Rosso K, Wang Z, Ainsworth C & Fredrickson J:**
INV Rates of Uranium Electron Transfer: a Theoretical Perspective
- 11:00 Kretzschmar R, Heidmann I & Christl I:**
INV Effects of Metal Cation Binding on the Colloidal Stability of Kaolinite-Fulvic Acid Particles
- 11:15 Mikutta C, Lang F & Kaupenjohann M:**
Citrate Impairs the Diffusion of Phosphate into Goethite
- 11:30 Martin S, Jun Y, Kendall T & Duckworth O:**
INV Nucleation and Growth of Manganese Oxide Films
- 11:45 Bylaska E, Tsemekhman K, Ilton E & Rosso K:**
INV Self-Consistent Self-Interaction Corrected DFT Studies of Annite

(Symposium S40 continues on page 88)

Symposium S54 **Room: Renfrew 111**
Nanogeoscience

Convenors: **Kevin Rosso & R. Lee Penn**

- 08:30 Banerjee S, Penn L, Berquo T, Guyodo Y & Popa R:**
INV Accurate Multidisciplinary Identification of Nanophase Iron Minerals in Simulated Pedogenic Environment
- 08:45 Navrotsky A:**
INV Nanoparticle-Mediated Processes and the Ostwald Step Rule
- 09:00 Frandsen C, Bahl C & Mørup S:**
KEY Antiferromagnetic Nanoparticles
- 09:30 Reich M, Utsunomiya S, Becker U, Wang L & Ewing R:**
In situ Observation of Thermodynamic Size Effects on Melting of Natural Gold Nanoparticles
- 09:45 Kim C & Waychunas G:**
Reactivity of Iron Oxyhydroxide Nanoparticles with Heavy Metals as a Function of Particle Size
- 10:00 Madden A & Hochella, Jr. M:**
INV Nanoscience Meets Geochemistry: Size-Dependent Reactivity of Hematite
- 10:15 Penn RL, Anschutz AJ, Jentzsch T & Erbs J:**
Reactivity of Ferrihydrite Nanoparticles Prepared With and Without Added Carbonate, Arsenate, and Other Oxoanions
- 10:30 Harrington L & Myneni S:**
INV The Structural Chemistry of Hydroxyl Moieties in Ferric Polymers
- 10:45 Rustad J & Casey W:**
KEY Computational Subcolloidal Mineralogy
- 11:15 Teng H & Fan C:**
INV Controls of Step Length and Direction on Crystal Solubility
- 11:30 Wang Y & Xu H:**
INV Nanogeochimistry: Geochemical Reactions in Nanopores
- 11:45 Balaz P & Alacova A:**
Relationship between Freundlich Equation Constants for Zinc Sorption on Nanocrystalline Calcite

Symposium S57 **Room: Agricultural Science 204**
NOM-Metal Complexation and the Mobility of Metals

Convenors: **Paul Bloom & Yona Chen**

- 08:30** **Tipping E, Lofts S, Lawlor A & Shotbolt L:**
KEY Humic Ion-Binding Modelling and its Application to Field Processes and Ecotoxicology
- 09:00** **Benedetti MF:**
KEY Metal Binding to NOM from Database to Field Systems
- 09:30** **van Riemsdijk W & Weng L:**
INV Fundamental Aspects of Interaction between Metals and Humics in the Environment
- 09:45** **Gérard E, Jaffrain J, Boudot J & Ranger J:**
 Influence of SOM on Aluminium Mobility in a Forested Brown Acidic Soil: A View from Soil Solutions Held at Different Matrix Potentials
- 10:00** **Chen Y, Kaschl A & Gat P:**
 The Binding of Cadmium, Copper and Iron by Fractions of Dissolved Organic Matter and Humic Substances Originating from Compost
- 10:15** **Reszat T, Hendry J & Ranville J:**
 Quantifying Uranium Complexation in Groundwater DOC using Coupled Detection Methods
- 10:30** **Kaste J, Friedland A, Bostick B & Schroth A:**
 Lead Transport and Speciation in Organic Horizons of Forest Soils
- 10:45** **Perdue EM, Hertkorn N & Kettrup A:**
INV A Potentiometric and ¹¹³Cd NMR Study of Cadmium Complexation by Natural Organic Matter at Two Different Magnetic Field Strengths
- 11:00** **Aiken G, Ryan J & Nagy K:**
INV Interactions between Dissolved Organic Matter and Mercury in Aquatic Environments
- 11:15** **Nagy K, Waples J, Aiken G & Ryan J:**
 The Influence of Dissolved Organic Matter on Cinnabar Dissolution
- 11:30** **Gu B:**
 Role of Humic Substances in Metal Complexation, Reduction and Reoxidation Processes
- 11:45** **Palmer N & von Wandruszka R:**
 Reduction of Inorganic Arsenic with Humic Materials

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25:am

Symposium S63 **Room: Albertson 102**
**Recent Advances in Electron Microbeam Induced X-Ray
 Microanalysis: Instrumentation, Hyperspectral Data
 Handling, and Applications to Geochemistry**

Convenors: **Dale Newbury, Greg Meeker & Paul Carpenter**

- 08:30** **Carpenter P:**
KEY Quantitative Electron Probe Microanalysis: State of the Art
- 09:00** **Newbury D:**
KEY SEM/EDS X-Ray Spectrum Imaging Above 100 kHz with the Silicon Drift Detector (SDD), and How to Locate the Proverbial Needle in a Haystack, Even When you Don't Know it's a Needle that You are Seeking!
- 09:30** **Kotula P, Keenan M, Goldstein J & Carpenter P:**
INV STEM and SEM X-Ray Spectral Imaging with Multivariate Statistical Analysis: Application to the Microanalysis of Meteorites
- 09:45** **Meeker G, Lowers H & Brownfield I:**
INV Microanalysis of Particulate Mineral Material in the Real World; How Analytical Errors Affect Results used by the Health, Regulatory, and Legal Communities
- 10:00** **Donovan J & Rowe M:**
INV Techniques for Improving Quantitative Analysis of Mineral Glasses
- 10:15** **Fournelle J:**
INV Al and Si Quantitation in Routine Silicate EPMA: Maybe not so Routine
- 10:30** **Kelly J, Gosses J, Webber C, Staffier K & Fournelle J:**
INV PENELOPE Computer Simulations of Secondary Fluorescence in EPMA
- 10:45** **Sakamoto T, Shimada N, Abe D, Nakamura T, Nozaki W, Shimada K & Iida A:**
 SR-XRF Analyses of Trace Elements in Electrum from Several Epithermal Gold Deposits, Japan

Wednesday May 25th 2005: Morning Session

Symposium S81

Room: Albertson 201

Watershed Scale Geochemistry

Convenors: Russell Harmon, Berry Lyons & David Long

- 08:30 Velbel M:**
KEY Solute Geochemical Mass Balance and Forest Biomass in Small Appalachian Blue Ridge Watersheds
- 08:45 Peters S, Hargreaves B & Haight S:**
Solute Behavior in Agricultural vs Forested Watersheds during Storm Events: Implications for DOC Sources
- 09:00 Price J, Patino L & Velbel M:**
Geochemical Mass Balances and Weathering Rates in Forested Watersheds of the Southern Blue Ridge: Solving More Equations in More Unknowns Through Incorporation of Rare Earth Elements
- 09:15 Lindeman M, Long D, Pijanowski B & Stevenson RJ:**
Exploring the Effects of Urban and Agricultural Land Use on Surface Water Quality
- 09:30 Jardé E, Gruau G & Mansuy-Huault L:**
The Coprostanol/Sterol Ratio as Indicator of Organic Matter Provenance in Soils and Rivers
- 09:45 Chetelat B & Gaillardet J:**
Human Impacts on Boron Geochemistry of the Seine River, France
- 10:00 Glanzman R & Squires E:**
Boise Valley Groundwater Geochemistry – Origin, Infiltration Rate and Transport Characteristics
- 10:15 Giammar D, Yuan Z & Falke S:**
Geochemical Indicators of Natural and Anthropogenic Water Inputs to a Lake in a Mixed Land Use Watershed
- 10:30 Dosseto A, Douglas G & Turner S:**
Understanding Radioactive Disequilibrium in River-Borne Material: Dependence on Colloid/Particle Size
- 10:45 Parker S, Poulson S & Gammons C:**
Diel Cycles in Stable Isotopes of Dissolved O₂ and Dissolved Inorganic Carbon in the Big Hole River, Montana
- 11:00 Alagappan R:**
Ecohydrochemical Studies in the Achankovil River Basin. Western Ghats. South India
- 11:15 Gruau G & Jardé E:**
Export of DOM by Rivers: Assessing the Relative Effects of Climate Change and Human Activities using Long-Term Records
- 11:30 Kautz C & Martin C:**
Chemical Weathering and Erosion in New Zealand Monitored by Bedload and Suspended Sediments
- 11:45 Young C, Hoover D, De Carlo E, Mackenzie F & McManus M:**
Impact of Storm Runoff from Subtropical Watersheds on Coastal Water Quality and Productivity

Symposium S82

Room: Albertson 101

Mineralogy and Geochemistry of Acid Mine Drainage and Metalliferous Minewastes

Convenors: David J. Vaughan & John L. Jambor

- 08:30 Majzlan J, Nielsen U & Grey C:**
The Existence and Mobility of Hydronium Ion in the Structure of Jarosite
- 08:45 Hudson-Edwards K, Smith A, Dubbin W & Wright K:**
Jarosites in Acid Mine Drainage Environments: Formation, Mineralogy, Stability
- 09:00 Sidenko N & Sherriff B:**
The Attenuation of Ni, Zn, Cu, by Secondary Fe Phases from Surface and Ground Water of Two Sulfide Mine Tailings Deposits
- 09:15 Hammarstrom J, Piatak N & Seal R:**
Mineralogical Controls on Acid-Mine Drainage from Waste Piles in the Vermont Copper Belt
- 09:30 Logsdon M, Saran J, Yeomans B & Cherry J:**
Use of a Mine-Tailing Line as a Geochemical Reactor for Treating Acid-Rock Drainage: Bingham Canyon (USA)
- 09:45 Alpers CN, Majzlan J, McCleskey RB, Nordstrom DK & Navrotsky A:**
Thermodynamic Data for Hydrated Ferric Sulfates and Application to Secondary Minerals at Iron Mountain, California
- 10:00 Peterson R:**
Dehydration and Rehydration of Melanterite with Significant Copper Content
- 10:15 Ndur S & Norman D:**
Arsenic Distribution in the Sansu Tailings Dam, Anglogold Ashanti Gold Mine, Obuasi, Ghana
- 10:30 Petrunic B & Al T:**
Arsenopyrite Weathering in Tungsten Mine Tailings: a TEM Analysis
- 10:45 Yang Y & Liu C:**
Anthropogenic Heavy Metal Discrimination in Stream Sediments around an Abandoned Zinc Smelter by using Isotope Tracers
- 11:00 Nimick D, Cleasby T & McCleskey B:**
Seasonality of Diel Cycles of Dissolved Trace-Metal Concentrations in a Rocky Mountain Stream
- 11:15 Gammons C, Shope C & Xie Y:**
Causes of Diel Cycling of Zn in Streams with Near-Neutral pH Draining Abandoned Mine Lands
- 11:30 Bostick B, Landis J & Gehrke G:**
Seasonal Mineralogical Transformations Influence Heavy Metal Release from Mine-Impacted Coeur d'Alene River (ID) Wetlands
- 11:45 Conca JL & Wright J:**
The Mineralogical Facies Developed within an Apatite II PRB for Pb, Cd and Zn Acid Mine Drainage

Wednesday May 25th 2005: Morning Session

Symposium S02**Room: Renfrew 126****Accessory Mineral Geochemistry II: Metamorphic
Petrogenesis and Tectonics****Convenors:****Joe Pyle & Matt Kohn****13:30 Möller A:***KEY* Constraints on Age and Duration of Metamorphic Events from *in situ* U-Pb Dating and Geochemical Characterization of Zircon**14:00 Kelly N & Harley S:***INV* Timing of Zircon Growth during High-Grade Metamorphism: Constraints from Garnet-Zircon REE**14:15 Baldwin J, Brown M, McDonough W, Piccoli P & Timpa S:**

Zircon Paragenesis and Timing of UHT Metamorphism in the Anápolis-Itaçu Complex, Brazil

14:30 Chen D, Deloule E, Xia Q, Li B & Ni T:

Synchronized Study on Micro-Scale U-Pb Ages and Oxygen Isotopes for Metamorphic Zircons from Dabie-Sulu Orogen, Eastern Central China

14:45 Wang X & Yao X:

Metamorphic Zircon and its Inclusion Minerals from Coesite-Bearing Eclogites of the Dabie Mountains (East-Central China)

15:00 Sorensen S:*INV* Accessory Minerals, Trace Elements, Fluids and Subduction**15:15 Spear F, Cheney J & Wark D:**

Application of Accessory Phase/Trace Element Thermometry to Blueschists from Syros and Sifnos, Greece

15:30 Henry D:

Fluorine – X-Site Vacancy Avoidance in Natural Tourmaline: Internal vs. External Control

15:45 Davis W & McNicoll V:

U-Pb Discordance in Titanite and the Interpretation of the Thermal History of Metamorphic Rocks

16:00 Nicolescu S & Reiners P:

(U-Th)/He Dating of Epidote and Andradite Garnet

16:15 Stockli D:*INV* Application of Multiple (U-Th)/He Geo- and Thermochronometers with Closure Temperatures <~250°C**Symposium S08****Room: Renfrew 125****A-Type Granites and Related Rocks Through Time****Convenors:****Carol Frost, Roberto Dall'Agnol & Tapani Ramo****13:30 Dall'Agnol R, Frost CD & Rämö OT:***INV* A-Type Granites and Related Rocks Through Time**13:45 Bonin B:***KEY* A-Type Granites: Definitions, Facts and Speculations**14:00 Christiansen E:**

Cenozoic and Proterozoic A-Type Silicic Magmas of the Western US

14:15 McLemore V & Rämö OT:

1.4 and 1.2 Ga Bimodal A-Type Magmatism in SW New Mexico and SE Arizona, USA

14:30 Lowell G, Harrison R & Unruh D:

Contrasting Rift-Margin Volcanism in the St. Francois Terrane of Missouri at 1.47 Ga

14:45 Goodge J & Vervoort J:

Hf Isotope Compositions of Laurentian Anorogenic Granites

15:00 Rämö OT, Elliott BA, Peck WH, Johanson B & Alviola R:

A-Type Granites and AMCG Suites; An Isotopic Study from SE Finland

15:15 Rosa MLS, Menezes RCL, Conceição H, Macambira MJ, Galarza MA, Oliveira EC, Marinho MM & Rios DC:

Geochronology of a Rare Alkaline Magmatism: The Blue Sodalite-Syenite Ore (NE Brazil)

15:30 Rubiolo D & Hickson C:

Mesozoic Alkaline Magmatism as a Window to Interpret Geotectonic Evolution of the Central Andes

15:45 Frindt S & Haapala I:

Cretaceous Gross Spitzkoppe Stock in Namibia: Genuine A-Type Granites Related to Continental Rifting

16:00 Wei C, Zheng Y & Zhao Z:²⁰⁷Pb-²⁰⁸Pb Decoupling of Alkali Feldspar from a Late Mesozoic A-Type Granite in Eastern China: Implications for Magma Dynamics**16:15 Whalen J:***KEY* A-Type Granites: >25 Years Later

Symposium S16

Room: CNR 010

Computer Modeling of Reactive-Transport in the Near-Surface Environment

Convenor:

David Sherman

15:15 Parkhurst D, Kipp K, Engesgaard P & Charlton S:

KEY PHAST – A Program for Simulating Ground-Water Flow, Solute Transport, and Multicomponent Geochemical Reactions

15:30 Cooper D, Hull L & Wright K:

Geochemical Modeling of Decontamination Solutions for Building Surfaces

15:45 Zhang G, Spycher N, Sonnenthal E & Steefel C:

Reactive Transport Modeling of Acid Gas Generation and Condensation

16:00 Driesner T, Kostova B & Heinrich CA:

Hydrodynamic and Thermodynamic Modelling of the Formation of the Yuzhna Petrovitsa Hydrothermal Pb-Zn Ore Deposit, Madan, Bulgaria

16:15 van der Grift B & Griffioen J:

Geochemical Transport Modeling of a Phreatic Drinking Water Pumping Station

Symposium S18

Room: CNR 010

Diffusion-Reaction Systems in the Earth Sciences: New Characterization and Modeling Approaches

Convenors:

Carl I. Steefel, Philippe Van Cappellen & Sumit Chakraborty

13:30 Tirone M & Morgan JP:

INV Non-Equilibrium Thermodynamics: Diffusion Controlled Partial Melting

13:45 Soler J, Gimmi T, Cartalade A, Wersin P & Van loon L:

INV *In situ* Diffusion at Mont Terri URL

14:00 Malmström M, Destouni G & Berglund S:

Spreading versus Mixing Effects on Reactive Transport in Groundwater

Presentation by the Clarke Medallist

14:15 Van Orman J:

Diffusion in Mantle and Core Materials

14:45 Liang Y:

INV Diffusion and Reaction in Multicomponent Partially Molten Silicates: Dissolution-Reprecipitation

15:00 Lundstrom C:

How Solid Solution Minerals React with Melt during Diffusion-Reaction

Symposium S21

Room: Agricultural Science 106

Energetic Considerations for the Emergence and Proliferation of Life in Extreme Environments

Convenors:

Mitch Schulte, Tom McCollom & Tori Hoehler

15:15 Edwards K, Santelli C & Bach W:

KEY Microbial Weathering of Ocean Crust

15:45 Hand K, Carlson R & Chyba C:

INV Oxidant Production via Electron Bombardment: Progress in Experimental Simulations of the European Surface Environment

16:00 Arkadakskiy S, Muehlenbachs K, Mendoza C & Szatkowski B:

Anaerobic Oxidation of Natural Gas in Soil – The Geochemical Evidence?

16:15 Rogers K & Amend J:

INV What's on the Menu for Thermophilic Heterotrophs?

Symposium S37 **Room: Renfrew 111**
Igneous Processes and their Rates from U-Series Studies

Convenors: Aaron Pietruszka, Jorge Vazquez & Kari Cooper

- 13:30 Reid M & Cooper K:**
INV A Mixed Message from U-Series Crystal Ages
- 13:45 Snyder D, Widom E, Pietruszka A & Carlson R:**
INV Time Scales of Chemically Zoned Magma Chamber Formation: U-Series Disequilibria in the Fogo Trachyte Deposits, São Miguel, Azores
- 14:00 Pietruszka A, Hauri E, Carlson R & Garcia M:**
 The ^{226}Ra Chronology and Magma Residence Time of Young Lavas from Loihi Seamount, Hawaii
- 14:15 Sims KWW & Hart SR:**
KEY Comparison of Th, Pb, Nd and Sr Isotopes in Oceanic Basalts: Implications for Mantle Heterogeneity and Magma Genesis
- 14:30 Standish JJ, Sims KWW & Dick HJB:**
 Producing U-Series Disequilibria thru Ultraslow Crustal Accretion
- 14:45 Saal A & Van Orman J:**
INV Diffusive Fractionation of ^{226}Ra - ^{230}Th in Oceanic Basalts during Shallow Level Interaction
- 15:00 Rubin K, van der Zander I, Smith M & Bergmanis E:**
INV ^{210}Pb - ^{226}Ra - ^{230}Th Disequilibria in Very Young Mid-Ocean Ridge Basalts
- 15:15 Reagan M, Tepley F, Gill J, Cooper K & Garrison J:**
KEY Degassing and Crystallization Time-Scales Implied by ^{210}Po - ^{210}Pb - ^{226}Ra Activities for Lavas from Anatahan, Arenal, and Mount St. Helens
- 15:30 Turner S & Berlo K:**
INV ^{210}Pb - ^{226}Ra - ^{230}Th Implications for the Timescales of Island Arc Magma Degassing
- 15:45 George R, Turner S, Reagan M, Sandiford M, Hawkesworth C & Hildreth W:**
INV Magma Differentiation and Storage at Katmai-Novarupta 1912: Comparing U-Series Time Scales with Thermal Models
- 16:00 Tepley F, Lundstrom C, Williams R & Gill J:**
INV U-Th-Ra Disequilibria and the Time Scale of Andesite Differentiation at Arenal Volcano, Costa Rica (1968-2003)
- 16:15 Zou H, Fan Q & Schmitt A:**
 U-Th Disequilibrium Constraints on the Origin of Holocene Lavas from Jingbohu, Long-Gang and Tianchi

Symposium S40 **Room: Agricultural Science 106**
Interfacial Biogeochemical Processes

Convenors: James Frederickson, Javiera Cervini & Stephan Kraemer

- 13:30 Traina S & Chen C:**
KEY Siderophore-Metal Interactions on Oxide Surfaces
- 14:00 Duckworth O & Sposito G:**
INV Formation of Manganese-Desferrioxime B Complexes by Dissolution of Manganese Oxides
- 14:15 Maurice P, Mishra B, Haack E & Bunker B:**
INV Effects of Siderophores on Pb Adsorption to Kaolinite
- 14:30 Bunker B, Mishra B, Haack E & Maurice P:**
INV Pb Speciation in the Presence of Siderophores and Clay Surfaces – XAFS Study
- 14:45 Carrasco N, Kretzschmar R & Kraemer S:**
 The Effect of Synthetic and Biogenic Surfactants on Iron Oxide Dissolution
- 15:00 Semrau J, DiSpirito A & Antholine W:**
INV Metal Binding by a Novel Biogenic Chalkophore, Methanobactin, and the Effect on Microbial Activity

Symposium S59

Room: Agricultural Science 204

Organic-Inorganic Interactions in Petroleum Hydrocarbon Systems

Convenors:

Geoffrey S. Ellis & Jeff Seewald

- 13:30 Hill R, Kaplan I, Aizenshtat Z, Tannenbaum E & Jarvie D:**
INV Reality or Myth: The Role of Minerals in Petroleum Generation
- 13:45 Kennedy M & Pevear D:**
INV Clay Mineral Control of Organic Carbon Deposition and Preservation in Petroleum Source Rocks
- 14:00 Ritter U & Groever A:**
Molecular Retention Processes in Source Rocks: Can They Explain Fractionation during Expulsion?
- 14:15 Bennett B, van Duin A & Larter S:**
INV Fluid-Rock Interactions in Petroleum Reservoirs: Alkylphenols
- 14:30 Helgeson H, Schmitt A, Richard L & Dick J:**
INV Phase Relations in the System CHO and the Generation of Petroleum in Hydrocarbon Source Rocks
- 14:45 Mango F:**
INV The Case for Catalytic Gas
- 15:00 Schimmelmann A:**
INV Hydrogen Isotopes in Organic Matter Maturation: a Synthesis
- 15:15 Sherwood Lollar B, Telling J, Lacrampe-Couloume G, Fu Q, Seyfried, Jr. W, Horita J & McCollom T:**
INV Carbon and Hydrogen Isotope Measurements in Abiogenic Hydrocarbon Synthesis
- 15:30 Fu Q, Sherwood Lollar B, Horita J, Lacrampe-Couloume G & Seyfried W:**
Hydrogen and Carbon Isotope Compositions of Hydrocarbons in Hydrothermal Carbon Reduction Processes
- 15:45 Seewald J & Boekelheide N:**
Experimental Investigation of Organic Acid Carboxyl Carbon Exchange with Aqueous CO₂
- 16:00 Tang Y, Ellis G, Zhang T & Jin Y:**
Effect of Aqueous Chemistry on the Thermal Stability of Hydrocarbons in Petroleum Reservoirs
- 16:15 Worden R & Carrigan W:**
INV Oil-Anhydrite TSR Reactions in the Permian Khuff Fm, Saudi Arabia

Symposium S64

Room: Albertson 102

Recent Developments in Microbeam Cathodoluminescence with Applications to Mineralogy

Convenors:

Ian Coulson & Paul Mainwaring

- 13:30 Edwards P, Martin R & Lee M:**
KEY Simultaneous Cathodoluminescence Hyperspectral Imaging and X-Ray Microanalysis
- 14:00 Palenik CS & Buscaglia J:**
KEY Applications of Cathodoluminescence in Forensic Geology
- 14:30 Schieber J & Wintsch R:**
INV Scanned Color Cathodoluminescence Establishes a Slate Belt Provenance for Detrital Quartz in Devonian Black Shales of the Appalachian Basin
- 14:45 Wark D & Spear F:**
INV Ti in Quartz: Cathodoluminescence and Thermometry
- 15:00 Lee M, Martin R, Edwards P & Parsons I:**
INV Hyperspectral Cathodoluminescence Mapping of Calcite and Feldspar
- 15:15 Coulson I & Mainwaring P:**
INV Zoning Patterns in Metasomatic Minerals from the North Qôroq Centre, South Greenland: Insights and Significance from Cathodoluminescence
- 15:30 Vicenzi E, Sorensen S & Rose T:**
INV From Luminoscope to SEM-Based Hyperspectral Imaging: An Evolution of CL Technology
- 15:45 Harlow G, Sahm E & Hunt J:**
INV CL in Support of Interpreting Gem Deposits
- 16:00 Gleeson S & Ickert R:**
The Relationship between Aluminium Contents and Cathodoluminescence in Hydrothermal Quartz Veins

Symposium S66**Room: Albertson 101****Soils as the First Factor in Ground-Water Chemistry****Convenors:****Gwen Macpherson & MaryLynn Musgrove****13:30 Reheis M, Forester R & Izbicki J:***INV* A Dust-Soil-Groundwater-Dust Cycle, Southwestern United States**14:00 Kurtz A, Pett-Ridge J, Lugolobi F, Derry L & Troester J:***INV* Solute Sources in a Tropical Granitoid Watershed, Luquillo, Puerto Rico**14:30 Jin L, Williams E, Walter L & Hamilton S:**Carbonate and Plagioclase Weathering Rates in Pleistocene Glacial Drift Deposits:
Solute Fluxes from Soils to Shallow Groundwater Systems**14:45 Dworkin SI:**

Origin of Radiogenic Sr in Surface Waters of Central Texas, USA

15:00 Macpherson GL, Johnson WC & Gatto LW:

REE in Konza Prairie LTER Site (USA) Soil – Allochthonous?

15:15 McMahon P & Bohlke J:*INV* Variability of Nitrate Sources in a Regional Aquifer: Role of Soil Processes and
Land use**15:45 Hartog N:**

Redox Controls on Denitrification at the Soil-Aquifer Interface

16:00 Townsend M & Macko S:

Evapoconcentration not an Indicator of Nitrate in Kansas Ground Water

16:15 Likhoshvay A & Grachev M:

Reversible Sorption of Phosphate Anions by Sediments of Lake Baikal

Symposium S72**Room: Albertson 201****The Bacterial Surface and its Role as a Reactive Interface****Convenors:****Jeremy Fein, Susan Glasauer & Vernon Phoenix****13:30 Beveridge T:***KEY* Bacterial Surface Structure, Physicochemistry and Geo-Reactivity**14:00 Ferris G:***KEY* Interfacial Free Energy Relationships in Bacterial Surface-Mineral Interactions**14:30 Gorman-Lewis D, Jensen M & Fein J:**Measuring the Enthalpy of Proton, Lead, and Cadmium Adsorption onto *Bacillus subtilis***14:45 Borrok D, Borrok J, Fein J & Kiessling L:***INV* A Link between Bacterial Surface Adsorption and Chemotactic Response**15:00 Yee N, Kobayashi D & Ma J:***INV* The Kinetics and Mechanism of Selenate Reduction by *Enterobacter cloacea***15:15 DiChristina T:***INV* New Insights into the Molecular Mechanism of Microbial Metal Respiration**15:30 Gorby Y, Biju V, Pan D, Mclean J, Saffarini D, Fredrickson J & Lu P:**Display and Retraction of Outer Membrane, Cytochromes by *Shewanella oneidensis* in Response to Electron Acceptor Availability**15:45 Konhauser K & Lalonde S:***INV* Role of Proteins in Silicification**16:00 Templeton A, Tebo B, Staudigel H, Bailey B, Lisa H & Trainor T:***INV* Fe(II) and Mn(II) Oxidation and Biomineralization within Basalt-Hosted
Lithoautotrophic Biofilms**16:15 Dittrich M & Obst M:***INV* Role of the Cell Surface in Calcite Precipitation on Picocyanobacteria

