

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

55

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 Ketchum 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

57

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 Fougérite 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)

61

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

63

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

(Symposium S52 continues on page 73)

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

(Symposium S67 continues on page 77)

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

(Symposium S01 continues on page 80)

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 & Avci 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

(Symposium S04 continues on page 81)

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 & Vernikovsky V:**
Neoproterozoic Collisional and Anorogenic A-Type Granites of the Yenisey Ridge Orogen (Southwestern Framing of the Siberian Craton)

(Symposium S08 continues on page 86)

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

(Symposium S14 continues on page 81)

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

(Symposium S16 continues on page 87)

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

(Symposium S18 continues on page 82)

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:**
INV Reconciling Isotope Effects of SO₂ Photolysis with the Archean Record of Sulfur Multiple Isotopes

73

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