

GOLDSCHMIDT 2010

Oral and Poster Presentations

Thursday June 17th 2010

Summary & Highlights

08:30	Plenary <i>Ballroom EFG</i> Susan Brantley Penn State University <i>'Bedrock to Soil: Where Rocks Meet Life in the Critical Zone'</i>	
09:15		
09:30	Oral Sessions	
12:30	Lunch (from 11:30) <i>Exhibit Hall A</i>	
13:30	Oral Sessions	
16:30	Poster Session <i>Exhibit Hall A</i>	Awards <i>Lecture Hall</i> Shen-su Sun Award: Zi-Fu Zhao GSJ Geochemical Journal Award: Michael Bau and Andrea Koschinsky IAG Early Career Researcher Award: Regina Mertz-Kraus <i>Full details page xx</i>
17:30		
18:00		

Thu

	200-A	200-B	200-C	200-D	200-E	300-A/B	300-C/D
	18f	17d	16c	15n / 15l	21c	02d	08c
09:30	Pratt	Burns	Essington	Stolz	McMillan	Papineau	Bebout
09:45				Engel	Vasquez	Huberty	
10:00	Head-Gordon	Casey	Donahoe	Härtig	Chon	Johnson	Chen
10:15	Morrone	Hennig	Kim	Daniel	Sadeghi		Liu
10:30	Weare	Rossberg	Langner	Weber	Carranza	Czaja	Menold
10:45	Sit	Singer	Mikutta		Grunsky	Fedo	Ye
11:00	Martyna	Boyanov	Le Hécho	Kozubal		Li	McClelland
11:15	Agmon	Perdrial	Yang	Fleming	Fraser	Murakami	Sheng
11:30		Kirsch	Rouff	Swanner	Cheng	Blum	Xia
11:45	Chandra	Finck	Mills	Leslie	Mehrabadi	Beukes	Zeng
12:00	Iyengar	Breynaert	Braud	Lu	Zhao	Lalonde	Li
12:15	Ma	Boland	Efimenko	Lentini	Bolster	Hage	Chen

	301-A	301-B	301-C	301-D/E	Ballroom A	Ballroom B	Ballroom C	Lecture
	14e / 14d	13f	12h / 12i	09h / 09i	03i / 03f	04e	08g / 08h	20i / 20f
09:30	Tipper	Hazen	Barbeau	Larter	van Hinsberg	Ewing	Chakraborty	Marshall
09:45	Verney-Carron	Cozzarelli	Hemming	Mastalerz	Trail		Stanley	
10:00	Liu	Flynn		Schlegel	Martin	DePaolo	Hirsch	Mao
10:15	Liu	Strattan	Hendry	Damashek	Laubier	Gabitov	Labotka	Marshall
10:30	Reynolds	LaRowe	Hartin	Jones	Frost	Stipp	Ferry	Podgorski
10:45	Balakrishnan	Noble	Dove	Gilcrease		Johnson	Ague	Hatcher
11:00	Kamber	Watson	Nehrke	Shuai	Hayden	Cooper	Dutrow	Rossel
11:15	Gislason	Boisson	Scherler	McIntosh	Chabot		Nabelek	Zwiener
11:30	Struyf	Akob	Singer	Boswell	Enggist	Liang	Parsons	Ravizza
11:45	White	Johnston	Finch	Beeskow-Strauch	Crispin	Teng	Villa	Kuroda
12:00	Lerman	Yang	Cuif	Wilson	Andrault	Dauphas	Allaz	Creaser
12:15	Van Cappellen	Ramaraju	Williams	Zhang	Grocholski	Kavner	Wirth	

02d: Precambrian Sediments as Records of Early Earth Tectonics and Ocean-Atmosphere-Biosphere Interactions

Session chaired by Huifang Xu, Chris Fedo & Andrew Czaja

- 09:30 Fluid-Deposition of Graphite with Apatite in an Eoarchean Banded Iron Formation from the Nuvvuagittuq Supracrustal Belt, Québec, Canada
A790 *Papineau D, De Gregorio B, Steele A, Stroud R & Fogel M*
-
- 09:45 Silician Magnetite from the Dales Gorge Banded Iron Formation
A434 *Huberty J, Konishi H, Fournelle J, Heck P, Valley J & Xu H*
-
- 10:00 **Keynote:** Isotopic Compositions of Archean and Proterozoic Rocks: Paleo-Ocean Proxies or Microbial Cycling?
A471 *Johnson C*
-
- 10:30 Iron Isotopes Reveal an Abiological Origin for a 2.75 Ga BIF from the Yilgarn Craton, Western Australia
A201 *Czaja AD, Johnson CM, Beard BL & Van Kranendonk MJ*
-
- 10:45 Can Fe Isotopes be Used to Fingerprint Precambrian BIF?
A282 *Fedo C, Hage M, Schoenberg R & Whitehouse M*
-
- 11:00 Fe Isotope Composition of BIF from NE China and its Paleogeographic Implications
A601 *Li Z-H, Zhu X-K & Tang S-H*
-
- 11:15 Weathering Under Low O₂ Conditions: Interpretation of Paleoproterozoic Paleosols
A739 *Murakami T & Sreenivas B*
-
- 11:30 Mercury Isotopes in the Late Archean Mount McRae Shale
A98 *Blum J & Anbar A*
-
- 11:45 **Invited:** Ce Anomalies in ~2.4 Ga Iron and Manganese Formations as Proxy for Early Oxygenation of Oceanic Environments
A85 *Beukes N, Gutzmer J & Nel B*
-
- 12:00 Transition Element Abundances in Banded Iron Formations Record the Great Oxidation Event
A557 *Lalonde S, Pecoits E & Konhauser K*
-
- 12:15 Evidence of a Redox Chemocline in post-Goe Oceans from the 1.9 Ga Gunflint Iron Formation
A369 *Hage M, Kamber B & Fedo C*
-

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03f: Experimental Petrology of the Mantle and Core

Session chaired by Michael J Walter,
Oliver Lord & Reidar Tronnes

- 11:30 The Stability of Phlogopite in the Sub-Continental Lithospheric Mantle: KCMASH±CO₂ vs. KMASH-CO₂
A267 *Enggist A & Luth R*
-
- 11:45 Length Scales of Chemical Transport in the Lower Mantle: Mn, Fe, Co, and Ni Diffusion in Periclase
A195 *Crispin K & Van Orman J*
-
- 12:00 **Keynote:** Melting Curve of the Lowermost Earth's Mantle
A22 *Andrault D, lo Nigro G, Bolfan-Casanova N, Bouhifd M-A, Garbarino G & Mezouar M*
-
- 12:15 Post-Perovskite Phase Transition in Compositions Related to Mantle Rocks
A356 *Grocholski B, Shim S-H & Prakapenka V*
-

(Session 03f continues on Thursday 17th Posters on page 230)

03i: Trace Element Partitioning

Session chaired by Wim van Westrenen,
James Van Orman & John Ayers

- 09:30 Lattice-Strain Modeling of Fluid Compositions in Subduction Zones and the Mid-Ocean Ridges
A1072 *van Hinsberg V & Williams-Jones A*
-
- 09:45 Ce Anomalies in Zircon vs. Oxygen Fugacity and Melt Composition
A1052 *Trail D, Watson EB & Tailby N*
-
- 10:00 Experimental Element Partitioning between Silicate and Carbonatite Melts and Evidence for Liquid Immiscibility
A672 *Martin LHJ, Schmidt MW, Gunther D & Hametner K*
-
- 10:15 Laser ICP-MS Study of Trace Element Partitioning between Olivine, Plagioclase and a Basaltic Melt
A566 *Laubier M, Grove TL & Langmuir CH*
-
- 10:30 **Keynote:** Si and O in the Earth's Core and their Effects on the Metal-Silicate Partitioning of Other Siderophile Elements
A308 *Frost D, Tsuno K, Rubie D & Nakajima Y*
-
- 11:00 Trace Element Partitioning in the Fe-S-C±P System
A388 *Hayden L, Van Orman J, McDonough W & Ash R*
-
- 11:15 Partitioning Behavior at Pressure in the Fe-S System
A155 *Chabot N, McDonough W, Saslow S, Ash R, Draper D, Jones J & Agee C*
-

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Session 03f follows this session in this room.

For details see page 183.

04e: Geochemistry far from Equilibrium
(A Session Celebrating the 5th
Anniversary of Elements Magazine)

Session chaired by Bruce Watson & Michael Hochella

- 09:30 **Keynote:** The Origin and Evolution of *Elements*
A Ewing R
-
- 10:00 **Invited:** Kinetic Theory of Isotopic and Trace Element
Partitioning between Calcite and Aqueous Solution
A224 DePaolo D
-
- 10:15 **Invited:** Growth Rate Effect on Fractionation of Elements
and Li Isotopes during Calcite and Aragonite Growth
A313 Gabitov R
-
- 10:30 **Invited:** Why are Chalk Particles so Small?
A994 Stipp SLS
-
- 10:45 **Invited:** Does Low Temperature and/or Life Demand
Disequilibrium? An Fe Isotope Perspective
A472 Johnson C
-
- 11:00 **Keynote:** Petrological & Geophysical Processes far from
Equilibrium: Fluctuations, Bifurcations, Criticality, Time
and Texture
A189 Cooper R
-
- 11:30 **Invited:** Grain Growth and Dissolution during Crystal-Melt
Interaction
A604 Liang Y, Xia Y & Bons P
-
- 11:45 Diffusion-Driven Kinetic Magnesium and Iron Isotope
Fractionation in Hawaiian Basalts and Olivines
A1036 Teng F-Z, Dauphas N, Huang S & Helz R
-
- 12:00 **Invited:** Isotopic Effects from Diffusive Transport in Zoned
Metal and Olivine
A211 Dauphas N & Teng F-Z
-
- 12:15 Metal Stable Isotope Probes of Electrified Interfaces
A499 Kavner A & Black J
-

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08c: Geochemical Processes in Continental Collision Zones I

Session chaired by Yong-Fei Zheng & Simon Cuthbert

- 09:30 **Keynote:** Subduction-Collision Transition and Preservation of Subduction-Zone Geochemical History in HP/UHP Metamorphic Suites
A65 *Bebout G*
-
- 10:00 **Invited:** Hydrogen Isotopes and Water Contents in Minerals from UHP Metamorphic Rocks
A171 *Chen R-X, Zheng Y-F & Gong B*
-
- 10:15 Evolution of Fluid Chlorinity Indicated by Cl-Bearing Minerals in the Processes of Subduction and Exhumation of UHP Eclogites of Yangkou from the Sulu Ultrahigh Pressure Metamorphic Terrane, China
A613 *Liu J, Zhang L, Mao Q & Ye K*
-
- 10:30 Assessing the Relationship between Excess Argon Content and Recrystallization of Ultrahigh-Pressure Metamorphic Rocks
A698 *Menold C, Grove M & Manning C*
-
- 10:45 **Invited:** Dissolution of Minerals into Ultrahigh-Pressure (UHP) Fluid and Element Mobilization during Small-Scale UHP Fluid-rock Interaction
A1182 *Ye K, Guo S, Chen Y & Liu J*
-
- 11:00 Zircon Trace Element Geochemistry from UHP to Exhumation Conditions, North-East Greenland Caledonides
A685 *McClelland WC, Gilotti JA & Wooden JL*
-
- 11:15 *In situ* U-Pb Dating, Oxygen Isotope and Trace Element Analyses of Zircons from Quartz Vein and Host UHP Eclogite in the Dabie Orogen
A948 *Sheng Y-M & Zheng Y-F*
-
- 11:30 **Invited:** Distinguishing Metamorphic Growth from Recrystallization of Zircon in Eclogite-Facies Metamorphic Rocks
A1151 *Xia Q-X, Chen R-X & Zheng Y-F*
-
- 11:45 Constrains on the Timing of Partial Melting Events in the Sulu UHP Rocks
A1199 *Zeng L, Gao L-E, Yu J & Hu G*
-
- 12:00 Partial Melting Processes during Exhumation of the Subducted Continental Crust in the Sulu UHP Terrane, China
A589 *Li H, Ye K, Liu J & Wang D*
-
- 12:15 The Retrograde Partial Melting of the Xitieshan UHP Eclogite from the North Qaidam, NW China
A167 *Chen D, Liu L, Sun Y & Zhu X*
-

08g: Simulation of Metamorphic Processes – Theory, Experiments, and Numerical Models

Session chaired by Peter Nabelek & Jay Ague

- 09:30 **Keynote:** Insights from Modeling Superposed and Coupled Metamorphic Processes
A156 *Chakraborty S*
-
- 09:45 Documenting the Physicochemical and Thermodynamic Changes Associated with all Possible Geochemical Reactions in Rocks Using Gale Vector Space
A988 *Stanley C & Murphy D*
-
- 10:00 Initial Results from an Experimental Study of Metamorphic Nucleation
A406 *Hirsch D & Manning C*
-
- 10:15 An Experimental Study of the Diffusion of C and O in Calcite in Mixed CO₂-H₂O Fluid
A553 *Labotka T, Cole D, Fayek M & Chacko T*
-
- 10:30 **Keynote:** Putting Fluid Salinity and Solid Solution into Transport Models
A290 *Ferry J, Winslow N & Gottschalk M*
-
- 10:45 Magmatism, Thermal Pulses, and Barrovian Metamorphism
A6 *Ague J & Lyubetskaya T*
-
- 11:00 Time-Dependent 3-D Modeling of Contact-Regional Metamorphism Suggests Reactions Occur in < 1 Ma
A254 *Dutrow B, Foster CT, Gable CW & Travis BJ*
-
- 11:15 Influences of Variable Reactivity of Calc-Silicates on Fluid Fluxes in Contact-Metamorphic Aureoles
A744 *Nabelek P*
-

(Session 08g continues on Thursday 17th Posters on page 239)

Session 08h follows this session in this room.

For details see page 188.

08h: Nano-Scale Processes and the Transport of Elements and Isotopes

Session chaired by Igor M Villa & Daniel Harlov

11:30 **Keynote:** Pervasive Replacement in Alkali Feldspars: A Major Crustal Process

A796 *Parsons I*

11:45 Geohygrometry of K-Feldspars

A1082 *Villa IM & Hanchar JM*

12:00 The Role of Retrograde Reactions and of Diffusion on ^{40}Ar - ^{39}Ar Mica Ages

A14 *Allaz J, Engi M, Berger A & Villa IM*

12:15 **Keynote:** Focused Ion Beam (FIB) Combined with TEM Reveals Nano-Scale Processes in Geosciences

A1138 *Wirth R*

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09h: Microbial Degradation of Organic Substrates and Generation of Natural Gas and Heavy Oil in Sedimentary Basins

Session chaired by Jennifer McIntosh,
Peter Warwick & Alain Huc

- 09:30** **Keynote:** Can Studies of Petroleum Biodegradation Help Fossil Fuel Carbon Management
A564 *Larter S, Gates I, Adams J, Oldenburg T & Head I*
-
- 09:45** **Keynote:** Microbial Gas in the Illinois Basin: Pennsylvanian Coals Versus Devonian/Mississippian Shales
A676 *Mastalerz M, Schimmelmann A & Strapoc D*
-
- 10:00** Methanogen Variations Related to Hydrogeochemical Conditions in Organic-Rich Shales and Coals in the Illinois Basin, U.S.A
A923 *Schlegel M, McIntosh J, Bates B, Kirk M & Martini A*
-
- 10:15** Microbial Community Structure and Geochemistry of the New Albany Shale (Illinois Basin) and its Potential to Produce Biogenic Methane
A204 *Damashek J, Miller S, Kirk M, McIntosh J, Schlegel M, Petsch S & Martini A*
-
- 10:30** Organic Toxicity may be a Factor during Stimulation of Biogenic Methane from Coal
A479 *Jones E, Voytek M & Orem W*
-
- 10:45** Biogenic Methane Potential for Surat Basin, Queensland Coal Seams
A331 *Gilcrease P, Papendick S, Downs K, Massarotto P & Golding S*
-
- 11:00** Secondary Biogenic Gas Formation and Accumulation: A Case Study from Baise Basin, Southern China
A958 *Shuai Y*
-
- 11:15** C and H Isotope Systematics of Microbial Methane Accumulations in Coalbeds and Fractured Shales
A688 *McIntosh J, Bates B, Schlegel M & Martini A*
-

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Session 09i follows this session in this room.
For details see page 190.

09i: Gas Hydrates: Energy Production and Storage, Carbon Sequestration, and Climate

Session chaired by Megan Elwood Madden & Claudia Rawn

11:30 **Keynote:** Progress in Understanding the Energy and Environmental Implications of Gas Hydrates

A108 *Boswell R*

11:45 All in Motion – The Dynamic Exchange of CO₂ and CH₄ in Gas Hydrates

A70 *Beeskow-Strauch B, Schicks J & Erzinger J*

12:00 Mechanisms Influencing Hydrate Dissolution Rates in Under-Saturated Systems: Lessons from Field Observations and Laboratory Results

A560 *Lapham L, Wilson R, Short T, Bell R & Chanton J*

12:15 Graphitic Carbon in the Pyrite Rods in the Sediment of South China Sea as a Mineral Indicator for Gas Hydrates

A1210 *Zhang M, Konishi H, Sun X, Xu H, Lu Y & Xu L*

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12h: Role of the Southern Ocean in Global Climate Change

Session chaired by **Laura Robinson & Stephen Barker**

- 09:30 Invited:** Insight into Drake Passage Opening from Sediment Provenance and Thermochronology
A51 *Barbeau DL, Zahid KM, Gombosi DJ, Guenther WR, Scher HD, Bizimis M, Davis JT, Brown AR, Gehrels GE, Reiners PW, Thomson SN & Garver JI*
-
- 09:45 Keynote:** Tracing Antarctica's Terrigenous Sediment Contributions to the Southern Ocean
A398 *Hemming S, Goldstein S, van de Flierdt T, Pierce E, Dale C, Williams T, Brachfeld S & Licht K*
-
- 10:15 Invited:** Sponge Silicon Isotopes as a Tracer of Southern Ocean Water in the Atlantic
A399 *Hendry K & Robinson L*
-
- 10:30** Model Comparison of Subantarctic Mode and Antarctic Intermediate Water in the South Pacific between the Last Glacial Maximum and Abrupt Climate Events
A385 *Hartin CA, Fine RA, Peterson LC, Clement AC & Kamenkovich I*
-

Session 12i follows this session in this room.
For details see page 192.

12i: Biomineralization: Implications for Paleoclimate and Paleoenvironment Reconstructions

Session chaired by **Alberto Perez-Huerta & Yannicke Dauphin**

10:45 **Keynote:** Deciphering Mg Signatures of Carbonates in the Framework of Biogenic Versus Inorganic Pathways to Mineralization

A246 *Dove P, Stephenson A, Wang D & Hamm L*

11:00 **Invited:** The Role of Ca Pools in the Calcification Process of Foraminifera

A752 *Nehrke G, de Nooijer L, Langer G, Meibom A & Bijma J*

11:15 **Invited:** Palaeoecological Considerations in Oligocene Vertebrates of Western Europe – C and O Stable Isotope Compositions

A921 *Scherler L, Tütken T, Vennemann T, Becker D & Berger J-P*

11:30 **Invited:** Hydrogen in Tooth Enamel, and $\delta^2\text{H}$ for Paleodiet

A966 *Singer JW*

11:45 **Invited:** Magnesium in Biogenic Aragonite

A293 *Finch A, Allison N, Foster L, Wilson L & Hathorne E*

12:00 **Invited:** The Layered Growth and Reticulated Crystallization of the Coral Fibers

A199 *Cuif J-P, Dauphin Y & Nouet J*

12:15 **Keynote:** Extreme Bone Diagenesis: Implications for Reconstructing Palaeoenvironmental Parameters

A1132 *Williams CT*

13f: Hydrobiogeochemical Evolution of Groundwater Systems in Natural and Impacted Environments

Session chaired by Scott Brooks, Debra Philips, David Watson & Paul Bayer

- 09:30 **Keynote:** Systems Biology Approach to Bioremediation: Omics and Hydrobiogeochemical Processes
A390 *Hazen T*
-
- 09:45 Biogeochemical Evolution of Groundwater Chemistry Impacted by Leachate from a Closed Landfill
A193 *Cozzarelli I*
-
- 10:00 Groundwater Chemistry and the Active Bacterial Community in a Pristine Confined Aquifer
A298 *Flynn T, Sanford R & Bethke C*
-
- 10:15 Gene Expression of Dissimilatory Sulfite Reductase in *Desulfovibrio vulgaris* as a Marker for the Rate of Sulfate Reduction in Natural Systems
A998 *Strattan D, Sanford R, Flynn T & Bethke C*
-
- 10:30 Modeling Horizontal Gene Transfer in Porous Media: Implications for Contaminated Ground Waters
A562 *LaRowe D, Shafei B & Van Cappellen P*
-
- 10:45 **Keynote:** Modelling Sulphide Weathering and the Link to Biologically-Derived Nitrate in Groundwater of the Northeast Yilgarn Craton, Western Australia
A764 *Noble R, Gray D & Reid N*
-
- 11:00 Quantifying Nitrate Migration and Natural Attenuation in a Shale/Saprolite Pathway from a Former Waste Disposal Site
A1118 *Watson D, Tang G, Parker J & Brooks S*
-
- 11:15 Influence of Flow Velocity on Denitrification in a Pore-Scale Lab Experiment
A101 *Boisson A, Aquilina L & Bour O*
-
- 11:30 Natural Attenuation of Heavy Metals in Groundwater by Iron-Cycling Bacteria at a Mining-Impacted Site
A8 *Akob D, Fabisch M, Burkhardt E-M, Sitte J, Bischoff S & Küssel K*
-
- 11:45 Seawater Inundation of Fe-Rich Coastal Lowlands – Hydrogeochemical Coupling and Hysteresis at the Tidal Fringe
A475 *Johnston S, Keene A, Bush R, Burton E & Sullivan L*
-
- 12:00 Study of Hydrobiogeochemical Interfaces in Petroleum Contaminated Shallow Groundwater
A1178 *Yang Y & Du X*
-
- 12:15 Mining Wastes – Water Quality Deterioration and its Impact on Environment in Southern India
A847 *Ramaraju HHK*
-

14d: Biogeochemical Cycle of Silicon: From Land to Ocean

Session chaired by **Suvasis Dixit & Philippe Van Cappellen**

11:15 The Impact of Climate and Dam Construction on Silicon Fluxes to the Oceans

A336 *Gislason S, Eiriksdottir E, Oelkers E & Burton K*

11:30 Interactions between Climate Change, Land Use and the Biological Silica Buffer in Wetlands and Forests

A999 *Struyf E, Kokfelt U, Smis A, Conley D, Humborg C, Mörth C-M, Vandevenne F & Meire P*

11:45 Biotic/Abiotic Controls on Silica Cycling in a Grassland Soil Chronosequence

A1128 *White A, Schulz M, Vivit D & Evett R*

12:00 Global Biogeochemical Cycle of Silicon: Sources and Fluxes

A581 *Lerman A & Li DD*

12:15 Silica Cycle: The Land-Ocean Connection

A1071 *Van Cappellen P, Loucaides S & Laruelle G*

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14e: Isotope Tracers of Critical Zone Processes and Function

Session chaired by **Thomas Bullen & Friedhelm von Blanckenburg**

- 09:30 Tracing Mg Transfer from Rock to the Oceans: Insights from Mg Isotope Ratios in the Rivers of the Mackenzie Basin
A1045 *Tipper E, Gaillardet J & Calmels D*
-
- 09:45 Lithium Isotope Signatures of Hydrothermally Altered Basalts (Hengill, Iceland)
A1080 *Verney-Carron A, Vigier N, Millot R & Hardarson BS*
-
- 10:00 Lithium Isotope Composition of the Dissolved and Suspended Loads of the Changjiang River
A609 *Liu C-Q, Wang Q, Zhao Z & Chetelat B*
-
- 10:15 Low $\delta^7\text{Li}$ Regolith Produced during Basalt Weathering: A Case Study from the Columbia River Basalts
A622 *Liu X-M, Rudnick RL, McDonough WF & Cummings M*
-
- 10:30 Silicate Weathering and Si Isotope Fractionation in a Glacial, Granitic Catchment
A865 *Reynolds B, Lemarchand E, Hindshaw R, Tipper E & Bourdon B*
-
- 10:45 Sr and Nd Isotopic Studies on Various Size Fractions from Weathering Profiles Developed in Western Ghats, India – An Insight into Mineral Weathering
A216 *Deepthy R & Balakrishnan S*
-
- 11:00 Steady-State U-Series Systematics Recorded in Two Deep Weathering Profiles, India
A490 *Kamber B & Widdowson M*
-

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Session 14d follows this session in this room.

For details see page 194.

15l: Iron Geomicrobiology

Session chaired by Kirsten Küsel & Joel Kostka

- 10:30 **Keynote:** Microbially-Mediated Iron Biogeochemistry
A1121 *Weber KA*
-
- 11:00 Mechanisms of Iron Oxidation in the Thermoacidophilic Crenarchaeon *Metallosphaera yellowstonii*: Field and Laboratory Studies Suggest Possible Role of Novel Proteins
A535 *Kozubal M, Jay Z, Macur R & Inskeep W*
-
- 11:15 **Invited:** Untangling the True Phylogeny of *Leptothrix ochracea* with Single Cell Genomics and FISH
A297 *Fleming EJ, Langdon AE, Stepanauskas R, Poulton N, Masland D & Emerson D*
-
- 11:30 *Ralstonia* Species Mediate Fe-Oxidation in the Deep Biosphere of Henderson Mine
A1013 *Swanner E, Nell R & Templeton A*
-
- 11:45 Neutrophilic, Fe(II)-Oxidizing Organism Isolated from 1.4 Km-Depth in Cu/Zn Mine, Canada
A583 *Leslie K, Oates C, Ihlenfeld C & Fowle D*
-
- 12:00 Taking the Iron Snow Shuttle to the Microbial Iron Cycle in Acidic Lake Sediments
A636 *Lu S, Reiche M, Neu T, Gischkat S & Küsel K*
-
- 12:15 Mineralogical Niches Shape Microbial Populations Responsible for Fe(III) Reduction on a Diverse Set of Fe(III) (Hydr)oxides
A580 *Lentini C & Hansel C*
-

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15n: Microbial Transformations of Redox-Sensitive Elements in Extreme Environments

Session chaired by Britta Planer-Friedrich,
Charles Cockell & James Hollibaugh

09:30 **Keynote:** The Microbial Transformation of Arsenic in Extreme Environments

A996 *Stolz J*

09:45 Microbial Organoarsenical Production in Geothermal Systems

A267 *Engel A, Johnson L, Roy A & Merchan G*

10:00 Trithioarsenate Degradation in Geothermal Waters by *Thermocrinis*

A384 *Härtig C & Planer-Friedrich B*

10:15 Microbial Selenium and Iron Reduction Under High Pressure

A816 *Picard A, Daniel I, Oger P, Testemale D & Hazemann J-L*

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Session 15l follows this session in this room.

For details see page 196.

16c: Geochemistry and Biogeochemistry of Toxic Elements in the Environment

Session chaired by Rona J. Donahoe & Dibyendu Sarkar

- 09:30 **Keynote:** Geochemical Modeling of Speciation and the Prediction of Bioaccessibility: Can the Former Lead to the Latter?
A272 *Essington M*
-
- 10:00 Arsenic Bioaccessibility: What Does Soil Have to do with it?
A240 *Donahoe R*
-
- 10:15 (Micro)spectroscopic Investigations of Arsenic Speciation Trends in Mine Wastes
A515 *Kim C & Rytuba J*
-
- 10:30 Binding of Arsenic to Natural Organic Matter in a Minerotrophic Peatland
A559 *Langner P, Mikutta C & Kretzschmar R*
-
- 10:45 Effect of Citrate on the Structure of Ferrihydrite, Arsenate Binding, and Ternary Complex Formation
A709 *Mikutta C, Frommer J, Voegelin A, Kaegi R & Kretzschmar R*
-
- 11:00 Influence of Vegetation Type and Climate on Native Selenium Distribution and Speciation in Soils
A578 *Le Hécho I, Tolu J, Bueno M, Thiry Y & Potin-Gautier M*
-
- 11:15 Biotransformation of Selenium in Multispecies Biofilm
A1176 *Yang S-I, Pickering IJ & Lawrence JR*
-
- 11:30 Oxidation State and Temperature Influences Cr Sorption with Struvite
A887 *Rouff A & Maza D*
-
- 11:45 Controls on the Formation of Geogenic Cr(VI) in Soils of the Sacramento Valley, California
A711 *Mills C, Morrison J & Goldhaber M*
-
- 12:00 Chromium Hydroxide Dissolution Through Abiotic and Biotic Processes
A119 *Braud A, Hua B & Deng B*
-
- 12:15 High Cd Concentrations in Bajocian Carbonates in the Swiss Jura Mountains: Evidences for Hydrothermal Input
A260 *Efimenko N, Spangenberg J, Schneider J, Chiaradia M, Adatte T, Matera V & Föllmi K*
-

(Session 16c continues on Thursday 17th PM on page 219)

17d: Retention of Radionuclides at the Mineral-Water Interface with a Focus on Nanoparticles and Solid-Solution Formation

Session chaired by **Andreas Scheinost, Thorsten Stumpf, Dirk Bosback & Thorsten Schaefer**

- 09:30 **Keynote:** Synthesis, Structures, Compositions and Properties of Uranium Nanoparticles
A130 *Burns P*
-
- 10:00 **Invited:** ^{99}Tc - and ^{11}B -MAS-NMR Spectra of Oxide Material to Sequester TcO_4^-
A147 *Casey W, Phillips B, Yu P, Wang S, Albrecht-Schmitt T, Alekseev E, Diwa J & Depmeir W*
-
- 10:15 Chemical Bonds and Formation Process of Actinide(IV) Oligomers and Colloids
A400 *Hennig C, Takao K, Takao S, Ikeda-Ohno A, Banerjee D, Weiss S, Zaenker H, Kraus W, Emmerling F & Scheinost A*
-
- 10:30 Landweber-EXAFS Structural Analysis of Aqueous Polynuclear U(VI) complexes with Tartaric Acid
A884 *Rosberg A, Lucks C, Tsushima S & Scheinost AC*
-
- 10:45 Identification of U(VI) Sorption Products and Precipitates on Magnetite by GI-SAXS, GI-XAS, and Microscopy
A965 *Singer D, Banfield J & Waychunas G*
-
- 11:00 Mineral Nucleation and Redox Transformations of U(VI) and Fe(II) Species at a Carboxyl Surface
A115 *Boyanov M, O'Loughlin E, Kwon M-J, Mishra B, Rui X, Shibata T & Kemner K*
-
- 11:15 Mineral Transformations and Contaminant Release Dynamics Under Wetting-Drying Cycles in Simulated Hanford Sediments
A805 *Perdrial N, Thompson A & Chorover J*
-
- 11:30 Reaction of Pu(III) and (V) with Magnetite and Mackinawite: A XANES/EXAFS Investigation
A520 *Kirsch R, Fellhauer D, Altmaier M, Neck V, Rossberg A, Charlet L & Scheinost AC*
-
- 11:45 Selenium Retention by Iron Sulfides
A293 *Finck N, Dardenne K & Bosbach D*
-
- 12:00 The Geochemical Fate of Se(IV) in the Boom Clay System – XAS Based Solid Phase Speciation
A122 *Breyneart E, Scheinost A, Dom D, Rossberg A, Vancluysen J, Gobechiya E, Kirschhock C & Maes A*
-
- 12:15 The Inhibitory Effect of Silicate on the Fe(II)-catalysed Sequestration of U by Fe(III) Oxides
A101 *Boland D, Collins R, Payne T & Waite TD*
-

(Session 17d continues on Thursday 17th PM on page 221)

18f: Water in Solids and Solutions: Host or Guest?

Session chaired by Mark E Tuckerman & Stephen J Paddison

- 09:30 **Keynote:** Molecular Quasi-Chemical Theory Applied to Liquid Water
A829 *Pratt LR*
-
- 10:00 **Invited:** Experimental and Simulation Studies of Bulk Water and Hydration Water at Interfaces
A392 *Head-Gordon T*
-
- 10:15 **Invited:** Nuclear Quantum Effects in Water
A728 *Morrone J, Lin L & Car R*
-
- 10:30 **Invited:** 1st Principle Dynamical Simulation of Hydrogen Bond Structure, Dynamics and Simple Reactions in the Hydration Shells of Highly Charged Metal Ions
A1119 *Weare J, Bylaska E, Bogatko S, Cauet E & Fulton J*
-
- 10:45 **Invited:** Quantitative Description of Electron-Transfer Reactions from First-Principles
A967 *Sit PH-L, Migliore A, Klein M & Marzari N*
-
- 11:00 **Invited:** *Ab Initio* Molecular Dynamics Studies of Aqueous Solutions: Solvation of Salts and Amino Acids
A673 *Martyna G & Crain J*
-
- 11:15 **Keynote:** The Multiple Timescales of the Hydrated Proton
A5 *Agmon N*
-
- 11:45 **Invited:** Vibrational Spectral Diffusion and Chemical Dynamics in Aqueous Solutions
A158 *Chandra A*
-
- 12:00 **Invited:** Solvated Hydronium and Hydroxide Ions: An *ab Initio* Dynamics View
A449 *Iyengar S*
-
- 12:15 **Invited:** *Ab Initio* Molecule Dynamics Simulation of Hydroxide Reorientation in Water
A650 *Ma Z & Tuckerman M*
-

(Session 18f continues on Thursday 17th PM on page 223)

20f: Analytical Techniques and Applications
for Rhenium (Re) – Osmium (Os)
Geochemistry to Sedimentary Systems

Session chaired by Guangping Xu, Katsuhiko
Suzuki, Aaron Zimmerman & Gang Yang

11:30 **Keynote:** Reconstructing the Marine Os Record: Lessons
from Pelagic Sediments

A852 *Ravizza G, Paquay F & VonderHaar D*

11:45 **Invited:** Marine Osmium Isotopic Records in the Triassic-
Jurassic Deep-Sea Sediments of Panthalassa

A549 *Kuroda J, Hori R, Suzuki K & Ohkouchi N*

12:00 **Keynote:** ^{187}Re - ^{187}Os Geochronology and Tracing in
Sedimentary Systems – Applications and Limitations of the
Method

A194 *Creaser R*

(Session 20f continues on Thursday 17th Posters on page 257)

201: Molecular Characterization of Complex Organic Mixtures in the Earth, Environmental and Petroleum Sciences

Session chaired by William Cooper & Thorsten Dittmar

- 09:30 **Keynote:** Petroleomics: Molecular Characterization of Petroleum Crude Oil
A669 *Marshall A, Blakney G, Hendrickson C, McKenna A & Rodgers R*
-
- 10:00 Elucidating the Structure of Gilsonite Bitumen by Advanced Nuclear Magnetic Resonance Spectroscopy
A666 *Mao J & Helms J*
-
- 10:15 A New Approach to Molecularly Characterize the Biology and Economic Utility of Oil Shales
A669 *Marshall C & Olcott Marshall A*
-
- 10:30 The Molecular Characterization of Dissolved Organic Nitrogen by Atmospheric Pressure Photoionization Fourier-Transform Ion Cyclotron Resonance Mass Spectrometry
A821 *Podgorski DC, Osborne DM, McKenna AM, Rodgers RP, Marshall AG & Cooper WT*
-
- 10:45 Identification of Amides Involved in Nitrogen Sequestration in Dissolved Organic Matter and Sediments by ESI-FTICR-MS
A386 *Hatcher PG, Mesfioui R & McKee G*
-
- 11:00 Molecular Composition of Terrigenous Dissolved Organic Matter after Long-Term Degradation (2.4 Years)
A885 *Rosset P, Vähätalo A, Witt M & Dittmar T*
-
- 11:15 Application of Neutral Loss Tandem MS and Time-Of-Flight MS to Identify Anthropogenic Compounds in Fulvic Acids
A1239 *Zwiener C, Jobelius C, Frimmel FH, Mueller A & Schulz W*

(Session 201 continues on Thursday 17th Posters on page 259)

Session 20f follows this session in this room.

For details see page 201.

21c: Geochemical Data Acquisition, Analysis, Modeling and Visualization for Geological/mineral Exploration

Session chaired by Martiya Sadeghi & Emmanuel John Carranza

- 09:30 Rapid, *in Situ*, Portable, and Minimally Destructive Analysis by Laser-Induced Breakdown Spectroscopy: A New Paradigm in Geochemistry
A691 McMillan N
-
- 09:45 Standard Sampling and Assaying Methods to Support Mineral Exploration in an Extremely Arid Environment: The Chilean Experience
A1075 Vasquez A
-
- 10:00 A Biogeochemical Study at the Eunsan Gold Mine, Haenam District in Korea
A486 Jung JE, Kim J-N & Chon H-T
-
- 10:15 Leveling and Analysis of Till Geochemical Data: Case Study in the Skellefte District (Sweden)
A897 Sadeghi M, Carranza EJM & Lax K
-
- 10:30 Mapping of Anomalies in Continuous and Discrete Field Models of Stream Sediment Geochemical Data
A145 Carranza EJM
-
- 10:45 **Keynote:** Visualization and Statistical Methods for the Interpretation of Geochemical Survey Data
A358 Grunsky E
-
- 11:15 Self Organizing Maps for Targeting within Regional Geochemical Data Sets
A304 Fraser S, Dickson B, Kowalczyk P & Hodgkinson J
-
- 11:30 Scale, Scaling and Multifractality of Geochemical Landscape and Identification of Weak Anomalies Caused by Buried Sources
A173 Cheng Q
-
- 11:45 Generation of Integrated Geochemical-Geological Predictive Model of Porphyry-Cu Potential, Chahargonbad District, Iran
A694 Mehrabi A & Derakhshani R
-
- 12:00 Integration of Stream Sediment Geochemical and Aeromagnetic Data for Mapping Target Areas for Mineral Exploration for Iron in Eastern Tianshan, China
A1220 Zhao J & Cheng Q
-
- 12:15 Recent Advances in Geochemical Interpretation for Mineral Exploration Through the Application of Regolith Terrain Mapping and the Power of New Remote Sensing and 3D Visualisation Techniques
A102 Bolster S

(Session 21c continues on Thursday 17th Posters on page 260)

	200-A	200-B	200-C	200-D	200-E	300-A/B	300-C/D
	18f / 18a	17d	16c / 16g	15i / 15k	21d	02d / 01e	08c
13:30	Iftimie	Schäfer	Cesar	Kirk	Bektursunova	Bell	Blondes
13:45	Kuo	Banerjee	Li	Saltikov	Mills	Bindeman	Liu
14:00	Klug	Navrotsky	Parat	Jardine	Wang	Frost	Liu
14:15	Lu	Polly	Rakshit		Merino	Swapp	Liu
14:30	Kalinichev	Armstrong	Baveye	Veeramani	Ding	Subba Rao	Zhang
14:45	Benoit	Schmidt		Loeffler	Dewers	Johnston	Xiao
15:00	Geiger	Kamiishi	Kausch	Elias	Budd	Marty	Brueckner
15:15	Garofalini	Mason	Burton		Huang		Zhao
15:30	Leung	Darbha	Shafei	Risgaard-Petersen	Redden	Holland	
15:45	Choe	Del Nero	Gerard	Lin		Yamamoto	He
16:00	Umemoto	Malin	Bouزيد	Kappler		Holland	Asthana
16:15		Holliday		Nielsen		Gillmann	Zheng

	301-A	301-B	301-C	301-D/E	Ballroom A	Ballroom B	Ballroom C	Lecture
	14h / 14f	13g	10d	09g	03k	04e	02e	20e
13:30	Godderis	Radloff	Joye	Sherwood Lollar	Daniel	Pasteris	Boyet	Valley
13:45	Beaulieu	Stollenwerk		Mayer		Cole	Schönbächler	
14:00	Blum	Hoque	Grünke	Krevor	Chellappa	Fischer	Marty	Wooden
14:15	Bhatt	Michael	Mußmann	Kampman	Chou	Kogawa	Bourdon	Kamenov
14:30	France-Lanord	Rahman	Jay	Kelemen	Yamashita	Mueller	Storey	Bowman
14:45	Keller	Zheng	Druschel	Wilson	Mookherjee	Thomas	Touboul	Castiñeiras
15:00	Bush	Lazareva	Oduro	Monger	Sanchez-Valle		Roth	Senkowski
15:15	Peltzer	Foster	Ono	DePaolo	Hu		O'Neil	Kostitsyn
15:30		Nordstrom	Loy	Gardiner	Park		McDonough	Allen
15:45	Bernasconi	Wen		Ballentine	Padrón-Navarta			Peterman
16:00	Giesler	Wu	Glamoclija	Gilfillan	Pokhilenko			Simon
16:15	Smits	Ravenscroft	Kamyshny	Newell	Du Frane			Bloch

01e: Mantle-Atmosphere Interactions on Earth and Beyond

Session chaired by Colin Goldblatt & Kevin Zahnle

15:00 **Keynote:** The Volatile Abundance Pattern of the Mantle-
Atmosphere: Clues to Origin and Reservoir Fluxes

A673 *Marty B*

15:30 Kr and Xe and the Origin of Noble Gases in the Mantle and
Atmosphere

A45 *Ballentine C & Holland G*

15:45 Subduction Related Signature in Noble Gas Isotopic
Compositions of Mantle Peridotites

A1168 *Yamamoto J, Kurz M, Curtice J, Arai S & Prikhod'ko V*

16:00 Volcanic Gases and the Oxygenation of the Atmosphere

A411 *Holland H*

16:15 Atmospheric Evolution of Terrestrial Planets Constrained by
Isotopic Data: The Effects of Degassing on Mars

A333 *Gillmann C, Lognonné P, Chassefière E & Moreira M*

(Session 01e continues on Thursday 17th Posters on page 226)

02d: Precambrian Sediments as Records of Early Earth Tectonics and Ocean-Atmosphere-Biosphere Interactions

Session chaired by **Huifang Xu, Chris Fedo & Andrew Czaja**

- 13:30 Early Archean Crustal Evolution from Jack Hills Detrital Zircons
A73 *Bell E & Harrison M*
-
- 13:45 The Limits of Hydrosphere-Lithosphere Interaction: The Origin of the Lowest-Known $\delta^{18}\text{O}$ Silicate Rock on Earth
A91 *Bindeman I, Schmitt A & Evans D*
-
- 14:00 U-Pb Discordance in Archean Detrital Quartzites, Central Wyoming: Implications for Pb Loss Mechanisms
A308 *Frost C, Allen C, Swapp S & Frost R*
-
- 14:15 A Mesoarchean Rifted Continental Margin in the Wyoming Province: Evidence for Supercontinent Breakup
A1014 *Swapp S, Frost C & Frost R*
-
- 14:30 Geochemistry of Late Archean Bababudan Metasediments, Dharwar Craton, India: Implications on Redox Conditions
A1002 *Subba Rao DV & Sreenivas B*
-
- 14:45 Understanding Ediacaran Environmental Change
A475 *Johnston DT, Macdonald FA, Poulton SW, Gill BC, Petach T, Halverson GP, Schrag DP & Knoll AH*
-

(Session 02d continues on Thursday 17th Posters on page 228)

Session 01e follows this session in this room.

For details see page 206.

02e: The First 500 Million Years

Session chaired by Rick Carlson & Maud Boyet

- 13:30 A Detailed Sm-Nd Investigation of Enstatite Chondrites
A115 *Boyet M, Gannoun A, Rizo H & El Goresy A*
-
- 13:45 Isotopic Constraints on Heterogeneous Accretion of the Earth
A926 *Schönbächler M, Carlson R, Horan M, Mock T & Hauri E*
-
- 14:00 Xenon Isotope Evidence for UV Irradiation in the Hadean and the Archean
A835 *Pujol M, Marty B & Marrocchi Y*
-
- 14:15 **Keynote:** Isotope Clues for the Early Differentiation of the Earth
A110 *Bourdon B*
-
- 14:30 An Early REE Fractionated Mantle?
A997 *Storey C, Hawkesworth C & Condon D*
-
- 14:45 In Quest of Enriched Reservoirs in the Hadean Mantle: New $^{146,147}\text{Sm}$ - $^{142,143}\text{Nd}$ Data for the Pilbara Craton
A1051 *Touboul M, Bourdon B, Kleine T & Philippot P*
-
- 15:00 ^{142}Nd Anomalies in the Nuvvuagittuq Supracrustal Belt Revisited
A886 *Roth A, Bourdon B, Kleine T, Mojzsis S & Touboul M*
-
- 15:15 Geochemical and Isotopic Characteristics of the Nuvvuagittuq Belt: Implications for Earth's Early Crust Formation
A769 *O'Neil J, Carlson R & Francis D*
-
- 15:30 Compositional Models of the Earth, Mantle and Core Revisited
A687 *McDonough W*
-

(Session 02e continues on Thursday 17th Posters on page 229)

03k: Fluid-Mineral Interactions in the Deep Crust and Mantle

Session chaired by **Dimitri A Sverjensky, Craig Manning, Yingwei Fei & Ronald Cohen**

- 13:30 **Keynote:** Solubility of Carbonate in Aqueous Fluids at HP-HT: A Combined X-Ray and Raman Spectroscopic Study
A207 *Daniel I, Petitgirard S & Sanchez-Valle C*
-
- 14:00 Methanogenesis via Carbonate Reduction in Mantle Minerals
A164 *Chellappa R, Sharma A, Somayazulu M, Goncharov A & Hemley R*
-
- 14:15 Modified Hydrothermal Diamond-Anvil Cell for the Study of C-H-O-S Fluids Near the Moho
A178 *Chou I-M, Bassett W & Li J*
-
- 14:30 Structure and Properties of Silicate-Saturated Fluids in the System $\text{Na}_2\text{O}-\text{Al}_2\text{O}_3-\text{SiO}_2-\text{H}_2\text{O}$ Determined *in situ* at High Temperature and Pressure
A1169 *Yamashita S & Mysen B*
-
- 14:45 Aluminate Speciation in H_2O at High Pressures and Temperatures
A722 *Mookherjee M, Keppler H, Manning C & Caracas R*
-
- 15:00 *In situ* Studies of PVTx Properties of Aqueous Fluids Using Brillouin Scattering Spectroscopy
A905 *Sanchez-Valle C, Mantegazzi D & Driesner T*
-
- 15:15 Experiments on Water Rock Interactions at Temperatures up to 435°C and its Implications on Geophysical Features in the Mid-Crust
A425 *Hu S, Zhang R & Zhang X*
-
- 15:30 Aqueous-Mineral Interfaces Toward Extreme Conditions: The Potential Experimental Approaches with Synchrotron X-Ray Probe
A794 *Park C, Fenter P, Catalano J, Lee SS, Nagy K & Sturchio N*
-
- 15:45 Textural Record of Metamorphic Fluids Expulsion during High-Pressure Deserpentinization
A783 *Padrón-Navarta JA, López Sánchez-Vizcaíno V, Garrido CJ & Gómez-Pugnaire MT*
-
- 16:00 Ilmenite Ultrabasite UV162/09: The Role of Deep Metasomatism in the Rock Formation
A822 *Pokhilenko L & Pokhilenko N*
-
- 16:15 Transformation Kinetics for Olivine with ~75 ppm H_2O into Ringwoodite
A250 *Du Frane W, Sharp T, Mosenfelder J & Leinenweber K*

(Session 03k continues on Thursday 17th Posters on page 231)

04e: Geochemistry far from Equilibrium
(A Session Celebrating the 5th
Anniversary of Elements Magazine)

Session chaired by Bruce Watson & Michael Hochella

- 13:30 **Invited:** Why do Fossil Bones and Teeth Exist?
A798 *Pasteris J & Ding D*
-
- 13:45 **Invited:** Chemical, Isotopic and Structural Features
Associated with Mineral-Fluid Systems Far from
Equilibrium
A185 *Cole D, Labotka T, Fayek M, Utsunomiya S, DeAngelis M
& Anovitz L*
-
- 14:00 Are Rock Dissolution Rates Predictable from Lab
Experiments?
A294 *Fischer C, Arvidson R & Luttge A*
-
- 14:15 Pb-Incorporation into Synthetic Pb-Doped Zircon
A526 *Kogawa M, Watson B, Ewing R & Utsunomiya S*
-
- 14:30 Experimentally Determined Interdiffusion Data of Divalent
Cations in Carbonates
A733 *Mueller T, Watson B & Cherniak D*
-
- 14:45 Fe-Mg Interdiffusion along Dry Grain Boundaries in
Quartzites
A1041 *Thomas J & Watson B*
-

08c: Geochemical Processes in Continental Collision Zones II

Session chaired by Bill C. McClelland & Kai Ye

- 13:30 Slow Cooling in the Lowermost Crust of a Continent-Continent Collision: Evidence from Accessory Phase U-Pb Thermochronology of Deep Crustal Xenoliths from the Mozambique Belt, Tanzania
A97 *Blondes M, Rudnick R, Ramezani J, Piccoli P & Bowring S*
-
- 13:45 **Invited:** Zircon as an Unique Window for the Tectonic Evolution of UHP Metamorphic Terrane: Mineral Inclusions and U-Pb SHRIMP Age
A611 *Liu F & Liou J*
-
- 14:00 Dating of Multi-Stage Metamorphism Events: Constraints on Episodic Zircon Growth from Retrograded Eclogites of the South Altyn Tagh, China
A616 *Liu L, Chen D, Wang C, Cao Y, Kang L, Yang W & Zhu X*
-
- 14:15 Two Episodes of Eclogite-Facies HP Metamorphism in Huwan Shear Zone and its Implication for Evolution of the Western Dabie Orogen, Central China
A620 *Liu X, Wu Y & Zhao L*
-
- 14:30 Zr-in-Rutile Thermometry in HP/UHP Eclogites from Western China
A1204 *Zhang G, Ellis D, Christy A, Zhang L & Song S*
-
- 14:45 Contrasting Behavior of Nb and Ta during Magma Differentiation and Subduction Dehydration Processes: Implications for the Continental Crust
A1156 *Xiao Y, Huang J, Gao Y & Wu W*
-
- 15:00 **Invited:** The Subduction of Continental Crust, the Origin of PO Granitoids, and the Evolution of the Svecofennian Shield
A125 *Brueckner H*
-
- 15:15 **Medal:** Remelting of Subducted Continental Lithosphere: Petrogenesis of Mesozoic Magmatic Rocks in the Dabie-Sulu Orogenic Belt
A1223 *Zhao Z-F & Zheng Y-F*
-
- 15:45 Partial Melts from Thick Lower Continental Crust: Geochemical Characterization and Identification
A392 *He Y-S, Li S-G, Hoefs J, Huang F & Liu S-A*
-
- 16:00 The Dongargarh Bimodal Volcanic Province and the Large Igneous Province Conundrum
A35 *Asthana D, Pophare A, Crawford A & Kanojkar D*
-
- 16:15 Geochemical Insights into Reworking of Juvenile and Ancient Crustal Rocks in Arc-Continent and Continent-Continent Collision Zones
A1225 *Zheng Y-F*

(Session 08c continues on Thursday 17th Posters on page 235)

09g: Geochemistry of CO₂ Sequestration: Isotopic Indicators of Carbon Capture, Storage and Migration in Natural and Engineered Systems

Session chaired by **Brian W Stewart & Rosemary C Capo**

- 13:30 **Keynote:** Moving Beyond Tracers: ¹³C Insights into Carbon Sequestration
A948 *Sherwood Lollar B & Ballentine C*
-
- 13:45 Accounting of Injected CO₂ during Geologic Storage Using Chemical and Isotopic Approaches
A472 *Johnson G, Mayer B, Nightingale M & Shevalier M*
-
- 14:00 Rapid Detection and Characterization of Surface CO₂ Leakage Through the Real-Time Measurement of ¹³C Signatures in CO₂ Flux from the Ground
A540 *Krevor S, Benson S, Rella C, Perrin J-C, Esposito A & Crosson E*
-
- 14:15 Coupled CO₂-leakage and *in situ* Fluid-Mineral Reactions in a Natural CO₂ Reservoir, Green River, Utah
A492 *Kampman N, Burnside N, Bickle M, Shipton Z, Ellam R & Chapman H*
-
- 14:30 Oxygen and Carbon Isotope Systematics during Natural Mineral Carbonation in Peridotite of the Samail Ophiolite, Oman
A504 *Kelemen P, Streit L, Mervine E, Matter J, Eiler J & Shock E*
-
- 14:45 Assessing Capture of Atmospheric CO₂ within Mine Tailings Using Stable Isotopes and ¹⁴C
A1135 *Wilson S, Dipple G, Barker S, Power I, Atudorei V, Fallon S & Southam G*
-
- 15:00 Pedogenic Carbonate in the Global Carbon Cycle: Active Sink or Long-Term Reservoir?
A721 *Monger C & Cole D*
-
- 15:15 **Keynote:** Radiogenic and Non-Traditional Isotopic Tracers of Subsurface CO₂
A225 *DePaolo D, Christensen J & Conrad M*
-
- 15:30 Tracking CO₂ Migration Through a Sandstone Aquifer Using Sr Isotopes: Chimayó, New Mexico, USA
A320 *Gardiner J, Stewart B, Capo R, Hakala J & Keating E*
-
- 15:45 **Keynote:** Noble Gas Isotope Insights into the Geological Storage of Carbon
A45 *Ballentine C & Sherwood Lollar B*
-
- 16:00 He and Ne as Tracers of Natural CO₂ Migration from a Deep Reservoir
A331 *Gilfillan S, Wilkinson M, Haszeldine S, Nelson S & Poreda R*
-
- 16:15 Isotope Geochemistry of CO₂-Rich Mineral Springs – Natural Analogs for a Leaking Carbon Sequestration Scenario
A755 *Newell D*
-

10d: Microbial Sulfur Transformations: Past, Present, and Away

Session chaired by Annette Summers Engel, Stefanie Gruenke,
Jennifer Macalady, Stefan Sievert & Alexis Templeton

- 13:30 **Keynote:** Microbially-Mediated Sulfur Cycling Across Diverse Aquatic Systems
A483 Loye S
-
- 14:00 Novel, Mat-Forming *Thiomargarita spp.* Thrive on a Sulfidic Fluid Outflow at the Amon Mud Volcano (Eastern Mediterranean)
A335 Girnth A-C, Grünke S, Lichtschlag A, Felden J, Knittel K, Wenzhöfer F, de Beer D & Boetius A
-
- 14:15 **Invited:** Novel Groups of Sulfur Oxidizing Bacteria in Coastal Sediments
A741 Mußmann M, Lenk S, Arnds J, Zerjatke K, Moraru C & Amann R
-
- 14:30 Microbially Mediated Sulfur Cycling in Chemotrophic Geothermal Systems of Yellowstone National Park
A461 Jay ZJ, Kozubal MA, Macur RE, Four Colors J & Inskeep WP
-
- 14:45 Elemental Sulfur Mineralogy, Surface Chemistry, and Aqueous Chemistry Affecting Microbial Metabolisms
A248 Druschel G
-
- 15:00 Multiple Sulfur Isotope Constraint of Environmental VOSCs and Related Sulfur Compounds: Implication for Organosulfur Production and Cycling in Natural Systems
A771 Odoro H, Kamyshny A, Tang K & Farquhar J
-
- 15:15 Multiple Sulfur Isotope Evidence for Deep Biosphere in Altered Oceanic Basalt and Peridotite Basement Rocks
A777 Ono S, Keller N, Rouxel O & Alt J
-
- 15:30 **Keynote:** Sulfate Reduction in Peatlands – Does a Rare Keystone Microorganism Drive a Process that Mitigates Global Warming?
A633 Loy A
-
- 16:00 Microbial Nitrogen and Sulfur Cycles at the Dune Field, White Sands National Monument (New Mexico)
A337 Glamoclija M, Fogel ML, Kish A & Steele A
-
- 16:15 Solubility of Cycloctasulfur in Water as a Function of Temperature, Salinity and Sulfide Concentration
A493 Kamyshny A

(Session 10d continues on Thursday 17th Posters on page 243)

13g: Sustainable Management of Safe Aquifers in Areas Affected by High Groundwater Arsenic

Session chaired by Yan Zheng & Holly Michael

- 13:30 Evaluating Arsenic Adsorption in a Low Arsenic Aquifer in Bangladesh Using *in situ* and Laboratory Methods
A843 Radloff K, Zheng Y, Michael H, Stute M, Mihajlov I, Ahmed KM & van Geen A
-
- 13:45 **Keynote:** Geochemical Implications for Sustainable Utilization of Low-Arsenic Aquifers in the Bengal Basin
A995 Stollenwerk K
-
- 14:00 **Invited:** Heterogeneity of the Bengal Aquifer System and Security of As-Safe Deep Groundwater
A417 Hoque MA, Burgess WG & Ahmed KM
-
- 14:15 Regional Modeling of Groundwater Flow and Arsenic Transport in the Bengal Basin: Effects of Sorption on Safe Groundwater Use
A704 Michael HA, Voss CI, Radloff KA & Zheng Y
-
- 14:30 Targeting a Safe Aquifer in the Arsenic Contaminated Alluvial Deposits
A844 Rahman MT, Mano A, Udo K & Ishibashi Y
-
- 14:45 Evaluation of Water Quality from Deep Wells in Bangladesh
A1224 Zheng Y, Van Agthoven A, Hakim A, Morsheda E, Rasul S, Huq I & Ghosh S
-
- 15:00 Geochemical Assessment of Geogenic Arsenic Contamination in the Floridan Aquifer
A570 Lazareva O, Druschel G & Pichler T
-
- 15:15 Arsenic Association with Secondary Iron Phases on Ferroan Micas: Implications for Ground Water Quality in South Asia
A300 Foster A, Lowers H, Breit G, Whitney J, Yount J, Uddin M & Muneem A
-
- 15:30 Arsenic not Attenuated during Downstream Transport in Gibbon and Firehole Rivers, Yellowstone National Park
A764 Nordstrom DK, McCelskey RB, Susong DD & Ball JW
-
- 15:45 Arsenic Mitigation and Safe Water Provisions in Sedimentary Basins of Northern China: Utilization of Deep Aquifer and Piped Water System
A1126 Wen D, Zhang F, Guo J, Li X, Zhang E & Zheng Y
-
- 16:00 Subsurface Heterogeneity of High and Low Arsenic Aquifers Delineated by High Resolution Geophysical Survey in Datong Basin, Shanxi, China
A1148 Wu Y, Zhu Q, Li F & Li G
-
- 16:15 **Keynote:** Sustainability of Groundwater Abstraction in the Arsenic-Affected Bengal Basin, Bangladesh and West Bengal
A851 Ravenscroft P

14f: Temporal Evolution and Life Cycle of the Critical Zone

Session chaired by Stefano Bernasconi & Håkan Wallander

- 15:15 **Keynote:** Causes and Consequences of Ecosystem Retrogression
- A802 *Peltzer D, Wardle D, Allison V, Baisden T, Bardgett R, Chadwick O, Condron L, Parfitt R, Porder S, Richardson S, Turner B, Vitousek P, Walker J & Walker L*
-
- 15:45 Chemical and Biological Gradients along the Damma Glacier Soil Chronosequence
- A83 *Bernasconi S, Smittenberg R & BigLink project members*
-
- 16:00 **Invited:** Rapid P Transformation Across a North Sweden Podzol Chronosequence
- A329 *Giesler R*
-
- 16:15 **Invited:** Ectomycorrhizal Weathering, Evidence from the Field?
- A973 *Smits M, Wallander H & Johansson L*
-

(Session 14f continues on Thursday 17th Posters on page 250)

14h: Critical Zone Processes Across Environmental Gradients

Session chaired by F. Chabaux, L. Derry & Lin Ma

- 13:30 **Keynote:** Sensitivity of the Chemical Weathering of the Continents to Environmental Gradients
- A340 *Godderis Y, Violette A, Beaulieu E, Williams J, Roelandt C, Vigier N, Schott J, Pollard D, Pierret M-C & Brantley S*
-
- 13:45 Impact of Atmospheric CO₂ Levels on Continental Silicate Weathering
- A65 *Beaulieu E, Godd ris Y, Labat D, Roelandt C, Oliva P & Guerrero B*
-
- 14:00 Forms of Energy Involved in Weathering Processes
- A99 *Blum WEH*
-
- 14:15 How Basalt Weathering Rates Vary with Time and Scale of Measurement
- A86 *Bhatt M, Liermann L, Sak P & Brantley S*
-
- 14:30 Mountain Versus Floodplain Weathering: Example of the Himalayan Basin
- A303 *France-Lanord C & Lupker M*
-
- 14:45 Chemical Weathering and Chemical Denudation as Functions of Ecosystem Development: Mesoscale Experiments
- A504 *Keller CK, Balogh-Brunstad Z, O'Brien R & Bormann B*
-
- 15:00 Climate Change Impacts on Coastal Lowland Acid Sulfate Soil Landscapes
- A132 *Bush R, Sullivan L, Burton E, Johnston S, Keene A, Wong V & Mosley L*
-

(Session 14h continues on Thursday 17th Posters on page 250)

Session 14f follows this session in this room.

For details see page 215.

15i: Microbial Redox Transformations of Metal(loid)s and their Implication for Bioremediation

Session chaired by Brandy Stewart, Matthew Ginder-Vogel, Chad Saltikov & Carolina Reyes

- 13:30 Speciation of Selenium by Facultative Bacteria in Phosphate Mine Waste
A519 *Kirk LB, Stewart BD, Macur R & Gerlach R*
-
- 13:45 The Genetic Pathway for High Level Chromium Resistance in *Shewanella* sp. Strain ANA-3
A847 *Ramos J & Saltikov C*
-
- 14:00 **Keynote:** Impact of Scale-Dependent Coupled Processes on the Bioremediation of Contaminant Metals in Heterogeneous Subsurface Environments
A460 *Jardine P*
-
- 14:30 Products of Abiotic U(VI) Reduction by Biogenic Magnetite and Vivianite
A1078 *Veeramani H, Alessi D, Suvorova E, Lezama-Pacheco J, Stubbs J, Dippon U, Kappler A, Bargar J & Bernier-Latmani R*
-
- 14:45 Uranium Biogeochemistry – Novel Insights from a Microbe’s Prospective
A907 *Sanford R, Fletcher K, Thomas S, Kemner K, Boyanov M, Ritalahti K & Loeffler F*
-

(Session 15i continues on Thursday 17th Posters on page 251)

Session 15k follows this session in this room.

For details see page 218.

15k: Extracellular Electron Transfer and Microbial Mineral Transformation

Session chaired by Yuri Gorby & Eric Roden

- 15:00 **Keynote:** Can Direct Extracellular Electron Transfer Occur in the Absence of Outer Membrane Cytochromes in *Desulfovibrio vulgaris*?
A263 *Elias D, Zane G, Auer M, Fields M, Wall J & Gorby Y*
-
- 15:30 Extracellular Electron Transport Coupling Biogeochemical Processes Centimeters Apart
A872 *Risgaard-Petersen N, Fossing H, Christensen PB, Sayama M & Nielsen LP*
-
- 15:45 Mechanism of Electron Transfer during Dissimilatory Mn(IV) Reduction by *Shewanella oneidensis* MR-1
A606 *Lin H, Burns J, DiChristina T & Taillefert M*
-
- 16:00 Influence of Ionic Strength on Structure and Redox Activity of Humic Substances
A495 *Kappler A, Bauer I, Haderlein SB & Kappler A*
-
- 16:15 Are Hydrothermal Vents Natural Microbial Fuel Cells?
A759 *Nielsen M & Girguis P*
-

(Session 15k continues on Thursday 17th Posters on page 252)

16c: Geochemistry and Biogeochemistry of Toxic Elements in the Environment

Session chaired by Rona J. Donahoe & Dibyendu Sarkar

- 13:30 Hydrogeochemical Response of Land-Use in the Aquatic Eco-Region Xingu-Tapajós (Brazilian Amazon): Emphasis on Trace Elements
A154 *Cesar R, Castilhos Z, Colonese J, Vidal R, Egler S & Araujo P*
-
- 13:45 Potential Ecological Risk Assessment Model for Heavy Metal Contamination of Agricultural Soils
A599 *Li ZQ, Liu W, Lu DP & Wang JZ*
-
- 14:00 Disposable Sensors for $[Zn^{2+}]$, $[Cd^{2+}]$ and $[Pb^{2+}]$ Determination in Natural Samples
A791 *Parat C, Authier L, Aguilar D, Companys E, Galceran J & Potin-Gautier M*
-
- 14:15 Sorption of Oxytetracycline on Magnetite-Water Interface
A846 *Rakshit S, Punamiya P, Datta R & Sarkar D*
-

Session 16g follows this session in this room.
For details see page 220.

16g: Controls and Small-Scale Dynamics of Biogeochemical Processes in Near-Surface Porous Media

Session chaired by Christof Meile, Celine Pallud & Aaron Thompson

14:30 **Keynote:** Small Things Considered: Understanding how Spatial Micro-Heterogeneities Affect the Response of Soils and Sediments to Environmental Change

A61 *Baveye P*

15:00 Heterogenous Selenium Reduction in Artificial Soil Aggregates

A499 *Kausch M, Ha J & Pallud C*

15:15 Sulfur Biomineralisation Across a Spatio-Temporal Hydrogeochemical Gradient in an Acid Sulfate Soil Wetland

A131 *Burton E, Bush R, Johnston S, Keene A & Sullivan L*

15:30 Arsenic Sorption in Aquatic Sediments: Equilibrium, Kinetic and Mixed Modeling Approaches

A938 *Shafei B, Couture R-M & Van Cappellen P*

15:45 Surface Complexation Modelling of Phosphorus Availability and Bioavailability for Plants

A228 *Devau N, Le Cadre E, Hinsinger P & Gerard F*

16:00 Metastabilizing Aqueous Solutions in Micrometric Cylindrical Tubes

A111 *Bouزيد M, Mercury L, Lassin A & Matray JM*

(Session 16g continues on Thursday 17th Posters on page 253)

17d: Retention of Radionuclides at the Mineral-Water Interface with a Focus on Nanoparticles and Solid-Solution Formation

Session chaired by **Andreas Scheinost, Thorsten Stumpf, Dirk Bosback & Thorsten Schaefer**

- 13:30 U(VI) Sorptive Reduction on Magnetite Nanoparticles
A918 *Schäfer T, Huber F, Schild D, Smyrek A, Dardenne K & Rothe J*
-
- 13:45 XPS and XAS Investigation of Sb(V) Reduction on Mackinawite: Effect of pH and Surface Loading
A47 *Banerjee D, Kirsch R & Scheinost A*
-
- 14:00 **Invited:** Thermodynamic Issues in Nanoscale Actinide Oxides
A750 *Navrotsky A*
-
- 14:15 Theoretical Investigation of the Solvated Corundum Surface
A824 *Polly R, Schimmelpfennig B, Flörsheimer M, Klenze R & Geckeis H*
-
- 14:30 Spectroscopic and Calorimetric Study of Synthetic françoisite-(Nd): $\text{Nd}[(\text{UO}_2)_3\text{O}(\text{OH})(\text{PO}_4)_2] \cdot 5\text{H}_2\text{O}$
A33 *Armstrong C, Clark S & Navrotsky A*
-
- 14:45 Guest Ion Speciation in a Homogeneous Solid Solution by Polarisation-Dependent TRLFS
A924 *Schmidt M, Bosbach D, Stumpf T & Walther C*
-
- 15:00 Mechanism of Selenite Sequestration by Low-Soluble Phosphate Minerals
A491 *Kamiishi E & Utsunomiya S*
-
- 15:15 Paramagnetic Adsorption on Silica as an Analogue for Actinide Adsorption: A Solid-State NMR Study
A675 *Mason H, Maxwell R & Carroll S*
-
- 15:30 Retention of Colloids at Rough Mineral Surfaces: An Analog Study
A209 *Darbha G, Michler A, Schafer T, Luttge A & Fischer C*
-
- 15:45 Surface Precipitation at the Al_2O_3 / Uranyl Phosphate Solution Interface
A221 *Del Nero M, Galindo C & Barillon R*
-
- 16:00 U(VI) and Sr(II) Speciation at the Silica/Water Interface Determined by Second Harmonic Generation
A660 *Malin J & Geiger F*
-
- 16:15 Using Time Resolved Laser Spectroscopy to Probe Apatite Containing Europium and Curium
A412 *Holliday K, Schmidt M & Stumpf T*
-

(Session 17d continues on Thursday 17th Posters on page 254)

18a: Theoretical High Pressure Mineralogy

Session chaired by Anatoly Belonoshko & Artem Oganov

16:00 **Keynote:** First-Principles Investigation of Order-Disorder Phase Boundary in Ice

A1065 Umemoto K, Wentzcovitch R, Baroni S & de Gironcoli S

(Session 18a continues on Thursday 17th Posters on page 255)

18f: Water in Solids and Solutions: Host or Guest?

Session chaired by Mark E Tuckerman & Stephen J Paddison

- 13:30 **Invited:** Spectroscopic, Structural and Electronic Properties of Acid Dissociation Intermediates in Water
A442 *Iffimie R, Thomas V, Buin A & Ayotte P*
-
- 13:45 **Invited:** First Principles Simulations of Liquid-Vapor Interfaces: Structures, Dynamics and Chemical Reactivity
A547 *Kuo I-FW*
-
- 14:00 **Invited:** Structures and Dynamics of Dense Clathrate Hydrates
A525 *Klug D, Tse J, Zhao J, Sturhahn W, Alp E & Tulk C*
-
- 14:15 **Invited:** Structure and Vibrational Spectroscopy of Hydrogen Clusters in Hydrogen Clathrate Hydrate by Molecular Dynamics Simulation and First-Principles Calculation
A634 *Lu H, Wang J & Becker U*
-
- 14:30 **Invited:** Molecular Mechanisms of the Librational Motions of Water in the Interlayers of Hydrocalumite
A489 *Kalinichev A, Iskrenova-Tchoukova E, Faraone A & Kirkpatrick RJ*
-
- 14:45 **Invited:** First-Principles Molecular Dynamics Simulations of Hydrous Silica Glasses and Melts
A79 *Benoit M, Poelmann M & Kob W*
-
- 15:00 **Invited:** Molecular H₂O in Microporous Silicates: Thermodynamic and H-Bonding Behavior of Confined H₂O
A323 *Geiger CA, Dachs E, Dalconi MC & Artioli G*
-
- 15:15 **Invited:** Molecular Simulations of the Role of Bridging Oxygen on Wet Porous Silica Surfaces on Proton Transport
A320 *Garofalini S & Lockwood G*
-
- 15:30 **Invited:** Elucidating the Bimodal Acid-Base Behavior of the Water-Silica Interface from First Principles
A584 *Leung K, Nielsen I & Criscenti L*
-
- 15:45 **Invited:** First-Principles Modeling of Proton and Proton Coupled Water Transport in Polymer Electrolyte Membranes
A176 *Choe Y-K, Tsuchida E & Ikeshoji T*
-

Session 18a follows this session in this room.

For details see page 222.

20e: Integrating Isotopic and Trace Element Characterizations of Mineral Chronometers in Geochemistry and Geochronology

Session chaired by Joe Wooden, Paul Mueller, Calvin Miller, Martin Whitehouse & Daniela Rubatto

- 13:30 **Keynote:** Magmatic Zircons: Evolution of $\delta^{18}\text{O}$ Through Time – Revisited *in situ*
A1069 Valley J
-
- 14:00 **Invited:** Advantages of Combining Geochronology and Trace Element Analyses Using the SHRIMP-RG
A1140 Wooden J
-
- 14:15 **Invited:** Reliability of LA-MC-ICP-MS Hf Isotope Analyzes: Insights from Natural and Synthetic Zircons
A491 Kamenov G, Mueller P, Wooden J & Mazdab F
-
- 14:30 Preservation vs. Alteration of Zircon Pb, O Isotope and Trace Elements Following 80 Ma of Lower Crustal Metamorphism, Kapuskasing Uplift
A114 Bowman J, Moser D, Wooden J, Valley J & Kita N
-
- 14:45 Power and Pitfalls of Trace Element Geochemistry in Zircon from High-Temperature-High-Pressure Rocks: Some Examples from NW Spain
A149 Castiñeiras P, Gómez-Barreiro J, Fernández-Rodríguez FJ & Aguilar C
-
- 15:00 U-Pb & O-Isotope Depth-Profiling Coupled with REE on Zircon: Evidence for Cycladic Anatexis
A934 Senkowski C, Schneider DA, Iglseeder C & Grasemann B
-
- 15:15 Archean Detrital Zircon's Age at the Active East-Volcanic Zone of Kamchatka
A534 Kostitsyn Y & Belousova E
-
- 15:30 Changes of Detrital Zircon Composition Through Time: Deductions from a Large Database
A15 Allen CM, Campbell IH & Iizuka T
-
- 15:45 Linking Temperature to Time in Retrograde Metamorphism: Ti-in-Quartz + Rb/Sr of Muscovite in Preserved Ms + Qtz Symplectite
A809 Peterman E & Grove M
-
- 16:00 Hf Isotopes in Zircon: Implications for Magma Evolution at Long Valley
A964 Simon JJ, DePaolo DJ, Weis D, Renne P & Mundil R
-
- 16:15 Diffusion Kinetics of Hafnium in Garnet: Experimental Determination and Geochronological Implications
A97 Bloch E & Ganguly J
-

(Session 20e continues on Thursday 17th Posters on page 257)

21d: Nonlinear Dynamics of Geochemical Systems: Feedbacks, Stability, Complexity and Pattern Formation

Session chaired by Yifeng Wang, Enrique Merino & Huifang Xu

- 13:30 **Invited:** Liesegang Pyrite Bands in Sapropel Sediments
A72 *Bektursunova R & L'Heureux I*
-
- 13:45 **Keynote:** What Happened in the Neoproterozoic? Investigations Using a Simplified Earth System Model
A711 *Mills B, Boyle R, Goldblatt C, Lenton T & Watson A*
-
- 14:00 **Invited:** Nonlinear Dynamics of Banded Iron Formation Precipitation
A1110 *Wang Y, Xu H & Merino E*
-
- 14:15 **Keynote:** Modeling Geochemical Self-Organization and Dynamics: Strategy, Feedbacks, Testing. Dolomitization
A699 *Merino E*
-
- 14:30 **Invited:** Subsurface Contaminant Transport Across Physical, Chemical and Mineralogical Heterogeneities
A234 *Ding M*
-
- 14:45 **Keynote:** Mechanical-Chemical Coupling and Self-Organization in Mudstones
A229 *Dewers T*
-
- 15:00 **Invited:** Bed-Scale Reaction Transport Modeling of Dolomitization Reveals the Emergence of Self-Organizing Patterns
A126 *Budd DA & Park AJ*
-
- 15:15 **Invited:** Reactive Transport Modeling of Ureolytic Calcite Precipitation Using a Parallel, Fully Coupled Approach
A427 *Huang H, Guo L, Gaston D, Xu Z, Redden G, Fox D & Fujita Y*
-
- 15:30 **Invited:** Dynamics of Mineral Precipitation in Mixing Zones in Porous Media
A854 *Redden G, Fox D, Gebrehiwet T, Huang H, Guo L & Fujita Y*
-

01e: Mantle-Atmosphere Interactions on Earth and Beyond

- 1 Some New Scientific Facts on the Diamond and Gold-Forming Astropipe Geostructures of Mongolia
A243 *Dorjnamjaa D, Selenge D, Amarsaikhan T & Enkhbaatar B*
-
- 2 The Subduction Origin of Mantle Nitrogen
A342 *Goldblatt C & Zahnle K*
-
- 3 The Serpentosphere
A1013 *Swan M, Keith S, Hovland M, Rueslatten H, Johnsen HK & Page N*
-

01f: Origins of Life: Environments, Mineral Surfaces and Prebiotic Chemistry

- 4 Constraints on the Formation Mechanism of Early Solar System Organic Matter in Primitive IDPs
A298 *Flynn G, Wirick S, Keller L, Jacobsen C & Sandford S*
-
- 5 Adsorption of Amino Acids on Oxide Surfaces as a Function of Environmental Conditions
A574 *Lee N, Jonsson C, Jonsson C, Ohara S, Cody G, Klochko K, Cleaves JH, Sverjensky D & Hazen R*
-
- 6 Stability of Amino Acids and Peptides during Diagenesis on the Early Earth
A782 *Otake T, Taniguchi T, Furukawa Y, Nakazawa H & Kakegawa T*
-
- 7 Densities of Dilute Adenosine Solutions to 50 MPa and 373.15 K
A866 *Rhett G, Seitz J, Schulte M & Hall A*
-
- 8 A First Principles Study of the Structure and Stability of Iron Sulfides and their Surfaces
A980 *Spagnoli D, Wright K & Gale J*
-

(Session 01f continues on Friday 18th AM on page 266)

02a: Evidence of Impacts from the Early Earth

- 9 Distal Transport (>650 km) of Detrital Shocked Zircon in a Cratonic Fluvial System: The Vaal River, South Africa
A270 *Erickson T, Cavosie A, Moser D & Radovan H*
-
- 10 Petrology of the Crystalline Rocks Hosting the Santa Fe Impact Structure
A927 *Schrader C & Cohen B*
-

(Session 02a continues on Friday 18th PM on page 290)

02b: Geodynamic and Petrogenetic Processes in the Early Earth: Insights from Greenstone Belts, TTGs, and Layered Anorthosite Complexes

- 11 Geochemistry and Nd Isotopic Systematics of ~ 3.3 Ga Banasandra Spinifex-Textured, Ultramafic Komatiites, Western Dharwar Craton, Southern India: Constraints on Mantle Sources and Melting
A85 *Bhaskar Rao YJ, Babu EVSSK & Vijaya Kumar T*
-
- 12 Style of Late Archaean Crust Formation as Evidenced from Geochemical and Nd Isotopic Composition of Granitoids from NW Part of the Dharwar Craton, Southern India
A229 *Dey S*
-
- 13 A Mineral Record of 4.0Ga Metamorphism: Evidence of Metamorphic Zircon Xenocryst from Western North Qinling Orogenic Belt
A237 *Diwu C, Sun Y, Wang H & Dong Z*
-
- 14 Discovery of Palaeoproterozoic Volcanic Rocks in the Tianshuihai Massif, Xinjiang, West China and its Geological Significance
A463 *Ji W*
-
- 15 Geochemistry and Petrogenesis of Hornblendites in an Island Arc Tectonic Setting
A510 *Khanna T, Manikyamba C, Balaram V, Prachiti K, Raju K, Babu EVSSK & Aradhi AKK*
-
- 16 Geochemical Evidence for Arc/Back-Arc Association in the Bababudan Greenstone Belt, India
A664 *Manikyamba C, Khanna T, Kanakdande P, Kanaparthi R, Balaram V & Aradhi AKK*
-
- 17 LA-ICPMS U–Pb Zircon Geochronology and Lu–Hf Isotope Compositions of the Taihua Complex on the Southern Margin of the North China Craton
A1007 *Sun Y, Diwu C, Lin C & Wang H*
-
- 18 Högbonite Associated with V-Ti Magnetite Bands of Shimoga Schist Belt, Western Dharwar Craton, Karnataka, India
A1009 *Sunder Raju PV & Babu EVSSK*
-

(Session 02b continues on Friday 18th PM on page 291)

02c: Life Before the Rise of Oxygen

- 19 Enhanced Biological Nitrogen and Sulfur Cycles in the Stratified 1.9 Ga Gunflint Ocean
A447 *Ishida A, Hashizume K, Oba M & Kakegawa T*
-

20 Nitrogen in the Canadian Shield: Resolving Abiotic Contributions and Biological Cycling
 A591 *Li L, Sherwood Lollar B, Lacrampe-Couloume G, Moran J & Slater G*

21 Evidence for the Presence of Cyanobacteria and Thermophilic Methanogens in a 3.46 Ga Sea, Western Australia

A1116 *Watanabe Y, Hoashi M & Ohmoto H*

(Session 02c continues on Friday 18th AM on page 267)

02d: Precambrian Sediments as Records of Early Earth Tectonics and Ocean-Atmosphere-Biosphere Interactions

22 Detrital Garnet Sm/Nd Geochronology

A61 *Baxter E, Jordan M & Inglis J*

23 Cryogenian Strata of the Northern Margin of Yangtze

A415 *Hong J-A & Duan S-H*

24 Banded Iron Ores from the Eastern Desert of Egypt: A New Type of BIF?

A509 *Khalil KI & El-Shazly A*

25 Contribution of Methane Seeps to the Post-Marinoan Cap Carbonate? Evidence from Carbon Isotope and Petrology in Yangtze Gorges Area, South China

A607 *Lin Z, Feng D, Liu Q & Chen D*

26 Sedimentary and Geochemical Evidence for Methane Seep from a Dolomite Chemoherm in the Nantuo (Marinoan) Glacial Deposit, Zunyi Area, SW China

A617 *Liu Q, Feng D, Lin Z & Chen D*

27 Proterozoic Crustal Evolution of Yangtze Craton Revealed by Detrital Zircons from Shenlongjia Area, South China

A621 *Liu X, Ling W & Gao S*

28 Trace and Rare Earth Element Characteristics of Vindhyan (Neo-Proterozoic) Sandstones of Bhopal Region, Central India

A843 *Raghuwanshi RS*

29 Highly Alkaline, High-Temperature Hydrothermal Fluid Generated by Archean CO₂-rich Seawater

A951 *Shibuya T, Komiya T, Nakamura K, Takai K & Maruyama S*

30 Paleoproterozoic Positive $\delta^{13}\text{C}_{\text{carb}}$ Excursion in the Liaohe Group: Record of the Lomagundi Event in the Northeastern Sinokorea Craton

A1025 *Tang H-S*

- 31 Biomarker Evidence for an Unique Prokaryotic Microbial Mat Ecosystem in a Epicontinental Sea on the Mesoproterozoic (1.45~1.30Gyr) North China Craton
A1099 *Wang C*
-
- 32 Geochronology and Significance of the Oldest Intrusive in Qinling Mountains, China
A1102 *Wang H*
-
- 33 Early Crustal Evolution in the Western Yangtze Block: Evidence from U-Pb and Lu-Hf Isotopes on Detrital Zircons
A1105 *Wang L, O'Reilly SY, Griffin WL & Yu J*
-
- 34 Crustal Growth of North China as Revealed by Detrital Zircons
A1173 *Yang J, Gao S, Chen C, Tang Y, Yuan H, Gong H, Xie S & Wang J*
-
- 35 Quartz Nanoparticles in 2461-2495 Million Years Old Banded Iron Formation from Dales George, Hamersley, Western Australia
A1234 *Zhu S & Li Y*

02e: The First 500 Million Years

- 36 The Relations between the Stratums and Economic Indicator in Jinagxi Province
A430 *Huang M, Lin Z & Meng X*
-
- 37 REE Geochemistry in Biogenic Fossil and Isotopic Geochronology from the Cambrian-Ordovician Boundary Section in China
A1194 *Yuanyuan W, Huiming L, Di L, Xiancong T, Menqun Z & Yinxi W*

03a: Volatiles in Earth & Planetary Interiors

- 38 Nitrogen Solubility in a Molten Assemblage of an (Fe,Ni) Alloy and a CI Chondritic Silicate up to 18 GPa
A109 *Bouhifd A, Roskosz M, Jephcoat A & Mysen B*
-
- 39 Volatile Subduction in Serpentinites
A506 *Kendrick M, Scambelluri M, Honda M & Phillips D*
-
- 40 Potassic Amphibole from the Upper Mantle of NE China
A1004 *Sui J & Fan Q*
-
- 41 Origins of Hydrocarbon Volatiles in the Earth's Mantle Rocks
A1210 *Zhang M, Hu P, Zhang T, Zou H, Tang Q & Shen H*

(Session 03a continues on Friday 18th AM on page 268)

03f: Experimental Petrology of the Mantle and Core

- 42 Experimental Evidence for Perovskite and Post-Pv Coexistence throughout the Whole D" Region
- A22 *Andrault D, Munoz M, Bolfan-Casanova N, Guignot N, Perrillat J-P, Aquilanti G & Pascarelli S*
-
- 43 The Melting Curve of FeSi to 150 GPa: Implications for D"
- A631 *Lord O, Walter M, Dobson D, Armstrong L, Clark S & Kleppe A*
-

03i: Trace Element Partitioning

- 44 Subsolidus Cooling Effects on the Trace Element Systematics of Mantle Peridotite Pyroxenes
- A94 *Bizimis M*
-
- 45 Geochemical Parameters and Age of U Ores Related to Sodium Metasomatism in the Ukrainian Shield
- A266 *Emetz A, Cuney M, Mercadier J & Nazarchuk N*
-
- 46 Trace Elements in Olivines as Probes of Parental Melt Compositions in the Western Rift of East Africa
- A299 *Foley S, Jacob D & O'Neill H*
-
- 47 Analysis of Trace Elements in Glass and Pyroxene by LA-ICP-MS: Results from the Rhyolitic Ashfall and Ashflow Tuffs of the Bruneau-Jarbidge Eruptive Center, Yellowstone Hotspot Track
- A747 *Nash BP, Cathey HE, Allen CM & Campbell IH*
-
- 48 Preliminary Report on the Experimental Measurement of Trace-Element Partitioning between Zircon and Hydrothermal Metamorphic Fluids at High/Ultra-High Pressure Conditions
- A810 *Peters T & Ayers J*
-
- 49 Trace Elements in Quartz: Experimental Constraints on Al, Ti, Fe and P Saturation
- A1020 *Tailby N, Thomas J & Watson B*
-

03j: Origin and the Evolution of the Earth's Core

- 50 Providing Solar System Water and High Planetary Angular Momentum, Using a Return to Ringwood's Core Formation Model, Supported by the Behavioural Evolution of the Mantle
- A779 *Osmaston M*
-
- 51 Solid Core as Relic of Protocore
- A835 *Pushkarev Y & Starchenko S*
-

(Session 03j continues on Friday 18th PM on page 292)

03k: Fluid-Mineral Interactions in the Deep Crust and Mantle

- 52 The Role of NaCl and CO₂ on the Upper Critical End Point in SiO₂-H₂O: Insights from Solubility Experiments
A197 *Cruz M, Manning C & Hunt J*
-
- 53 High-Pressure Hydrofracturing during Deserpentinization
A321 *Garrido CJ, Padrón-Navarta JA, Tommasi A, López Sánchez-Vizcaíno V, Gómez-Pugnaire MT, Jabaloy A & Vauchez A*
-
- 54 The Adakite and Fe-Cu-Au Mineralization in the Luzong Volcanic Basin, Central Anhui
A425 *Hu S, Gao E & He S*
-
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