Mineralogical Society of America and Geochemical Society Short Course Announcement

THERMODYNAMICS OF GEOTHERMAL FLUIDS

Dates: Short Course sessions are Friday and Saturday, 24-25th August 2013 (in conjunction with the 13th Goldschmidt Conference in Florence, Italy, 25-30 August 2013).

Location: Short Course sessions Dipartimento di Scienze della Terra, Università degli Studi di Firenze, Florence, Italy.

Convenors: *Andri Stefánsson*, Institute of Earth Sciences, Science Institute, University of Iceland, Sturlugata 7, IS-101 Reykjavík, Iceland, e-mail: as@hi.is

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Fees:

		on or before 06/30/2013	*after 06/30/2013*
Professional Registration:	Member ‡	$420	$545
	Non-member	$500*	$625*
Student Registration:	Member ‡	$260	$340
	Non-member	$275*	$365*
Speaker		no cost	no cost

‡ Mineralogical Society of America (MSA) and Geochemical Society (GS) members.
*includes 2014 MSA membership dues and electronic access to *American Mineralogist*.

Registering: Online registration is at https://msa.minsocam.org/shortcourses.html. Printable registration forms are also available online, and from the MSA Business Office, 3635 Concorde Pkwy Suite 500, Chantilly, VA 20151-1110 USA. phone: +1 (703) 652-9950; fax: +1 (703) 652-9951; e-mail: jaspeer@minsocam.org. Registration forms with payment must be returned to the MSA Business Office. Registration fees will be partially refunded if cancellation is received in writing on or before 1 July 2013. All participants and speakers must register.

Practical: Registration fee includes MSA/GS short course sessions, the *Reviews in Mineralogy and Geochemistry* volume, morning and coffee/tea break with cake/cookies, lunch, coffee/tea break with cake/cookies and soft drinks. Registration fee does not include lodging, other meals, or any transportation costs to or from the short course site.

Short Course description: Crustal fluids play a fundamental role in chemical and physical processes in the Earth system. Our understanding of their geochemical behavior and reactivity is largely based on thermodynamics. Thermodynamic calculations are a central part of most geochemical modeling including hydrothermal geochemistry, CO_2 sequestration, nuclear waste management, natural and engineered geothermal systems, and ore deposit formation mechanisms, to name few. However, it has long been recognized by the scientific community that inconsistencies in and between existing databases and theoretical formulations (equations of states) that provide thermodynamic data such as equilibrium constants and activity coefficients can result in major differences and uncertainties in geochemical modeling. In recent years, substantial work has been carried out on fluid thermodynamics including experimental and theoretical work, and our capabilities today have advanced significantly, yet recent data and basic understanding of fluid chemical properties are commonly not incorporated into geochemical codes. The primary goal of the proposed short course and *Reviews* volume is to summarize

thermodynamics of aqueous fluids over a wide range of temperatures and pressures, spanning from molecular to macroscopic view, and its power in quantifying geochemical and geological processes in the Earth's crust.

Short Course Lecturers and Topics

- Thermodynamics of Geothermal Fluids ..... *Andri Stefánsson, Thomas Driesner and Pascale Bénézeth*
- The molecular-scale fundament of geothermal fluid thermodynamics ..... *Thomas Driesner*
- Thermodynamics of aqueous species at high temperatures and pressures: Equations of state and their applications to fluid-rock interactions and Modeling..... *David Dolejš*
- Mineral solubility and aqueous speciation under hydrothermal conditions to 300°C..... *Pascale Bénézeth, Andri Stefánsson, Jacques Schott and Quentin*
- Hydrothermal Fluids at High Pressure..... *Craig E. Manning*
- Speciation and transport of metals and metalloids in geological vapor phases..... *Gleb S. Pokrovski, Andrey Y. Bychkov, and Anastassia Y. Borisova*
- Solution Calorimetry under Hydrothermal Conditions ..... *Peter Tremaine and Hugues Arcis*
- Structure and thermodynamics of subduction zone fluids from spectroscopic Studies ..... *Carmen Sanchez-Valle*
- Thermodynamics of Organic Transformations in Hydrothermal Fluids ..... *Everett Shock, Peter Canovas, Kris Fecteau, Kirt Robinson, Grayson Boyer, and Kristin Johnson, Chris Glein*