



*Mineralogical Society of America and Geochemical Society*  
*Short Course Announcement*



## **High Temperature Gas–Solid Reactions in Earth and Planetary Processes**

- Dates** Short Course sessions are Friday 10<sup>th</sup> August (evening) through Sunday 12<sup>th</sup> August 2018 (before the Goldschmidt Conference, 12-17 August 2018, Boston, MA).
- Location** Short Course sessions will be held on the 18th floor of the 10 Buick Street Conference Center, Boston University (BU), Boston, MA.
- Convenors** *Penelope L. King*, Australian National University, Research School of Earth Sciences, Bldg 142, Mills Rd, Canberra ACT 0200 Australia. penny.king@anu.edu.au  
*Terry Seward*, Victoria University of Wellington, School of Geography, Environment and Earth, Cotton Building, Gate 7, Kelburn Parade, Wellington 6012 New Zealand. terry.seward@vuw.ac.nz

### **Short Course description**

Gas mixtures play a crucial role in distributing elements between different parts of Earth and planet-forming systems over a range of settings and temperatures. Despite the fundamental role of gases in geochemical cycles, the study of gas-solid interactions at high temperature is an emerging field in earth sciences. Currently, this area of research is spread between volcanology, planetary science, economic geology, environmental science, chemical engineering, chemistry, and metallurgy. The aim of this short course is to share the different approaches in this rapidly developing area. We will cover experimental work; modelling approaches; atom-scale reaction mechanisms; thermochemical and kinetic investigations; observations from active volcanic systems; and evidence for these reactions in the solar system and beyond.

### **Table of contents for the volume**

Penelope King et al.	Experimental approaches and theoretical aspects of gas-solid reactions
Kono Lemke & Terry Seward	Solute molecular chemistry in aqueous fluids having gas-like densities with applications to volcanic and hydrothermal systems
James Kubicki & Heath Watts	Reaction mechanisms and solid-gas phase reactions: Theory and Density Functional Theory simulations
Kim Dalby et al.	Analytical techniques for probing small-scale layers that preserve information on gas–solid interactions
Terrence Mernagh et al.	Spectroscopic approaches for analyzing gas-solid reactions
Andrew Palm et al.	Revealing mineral formation and major and trace element migration in a basaltic glass reacted with SO <sub>2</sub> gas at high temperature
Christian Renggli & Penelope King	SO <sub>2</sub> gas reactions with silicate glasses
Pierre Delmelle et al.	High temperature reactions between gas and ash particles in eruption plumes
Richard Henley & Terry Seward	Gas-solid reactions and reactive mass transport in volcanic systems
Paolo Sossi & Bruce Fegley	Gas-condensed phase interactions in planetary science: Thermodynamics and applications
Mikhail Zolotov	Gas-solid interactions on Venus and other solar system bodies
Hiroko Nagahara	Kinetics of gas-solid reactions in the Solar System and beyond
Peter Kreider & Wojciech Lipiński	High-temperature gas–solid heterogeneous reactions in industrial processes

### **Accompanying Goldschmidt Meeting Session**

04b- Gas-(Fluid)-Solid Reactions at High Temperatures and Their Importance in Earth and Planetary Systems

Fees		<i>on or before 6/01/2018 after 06/01/2018</i>	
Professional Registration:	Member ‡	\$350	\$450
	Non-member	\$430*	\$530*
Student Registration:	Member ‡	\$250	\$350
	Non-member	\$270*	\$370*
Speaker		no cost	no cost

‡ Mineralogical Society of America (MSA) and Geochemical Society (GS) members.

\*includes 2019 MSA member dues and electronic access to *American Mineralogist*.

**Registering** Online course registration at <https://msa.minsocam.org/shortcourses.html>. Print 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](mailto:jaspeer@minsocam.org). Registration forms with payment must be returned to the MSA Business Office. Space is limited and please RSVP. Registration fees will be partially refunded if cancellation is received in writing on or before 1 June 2018. All participants and speakers must register.

**Practical** Registration fee includes the following:

- MSA/GS two-day short course session
- *Reviews in Mineralogy and Geochemistry* volume
- Reception (Fri), Morning/afternoon refreshments and lunch (Sat and Sun)

Registration fee does not include lodging, other meals not specified, or other travel costs.

### Recommended Lodging

10 Buick St, Boston University, Boston, MA 02215 is an air-conditioned, suite-style residence residence hall located near the short course site (see map). Each suite consists of four (4) single-occupancy bedrooms, common room, and two bathrooms. Suites will be maximized based on gender but special requests can be made to share your suite and Boston University will do their best to honor these requests. Parking and Dining hall meals are available for an additional purchase onsite at Boston University.

**The reservation link is: <http://stay.bu.edu/msa-shortcourse.bnb>**

A participant's stay can be extended for the duration of the Goldschmidt Conference but an additional reservation will be required. Please contact [stay@bu.edu](mailto:stay@bu.edu) or 617-353-2238 about extending your stay or with other questions.

10 Buick St is just over 2 miles from The Goldschmidt Conference at the John B. Hynes Veterans Memorial Convention Center at 900 Boylston St, Boston, MA 02115

**Hotel reservations should be made as soon as possible as hotels will be filling up for the Goldschmidt Conference.**

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