

## Volcanology Short Course on Volcano-magma systems with emphasis on explosive processes and deposits



Microscopic study of model systems representing different plate-tectonic settings, fragmentation processes and eruptive environments.

**Potsdam, 22-26 September, 2014, University Potsdam and GFZ Potsdam**

The annual short course 2014 on microscopic study of pyroclastic rocks will be held by **Prof. Hans-Ulrich Schmincke and Mari Sumita** in Potsdam.

The focus of the course is on major types of pyroclastic and hydroclastic rocks, that will be studied microscopically. The course is accompanied by lectures and extended discussions focussing on the formation of pyroclastic rocks and volcano-magma-systems in general. A basic knowledge in mineral optics and petrography is required. Presentations on volcano monitoring and modelling contribute to the broad spectrum of the volcanology short course, with contributions by Thomas R. Walter, Eleonora Rivalta and Torsten Dahm (GFZ Potsdam).

Course keywords:

Characteristics of pyroclastic, hydroclastic and epiclastic particles and sediments; fallout deposits; pyroclastic flow deposits (ignimbrites) and evacuation of magma reservoirs; submarine volcanoclastic rocks; diagenesis of tephra deposits.

Costs:

PhD students: 75,-- Euro

University or grant employees (post docs): 120,-- Euro

Company and government employees: 240,-- Euro

The course fees for students who are members - or register to become members - of the Geologische Vereinigung (GV) will be waived/reimbursed by the GV. The workshop is also supported by the Deutsche Geophysikalische Gesellschaft DGG.

Accommodation and payment:

Information on housing, travel etc will be sent to registered participants.

Course fees should be paid following acceptance of registration. Details will be provided.

Dates:

The course will start on Monday September 22 at 10.00 and end on Friday September 26 at 13.00.

For organizational details including returning of registration, accommodation etc. please contact

Dr. Thomas Walter ([twalter@gfz-potsdam.de](mailto:twalter@gfz-potsdam.de)) or +49-331-288-1253

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## Registration form to be sent electronically (scanned pdf or jpg)

Herewith I register for the short course Volcano-Magma Systems with emphasis on explosive processes and deposits held from 22-26 September, 2014 in Potsdam.

I understand that class fees are for instructions only. I understand that payment in full is required to definite register for class. This form must be signed and submitted as early as possible as the class fills up quickly.

I agree to the above conditions                      X \_\_\_\_\_(signature)

Name:

Address:

Phone:

Fax:

E-mail:

Submit this form electronically (scanned pdf or jpg) to [twalter@gfz-potsdam.de](mailto:twalter@gfz-potsdam.de) or to by mail to

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## Basic elements of course

Thin section (and hand specimen) series of a wide range of volcanoclastic rocks representing major types of fragmentation and transport mechanisms, sites of eruption and deposition, emplacement temperature, degrees of alteration etc. All participants study thin sections from the same rock specimen. This allows full discussion on the same system since everybody will have looked at the same rock.

Rocks examined represent all plate tectonic environments enabling participants to become familiar with major and trace element concentrations characteristic for different plate tectonic settings; major and trace element analyses are provided for each rock. This - together with the mineralogical composition - allows to infer the original magma composition, modified in the population of particles by mixing with other materials in the conduit or on the ground, change in relative proportions of particles during transport and various degrees of alteration at high and/or low temperature.

For each rock, the degree of alteration (deuteric, diagenesis, weathering etc.) will be discussed because the alteration effects have to be subtracted before one can profitably discuss primary origin, magma composition etc.

Fragmentation mechanisms will be discussed at length. They have to be clearly distinguished from Transport mechanisms that vary extremely widely in the field of volcanoclastic deposits.

The site of deposition - on land, in the sea etc. - will be deduced from detailed study of the nature of individual particles and the rock fabric. Published papers on the rock bodies sampled will help to understand a particular rock in a broader context.

Open discussions within the group on the observational data and models that arise from the interpretation of all data are a fundamental aspect of the course. Discussion takes priority to formal lectures. Formal lectures will be given at the beginning of the course and following each thin section examination and discussion session. Depending on the need for discussion, formal lectures can be reduced to a minimum.

The general list of references for the short course comprises several books and shorter publications. The basic text for this course is Fisher and Schmincke "Pyroclastic Rocks" (1984) of which the relevant chapters are listed in the daily program. More general aspects of volcanism are discussed in Francis/Oppenheimer "Volcanoes" (2004, Oxford) and Schmincke "Vulkanismus" (2010 3<sup>rd</sup> ed, WBG, in German), revised and expanded in English ("Volcanism", Springer, 2004) and other books in the list of references included in the course book (in color) provided for each participant. Copies of some books (Schmincke (Vulkanismus, 3<sup>rd</sup> ed 2010), Geological evolution of the Canary Islands (together with M Sumita) (2010) and Vulkane der Eifel (2014 edition) will be available.