

We are pleased to announce the second international **Short Course on “Application of Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) to Earth Sciences”** that will be held in **Perugia (Italy)** on **7-8-9/06/2017**.

Description

The course will focus on the following topics:

- A first sight of LA-ICP-MS: theory and potentials in Earth Sciences;
- Trace element determination of geological matrices;
- Solving petro-volcanological problems through LA-ICP-MS;
- The use of LA-ICP-MS in tephra studies;
- Application of elemental imaging to geological problems.

The course is strongly based on the practical use of LA-ICP-MS, data reduction and interpretation. Applicants will be trained in the “hands-on” operation equipment, using the two LA-ICP-MS instruments available at the Petro-Volcanology Research Group @ University of Perugia.

Free Access to the LA-ICP-MS facility

A selected number of applicants (3 or 4) will have the opportunity to analyze their own data, free of charge (2 or 3 analytical sessions), in the 6 months following the short course. Selection will be based upon the submission of a short research proposal (max 2 A4 pages) stating: (a) the main focus of the research, (b) the role of LA-ICP-MS and, (c) the expected impact of the research. The awarded attendees are asked to provide an oral presentation during the short course.

IOLITE Poster Award,

The attendees are asked to prepare a poster presentation concerning their current studies emphasizing how LA-ICP-MS is or could be used to improve the currency of the obtained results. **The best poster presentation will be awarded with an IOLITE 3 license!**

Scientific Committee

Maurizio Petrelli (University of Perugia)

Teresa Ubide (University of Queensland, Australia)

Diego Perugini (University of Perugia)

Commercial Partners

Teledyne-Photon Machine

Thermo Fisher Scientific

Invited Speakers from commercial partners

Ciprian Stremtan (Teledyne-Photon Machine)

Marco de Santis (Thermo Fisher Scientific)

Organization

The course is organized by Maurizio Petrelli (Petro-Volcanology Research Group at Department of Physics and Geology, University of Perugia).

Location and Dates

Petro-Volcanology Research Group at Department of Physics and Geology, Palazzo delle Scienze, Piazza dell'Università, University of Perugia, Italy - June, 7-9, 2017.

Target

The workshop targets PhD students and advanced Master students, as well as Postdoctoral candidates and senior scientists. A series of lectures will be provided on the application of LA-ICP-MS in Earth Sciences.

Registration (free of charge)

Participants are kindly requested to register for the workshop by sending an e-mail to Maurizio Petrelli (maurizio.petrelli@unipg.it). **No registration fee is required.** Max number of participants is 25.

Deadline

The deadline for both registration and submission of proposals for the access to the LA-ICP-MS facility is **May 1, 2017**.

Provisional Program

Day 1

9.30-10.00

Maurizio Petrelli (University of Perugia):

Welcome to the attendees and Course Introduction

Day 1 - Morning session:

Theory - principles of LA-ICP-MS

10.00-11.00

Marco de Santis (Thermo Fisher Scientific):

Principles of Inductively Coupled Plasma Mass Spectrometry

11.00-11.30

Coffee Break – in front of the posters

11.30-12.30

Ciprian Stremtan (Teledyne-Photon Machine):

Principles of Laser Ablation Sampling for Earth Science Applications

12.30-13.00

Maurizio Petrelli (University of Perugia):

Coupling LA and ICP-MS, an introduction and some practical tips

Day 1 Afternoon session:

Practicals - Familiarization with the ICP-MS

14.30-16.00 GROUP A

Marco de Santis (Thermo Fisher Scientific):
Familiarization with the ICP-MS in front of the instrument

Ciprian Stremtan (Teledyne-Photon Machine):
Familiarization with the LA system in front of the instrument

16.00-17.30 GROUP B

Marco de Santis (Thermo Fisher Scientific):
Familiarization with the ICP-MS in front of the instrument

Ciprian Stremtan (Teledyne-Photon Machine):
Familiarization with the LA system in front of the instrument

14.30-16.00 GROUP B

Francesco Vetere (University of Perugia):
Visit to the sample preparation Facility and to the other Labs of the PVRG group

16.00-17.30 GROUP A

Francesco Vetere (University of Perugia):
Visit to the sample preparation Facility and to the other Labs of the PVRG group

Day 2 Morning session:

Theory – Data Reduction and Application of LA-ICP-MS to tephra studies

9.00-10.00

Maurizio Petrelli (University of Perugia):
Data reduction and uncertainties in LA-ICP-MS analysis

10.00-11.00

Maurizio Petrelli – (University of Perugia)
LA-ICP-MS analysis and elaboration of tephra samples: a python approach also involving machine learning

11.00-11.30

Coffee Break – in front of the posters

11.30-13.00

Focus group - Chairman: Daniele Morgavi (University of Perugia)

Oral presentation of the accepted research proposals and poster presentation for all the other attendees.

Day 2 Afternoon session:

Practicals – Prepare and Run LA-ICP-MS experiments

14.30-16.00 GROUP A

Maurizio Petrelli (University of Perugia):

- a) Prepare and tune the LA-ICP-MS instrumentation
- a) Check the LA-ICP-MS performances
- c) Prepare and run automated experiments by LA-ICP-MS

16.00-17.30 GROUP B

Maurizio Petrelli (University of Perugia):

- a) Prepare and tune the LA-ICP-MS instrumentation
- a) Check the LA-ICP-MS performances
- c) Prepare and run automated experiments by LA-ICP-MS

Theory – Application of LA-ICP-MS to petro-volcanological problems

14.30-17.30 GROUP A

Diego Gonzales Garcia (University of Perugia):

Application of LA-ICP-MS in the study of chemical diffusion in natural volcanic glasses: challenges and achievements.

Kathrin Laeger – (University of Perugia)

Application of High spatial resolution (up to 8 μm) LA-ICP-MS for the study of tephra samples from the Eyjafjallajökull 2010 eruption.

16.00-17.30 GROUP B

Diego Gonzales Garcia (University of Perugia):

Application of LA-ICP-MS in the study of chemical diffusion in natural volcanic glasses: challenges and achievements.

Kathrin Laeger – (University of Perugia)

Application of High spatial resolution (up to 8 μm) LA-ICP-MS for the study of tephra samples from the Eyjafjallajökull 2010 eruption.

Day 3 Morning session:

Theory - Elemental imaging by LA-ICP-MS

9.00-10.00

Ciprian Stremtan (Teledyne-Photon Machine):

Elemental imaging by LA-ICP-MS and its application in geological problems

10.00-11.00

Teresa Ubide (University of Queensland, Australia):

High-resolution LA-ICP-MS trace element mapping of igneous minerals: In search of magma histories.

11.00-11.30

Coffee Break – in front of the posters

11.30-12.30

Rebecca Astbury (University of Perugia):

Application of LA-ICP-MS trace element mapping to unravel dynamics and evolution of volcanic plumbing systems: insights on the evolution of the Campi Flegrei Caldera.

12.30-13.00

Poster Session and IOLITE poster Award.

Day 3 Afternoon session:

Practicals - Data Reduction in LA-ICP-MS

14.30-16.00 GROUP A

Maurizio Petrelli (University of Perugia):

Data reduction in LA-ICP-MS for trace element single spot analysis, the IOLITE™ approach

16.00-17.30 GROUP B

Maurizio Petrelli (University of Perugia):

Data reduction in LA-ICP-MS for trace element single spot analysis, the IOLITE™ approach

14.30-16.00 GROUP A

Teresa Ubide (University of Queensland, Australia) - Ciprian Stremtan
(Teledyne-Photon Machine)

Data reduction in LA-ICP-MS for trace element imaging

16.00-17.30 GROUP B

Teresa Ubide (University of Queensland, Australia) - Ciprian Stremtan
(Teledyne-Photon Machine)

Data reduction in LA-ICP-MS for trace element imaging