

1 2 3 4

from 4 to 15 may 2014
OROGENIC LHERZOLITE CONFERENCE

5 6th LHERZOLITE Marrakech MOROCCO

ABSTRACTS
VOLUME



1 2 3 4

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4-7 May _ Pre-conference field trip to the Beni Bousera Orogenic Peridotite

8-11 May _ Conference Meeting in Marrakech (Hôtel Le Semiramis)

12-14 May _ Post-conference field trip to the Middle Atlas Volcanics and Mantle Xenoliths

12-15 May _ Post-conference field trip to the Anti-Atlas Pan-African Ophiolites

Organizing committee

Conference : Jean-Louis Bodinier and Andréa Tommasi (Géosciences Montpellier, France), Amina Wafik (University Cadi Ayyad, Marrakech, Morocco), Kamal Targuisti (University Abdelmalek Essaâdi, Tetouan, Morocco), Carlos J. Garrido (IACT, Granada, Spain), Martin Menzies (Royal Holloway, Egham, U.K.), Henry Dick (WHOI, Woods Hole, U.S.A), Kazuhito Ozawa (University of Tokyo, Japan), Yigang Xu (Chinese Academy of Sciences, Guangzhou, China).

Beni Bousera field trip : Andréa Tommasi, Carlos J. Garrido, Kamal Targuisti, Jean-Louis Bodinier, Isma Amri (University Abdelmalek Essaâdi, Tetouan, Morocco).

Middle Atlas field trip : Houssa Ouali, Hicham El Messbahi (University Moulay Ismail, Meknes, Morocco), Jean-Marie Dautria (Géosciences Montpellier, France), Jean-Louis Bodinier, Kamal Targuisti.

Anti-Atlas field trip : Amina Wafik, Hassan Admou (University Cadi Ayyad, Marrakech, Morocco), Antoine Triantafyllou, (Mons University, Belgium), Julien Berger (Géosciences Environment Toulouse, France).

Understanding the complex physico-chemical features of the upper mantle beneath the Nógrád-Gömör Volcanic Field (Northern Pannonian Basin) - A study on peridotite xenoliths

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The Nógrád-Gömör Volcanic Field (NGVF) is located in the northern part of the Pannonian Basin, and is one of the five occurrences in the Carpathian-Pannonian region where xenoliths from the upper mantle and lower crust were enclosed and brought to the surface by Plio-Pleistocene alkali basalts. Upper mantle peridotite xenoliths of the NGVF can be divided into two lithologically different suites: lherzolites, which represent the depleted lithospheric mantle, and wehrlites, which were formed from lherzolites by cryptic and stealth metasomatism during melt-rock interaction. This study focuses on the petrography and geochemistry of the lherzolite suite because recent studies proved that these xenoliths are geochemically diverse and have suffered cryptic metasomatism to various extents.

Out of more than 200 collected samples, 15 representative lherzolite xenoliths were selected from the central and southern part of the NGVF for detailed petrographic study, analyses of major and trace element contents and measurements of crystal preferred orientation (CPO). Major element geochemistry revealed that composition of most of the lherzolite xenoliths match that of the average, depleted lithospheric mantle with approximately 20 % partial melting; however, some of the samples exhibit characteristically lower Mg-numbers, indicating metasomatic effect resulting in Fe enrichment. This suggests reaction with a melt whose composition is different from the host magma, and which could be the metasomatic agent that created the wehrlite bodies by alteration of the lherzolites. This assumption is supported further by trace element analyses that show various amounts of LREE enrichment, proposing that metasomatism has affected parts of the upper mantle to different degrees.

CPOs of olivine show a difference in fabric strength between lherzolite xenoliths from the central and the southern part of the NGVF, which may be attributed either to the difference in the depth of origin or the vicinity of major structural lines in case of the central part. Samples from the central part of the volcanic field represent a deeper domain of the lithospheric mantle than the ones from the southern part, and therefore may have been affected by a different deformation mechanism. Based on the results, we concluded that the xenoliths were not only subject to metasomatic processes, but also went through various deformation episodes, which occurred most probably during the Neogene evolution of the Pannonian Basin.

The general objective of the International Orogenic Lherzolite Conferences is to assemble specialists on mantle processes to share new findings (often resulting from recent PhD theses) that are discussed in a group setting, both on key outcrops and in room sessions.

For this 6th Lherzolite conference, we invite contributions in a large range of topics related to the physico-chemical evolution of the mantle including melting processes, melt transport, crustal recycling, significance of mafic lithologies in orogenic peridotites, metasomatism, lithosphere evolution through rejuvenation/refertilization, supra-subduction fluid/melt processes, feedbacks between deformation and melt segregation/migration, field and experimental studies on mantle rocks deformation, geophysical imaging of mantle structures and flow, mineral resources related to mantle rocks, etc...

The conference also welcomes contributions on the mantle dynamics associated with the convergence between the African and European plates in the Western Mediterranean, including geophysics, petrology and geochemistry of mantle rocks and volcanism, and modelling.

The 6th International Lherzolite Conference is organized in Morocco in the frame of an ongoing collaborative venture between Abdelmalek Essaâdi University (Tetouan), Moulay Ismaïl University (Meknes), Cadi Ayyad University (Marrakech), Geosciences Montpellier (CNRS & University of Montpellier) and the Instituto Andaluz de Ciencias de la Tierra (CSIG and University of Granada).



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