

PLINIUS

Supplemento italiano all'European Journal of Mineralogy



Numero 42 - Ottobre 2016

Società Italiana di Mineralogia e Petrologia
c/o Dipartimento di Scienze della Terra - Via S. Maria 53
I-56126 PISA

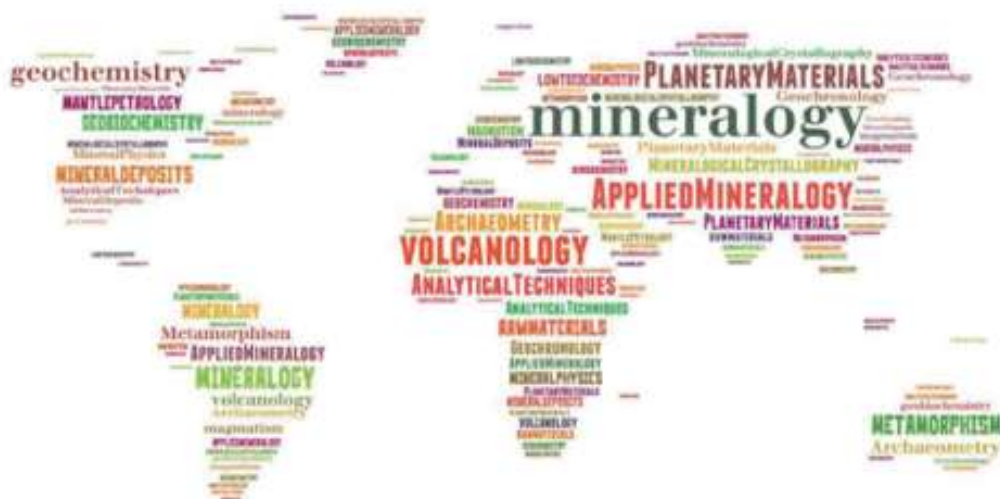
emc²2016

11 - 15 September

2nd European Mineralogical Conference

rimini, italy

Minerals, rocks and fluids: alphabet and words of planet Earth



Nelle pagine seguenti vengono riportati gli abstract presentati nelle sessioni della seconda European Mineralogical Conference emc2016 “Minerals, rocks and fluids: alphabet and words of planet Earth”, che la SIMP ha organizzato a Rimini nel periodo 11-15 settembre 2016.

Dal momento che tutti gli argomenti trattati nella Conference possono interessare i Soci SIMP, gli abstract inseriti nel volume distribuito ai partecipanti al congresso sono stati riportati integralmente, senza operare selezioni di alcun genere.

Si sottolinea che Plinius non rappresenta in alcun modo – nemmeno parzialmente – il volume ufficiale degli abstract del congresso che rimane quello distribuito in formato digitale ai partecipanti al congresso.

Pertanto la pubblicazione degli abstract su Plinius, è da ritenersi esclusivamente come un servizio utile per i Soci.

Si ringraziano i responsabili editoriali del Volume degli Abstracts di emc2016, Marco Pasero e Bernardo Carmina, per la cortese collaborazione.

**MELT-PERIDOTITE MULTISTAGE INTERACTION AT MANTLE CONDITIONS:
PETROLOGICAL AND GEOCHEMICAL EVIDENCES FROM SAPPHIRINE-
APATITE-CALCITE-BEARING GABBROIC DYKES FROM THE FINERO
PHLOGOPITE PERIDOTITE (IVREA-VERBANO ZONE)**

Giovanardi T.¹, Zanetti A.*², Mazzucchelli M.²⁻³, Langone A.² & Morishita T.⁴

¹ Institute of Geosciences, University of São Paulo, Brazil

² Istituto di Geoscienze e Georisorse, Consiglio Nazionale delle Ricerche, Pavia, Italy

³ Dipartimento di Scienze Chimiche e Geologiche, Università di Modena e Reggio Emilia, Modena, Italy

⁴ School of Natural System, College of Science and Engineering, Kanazawa University, Japan

Corresponding email: alberto.zanetti9@virgilio.it

Keywords:

The Finero Phlogopite-Peridotite (FPP) is a mantle unit outcropping in the northernmost part of the Ivrea-Verbano Zone (IVZ, Southern Alps). Multistage pervasive to channelled melt migrations had completely recrystallized the entire FPP. The main metasomatic event pervasively formed an association of amphibole-rich phlogopite harzburgite with subordinated phlogopite-pyroxenites which do not show geochemical gradients (Zanetti et al., 1999). Channelled migrations lately formed dunite bodies, sometimes containing stratiform chromitites and, more rarely, pyroxenite layers similar to those associated to phlogopite harzburgite. Several other lithologies, showing geochemical gradients with rocks of the main FPP association and characterized by the presence of apatite sometimes associated to carbonates (i.e. dolomite and calcite), are subordinated in volumes and abundances. Commonly these lithologies occur as dykes or veins along deformation zones. Geochronological data from apatite-calcite zircon syenites and apatite-dolomite wehrlites provide Triassic ages assumed to document the time of the melt/fluid migrations. Notwithstanding the apparent mineralogical and chemical differences with the main lithologic sequences, apatite-carbonates-bearing rocks have been frequently interpreted as cogenetic to phlogopite harzburgites and related to the main metasomatic event. Recently, apatite-calcite-bearing gabbroic dykes randomly crosscutting the FPP lithologic associations were recognized as possibly the last (or one of the last) melt migration event within the mantle unit (Giovanardi et al., 2013). The dykes show symmetrical internal layering formed by melanocratic bands towards the host peridotite dominated by titanian pargasite and a central leucocratic zone dominated by plagioclase. Magmatic sapphirine occurs in plaques at the contact of the leucocratic zone within the melanocratic bands. New field, petrographic and geochemical studies were conducted to constrain the gabbroic veins intrusion and their genetic relationships with other FPP metasomatic events. Petrographic evidences, major and trace element data and the O isotopic composition of such gabbroic veins indicate that they formed at shallow mantle conditions by multistage fractional crystallisation of a migrating melt unrelated to those forming the harzburgite-pyroxenite association and the dunite bodies. However, local strong enrichments in LILE, LREE and $\delta^{18}\text{O}$ in vein minerals confirm that such melt was deeply modified by interaction with the host phlogopite peridotite. However, the amphiboles in textural equilibrium with sapphirine show a marked M-HREE and Y depletion associated to a marked positive Eu anomaly, which support melt evolution through plagioclase assimilation. The genetic relationships with other intrusive events recorded by the FPP and the associated crustal sequence will be addressed with the aim of placing place new constraints on the petrologic and geodynamic evolution of the IVZ.

Giovanardi, T., Morishita, T., Zanetti, A., Mazzucchelli, M., Vannucci, R. (2013): Igneous sapphirine as a product of melt-peridotite interactions in the Finero Phlogopite-Peridotite Massif, Western Italian Alps. *Eur. J. Mineral.*, **25**, 17-31.

Zanetti, A., Mazzucchelli, M., Rivalenti, G., Vannucci, R. (1999): The Finero phlogopite-peridotite massif: an example of subduction-related metasomatism. *Contrib. Mineral. Petrol.*, **134**, 107-122.