

Curriculum Vitae

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Nationality Italian

Date of Birth 5th September 1986



Research Interest

Scientific interests on petrology, mineralogy, geochemistry and structural geology of subducted oceanic crust, and their application in reconstructing the architecture of fossil subduction zones. The research is field based and process oriented. It focusses on subduction zone processes, fluid rock interactions and earthquakes dynamics and triggering processes within HP to UHP rocks from orogenic belts as the Western Alps and the Central Scandinavian Caledonides.

Main goals:

- 1) Petrological and geochemical evolution of subducted oceanic crust, with attention on serpentinite geochemistry and HP, fluid induced, metasomatism.
- 2) Textual analysis and metamorphic phase relations in high and ultrahigh pressure mafic and ultramafic rocks. Reconstruction of fluid-rock interactions during subduction by studying fluid-mobile trace elements (B, AS, Sb, W, U, Th) and stable (B) and radiogenic (Sr, Pb, Nd) isotopes.
- 3) Reconstruction of the fossil Alpine plate interface assessing rock diversity and fluid rock interactions within subducted oceanic crust.
- 4) Microstructure, processes and triggering mechanisms of subduction earthquakes by studying fossil pseudotachylytes in HP oceanic crust and lithospheric mantle.
- 5) Deformation mechanisms in olivine and their implication in mantle and subduction zone dynamics.

Complementary skills

Technical skills and expertise acquired during long analytical stages at qualified international labs (Géosciences Montpellier, IGG-CNR Pisa and University of Bern; Certificates of attendance in appendix).

- Use of clean labs and acid dissolution of geological samples for ultra-trace ICP-MS analyses and column separation of elements and sample preparation for Thermal Ionization Mass Spectrometry (TIMS).
- Stable (B) and radiogenic (Sr, Pb, Nd) isotope analyses using Thermal Ionization Mass Spectrometry (TIMS) Finningan MAT262 and VG54E.
- Bulk and in-situ trace and ultra-trace analyses of geological samples using Laser Ablation-ICP-MS.
- In-situ EDS and WDS mineral analyses and micro-photography using Scanning Electron Microscopy (SEM) and Electron Microprobe (EMP).
- Geochemical thermodynamic modelling of mafic and ultramafic systems using the PerpleX suite software.

Past and Present

April 2014 - March 2017 PhD Student at the University of Genova (ITN-MarieCurie FP7 - ZIP; www.zip-itn.eu)

Phd thesis: Alpine Serpentinite Geochemistry: a Key to Unravel Subduction Accretion at the Plate Interface.

Supervisors: Marco Scambelluri (UG), Samuele Agostini (IGG-CNR), Thomas Pettke (UB)

February 2011 - August 2013 MSc in Geology at the Utrecht University
Masters thesis: The Friningen Garnet Peridotite (central Sweden): a good example of the characteristic microstructure and PTt path of a cold mantle wedge garnet peridotite
Supervisor: Dr. Herman L.M. van Roermund

September 2006 - December 2009 BSc in Earth Sciences at the Università degli Studi di Torino
Bachelor thesis: Tectonometamorphic evolution of the transition area between the Sesia Zone and the Lanzo Massif, between the villages of Tortore and Chiaves (Italy)
Supervisors: Prof. Dr. Roberto Compagnoni and Dr. Marco Beltrando

Conferences

18-21 April 2017 Subduction Interface Processes (SIP) Conference, Castelldefels (E)
Oral presentation
Abstract:
Gilio M., Scambelluri M., Agostini S., Godard M., Pettke T. & Angiboust S. (2016) - Alpine Serpentinite Geochemistry as Key to Define Timing of Oceanic Lithosphere Accretion to the Subduction Plate Interface.

12-16 December 2017 AGU Fall Meeting 2016, San Francisco (USA)
Oral presentation
Abstract:
Gilio M., Scambelluri M., Agostini S., Godard M., Pettke T. & Angiboust S. (2016) - Alpine Serpentinite Geochemistry as Key to Define Timing of Oceanic Lithosphere Accretion to the Subduction Plate Interface.

25-29 September 2016 4th Serpentine Days 2016, Sète (F)
Oral presentation
Abstract:
Gilio M., Scambelluri M., Agostini S., Godard M., Pettke T. & Angiboust S. (2016) - Alpine Serpentinite Geochemistry as Key to Define Timing of Oceanic Lithosphere Accretion to the Subduction Plate Interface.

11-15 September 2016 2nd European Mineralogical Conference (EMC²), Rimini (I).
Oral presentation
Abstract:
Gilio M., Scambelluri M., Agostini S., Pettke T. & Godard M. (2016) - Serpentinite-driven Exhumation of the UHP Lago di Cignana Unit in the Fossil Alpine Plate Interface.

- 14-18 December 2015** AGU Fall Meeting 2015, San Francisco (USA)
Poster presentation
Abstract:
Gilio M., Scambelluri M., Angiboust S., Godard M., Pettke T. (2015). Serpentine-driven Exhumation of the UHP Lago di Cignana Unit in the Fossil Alpine Plate Interface. Session T21E-2893.
- 10-12 September 2014** Congresso SGI-SIMP 2014, Milano (Italy)
Oral presentation
Abstract:
Gilio M., Clos F., van Roermund H.L.M. (2014). Olivine fabric as tool to constrain paleopiezometry and crystallization temperature in orogenic peridotites: an example from the Friningen Garnet Peridotite (Central Scandinavian Caledonides). *Rendiconti Online della Società Geologica Italiana* **31 (1)**, 469
- 4-7 September 2013** International Eclogite Conference 2013, Courmayeur (Italy)
Oral presentation
Abstract:
Gilio M. & van Roermund H.L.M. (2013). The Friningen Garnet Peridotite (central Sweden): a good example of the characteristic PTt path of a cold mantle wedge garnet peridotite. *IEC Abstracts Vol. 10*.
- 7 -12 April 2013** EGU General Assembly 2013, Vienna (Austria)
Poster presentation
Abstract:
Gilio M., Clos F., van Roermund H.L.M. (2013). On protolith-, metamorphic overprint, microstructure and rheology of mineral assemblages in orogenic peridotites of the central Scandinavian Caledonides. *Geophysical Research Abstracts Vol. 15*, EGU2013-885-1
- Publications** Scambelluri M., Bebout G.E., Belmonte D., **Gilio M.**, Campomenosi N., Collins N., Crispini L. (2016). Carbonation of subduction-zone serpentinite (high-pressure ophiocarbonate; Ligurian Western Alps) and implications for the deep carbon cycling. *Earth and Planetary Science Letters* **441**, 155-166. DOI: [10.1016/j.epsl.2016.02.034](https://doi.org/10.1016/j.epsl.2016.02.034)
- Scambelluri M., Cannà E., **Gilio M.**, Godard M. (2015). Petrologic and geochemical role of serpentinite in subduction zones and plate interface domains. *Rendiconti Online della Società Geologica Italiana* **37**, 61-64. DOI: [10.3301/ROL.2015.177](https://doi.org/10.3301/ROL.2015.177)
- Gilio M.**, Clos F., van Roermund H.L.M. (2015). The Friningen Garnet Peridotite (central Swedish Caledonides). A good example of the characteristic PTt path of a cold mantle wedge garnet peridotite. *Lithos* **230**, 1-16. DOI: [10.1016/j.lithos.2015.05.003](https://doi.org/10.1016/j.lithos.2015.05.003)
- Clos F., **Gilio M.**, van Roermund H. L.M. (2014). Fragments of deeper parts of the hanging wall mantle preserved as orogenic peridotites in the central belt of the Seve Nappe Complex, Sweden. *Lithos* **192**, 8-20. DOI: [10.1016/j.lithos.2014.01.004](https://doi.org/10.1016/j.lithos.2014.01.004)

Analytical work and laboratory training

(Certificates in the appendix)

- 10 March - 3 April 2015** Laboratory and analytical stage at the University of Montpellier under the supervision of Dr. M. Godard. University of Montpellier II, Montpellier (F)
- Sep 2015, Dec 2015 and Apr 2016** Sample preparation and Laser-Ablation ICP-MS analyses at the University of Bern, under the supervision of Dr. Thomas Pettke.
- Sep-Oct 2014, Feb, Apr, July 2016** Laboratory and analytical training in isotope geochemistry and isotopic analysis techniques using Thermal-Ionization Mass Spectrometry (TIMS) at the IGG-CNR in Pisa (I), under the supervision of Dr. Samuele Agostini.

Attended Workshops

(Certificates of attendance in the appendix)

- 16 September 2016** Solid inclusions in minerals as records of geological processes. Rimini (I).
- 9-13 May 2016** ZIP workshop "6.2 Private sector & Career development". Free University of Berlin. Berlin (D).
- 7-8 March 2016** Visit and workshop on "Trace element analyses and blank control" at the ALS Scandinavia Laboratories. Luleå (S)
- 26-30 October 2015** ZIP workshop "Rock mechanics and experimental rheology". CNRS. Paris (F).
- 5-17 October 2015** ZIP Consolidator (Field Trip) "On land continuous monitoring of the Chilean subduction interface". Antofagasta, Calama and San Pedro de Atacama (RCH).
- 18-22 May 2015** ZIP workshop "Analytical geochemistry, geochronology, and fluid characterization". University of Bern. Bern (CH)
- 18-19 February 2015** "Le Geoscienze e il ciclo del carbonio". Università di Milano, Milano (I)
- 24-28 November 2015** ZIP workshop "Active seismic data processing and inversion". Institute of Marine Science, CSIC. Barcelona (E)
- 20-24 October 2014** "Texture Topics", University of Basel, Basel (CH)
- 6-10 October 2014** ZIP workshop "5.1 Numerical Modelling in Geosciences". National Observatory of Athens, Athens (GR)
- 15-19 September 2014** ZIP workshop "Transferable skills". Marie and Pierre Curie University. Paris (F).
- 13 September 2014** "Guiding questions for an Italian Carbon initiative". Università di Milano, Milano (I).
- 8-17 July 2014** ZIP Starter 1 (Field Trip) "Walking along the plate interface of the Alpine subduction zone". Northern Apennine and Western Italian Alps (I).