Curriculum Vitae[*]

Mattia Guerri

I. Personal Data

Name: Mattia Guerri

Born: December 19, 1986
Gubbio, Umbria, Italia

Nationality: Italian

Address: Department of Geosciences and Natural Resource Management
University of Copenhagen
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II. Education

- Ph.D., Geophysics, Geodynamics.

University of Copenhagen, September 2016.

Thesis: *Thermochemical structure of the Earth's mantle and continental crust: Insights from a multidisciplinary approach involving seismological, mineral physics, geodetic and petrological constraints*.

- M. Sc., Summa Cum Laude. Structural Geology and Seismology.

University of Perugia, September 2011.

Thesis: *Seismic anisotropy and micro-seismicity in the upper crust at north of Gubbio graben (central Italy): relation with the structural features and the active stress field.*

- B. Sc., Summa Cum Laude, Tectonics and Magmatology.

University of Perugia, February 2009.

Thesis: *Fractal analysis of fragmentation processes during mixing of magmas: a new method for estimating magma volumes in plumbing system.*

[*] *Updated October 2016*

III. Other relevant academic experiences

- **Visiting Student at Geophysical Fluid Dynamics group, ETH Zurich**, April to October 2014. Working under the supervision of Pr. Paul Tackley on numerical modeling of mantle convection and its interaction with surface topography.
- **Teaching assistance**, Applied Geophysics course. Fall 2012 and fall 2013.
- **CIDER 2013 summer program**, "From mantle to crust: continental formation and destruction". Collaborating in a multidisciplinary team, consisting of PhDs and postdocs, investigating the dynamic processes responsible for the lithospheric root loss in the North China craton. The results of the project were presented at AGU Fall Meeting 2013, "Deep vs. shallow expressions of continental cratons: can cratonic root be destroyed by subduction?".

IV. Current position and previous working experiences

- [Current position] Research Assistant, Department of Geosciences and Natural Resource Management, University of Copenhagen, Denmark.
- Earth materials mechanics, standard penetration test, seismic prospecting (MASW), electric tomography at **Societa Geologica s.r.l.**, September 2011 to February 2012.
- Laboratory and site testing of construction materials and soils at **SGM EXPERIMENTATIONS**, August to September 2008.

V. Scientific focus areas

- Interpretation of geophysical observables (particularly seismic and gravity data) in terms of temperature and composition.
- Relationships between seismic wave speed and density.
- Experimental and theoretical mineral and rock physics.
- Phase equilibria and phase properties modelling.
- Thermo-mechanical numerical modelling.
- Continental lithosphere thermo-chemical structure.
- Continental lithosphere formation and evolution mechanisms.

VI. Field work activities

- Passive seismic survey, **Greenland**, June 2012.
- Structural and sedimentological mapping at Assino Valley, **Northern Apennines**, August 2010.
- Volcanology field course at **Vesuvio** and **Campi Flegrei**, Campania, June 2009.
- Volcanology field course at **Massif Central**, France, May 2009.
- Sedimentology and structural geology field course at **Maiella** and **Gran Sasso**, Central Apennines, July 2008.
- Structural geology field course at Cascia, **Northern Apennines**, July 2007.
- Petrography and mineralogy field course at **Elba Island**, June 2007.

VII. Software and programming languages

- **Matlab**, **Fortran, Unix shell, HTML**.
- ***StagYY*** [Tackley, 2008]: numerical modelling of mantle thermo-mechanical processes.
- **Perple_X** [Connolly, 2009]: thermodynamic modelling.
- **SAC**. Seismic Analysis Code.
- **GMT**. Generic Mapping Tools. Manipulation of geographic and Cartesian data sets.
- **Paraview**. Data analysis and visualization application.

VIII. References

- Fabio Cammarano, Professor, Department of Science - Geological Sciences, University of Roma Tre.
E-mail: fabio.cammarano@uniroma3.it.
- James A. D. Connolly, Professor, Institute of Mineralogy and Petrology, ETH Zurich.
Phone: +41 44 632 78 04. E-mail: james.connolly@erdw.ethz.ch.
- Paul J. Tackley, Professor, Institute of Geophysics, ETH Zurich.
Phone: +41 44 633 27 58. E-mail: paul.tackley@erdw.ethz.ch
- Diego Perugini, Researcher, Department of Physics and Geology, University of Perugia.
Phone: +39 075 585 2608. E-mail: diego.perugini@unipg.it.

IX. Peer reviewed publications and works in preparation

- **1. Guerri M.,** Youssof M., Cammarano F. (2016). Crustal chemical composition of the southern

African cratons: Insights from seismic and gravity constraints. [In Preparation].

- 2. Cammarano F. and **Guerri M.** (2016), Global thermal models of the lithosphere at multiple resolution. [Under review, *Geophysical Journal International*].

- 3. Guerri, M., F. Cammarano, and P. J. Tackley (2016), Modelling Earth's surface topography: decomposition of the static and dynamic components. [Accepted, *Physics of the Earth and Planetary interiors*].

- 4. Guerri, M., F. Cammarano, and J. A. D. Connolly (2015), Effects of chemical composition, water and temperature on physical properties of continental crust, *Geochemistry, Geophysics, Geosystems*, 16, 2431–2449, doi:10.1002/2015GC005819.

X. Conference Abstracts

- 1. Guerri, M., F. Cammarano, P. J. Tackley (2015), Geophysical, petrological and mineral physics constraints on Earth's surface topography. European Geosciences Union General Assembly 2015, Vienna.

- 2. Guerri, M., F. Cammarano (2014), Seismic velocities - density relationship for the Earth's crust: effects of chemical composition, amount of water, and implications on gravity and topography. European Geosciences Union General Assembly 2014, Vienna.

- 3. Perry-Houts, J., M. Calo, C. L. Eddy, **M. Guerri**, A. Holt, E. Hopper, A. Tesoniero, B. A. Romanowicz, T. W. Becker, L. S. Wagner (2013), Deep vs. shallow expressions of continental cratons: can cratonic root be destroyed by subduction? American Geophysical Union Fall Meeting 2013, San Francisco.

- 4. Guerri, M., F. Cammarano, P. J. Tackley (2013), Towards an integrated model of Earth's crustal density structure: gravity and topography effect on global scale. European Geosciences Union General Assembly 2013, Vienna.

- 5. Guerri, M., F. Cammarano (2012), Crustal density structure and its effect on isostatic topography: a thermodynamic modelling perspective. First international GOCE solid Earth workshop, University of Twente, 2012.

- 6. Guerri, M., M. Pastori, L. Margheriti, E. D'Alema, D. Piccinini, M.R. Barchi (2012), Seismic anisotropy and micro-seismicity in the upper crust at north of Gubbio basin (central Italy): relation with the subsurface geological structures and the active stress field. GNGTS, Potenza, 2012.

- 7. Guerri, M., D. Perugini (2009), Fractal analysis of fragmentation processes during mixing of magmas: a new method for estimating magma volumes in plumbing system. Geoitalia 2009, VI Forum Italiano di Scienze della Terra.