

CURRICULUM VITAE

Giulio Solferino

August 2018

PERSONAL DATA

Citizenship: Italian

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EDUCATION

28/10/16 Postgraduate Certificate in Teaching&Learning (University College Cork, Ireland)

26/09/2008 Doctoral Degree Confirmation: Doctor of Sciences (Dr. Sc. ETH Zurich).

01/2004 – 04/2008 ETH Zürich, Switzerland: doctoral student; supervised by Prof. M.W. Schmidt and PD Dr. Nikolai Bagdassarov.

27/06/2003 Master degree in Geology (University of Milan, Italy). Supervisors: Prof. S. Poli and Dr. P. Fumagalli (with the collaboration of Dr. Kazuaki Okamoto - Saitama University, Japan).

PROFESSIONAL EXPERIENCE

Sept. 2016 - present Lecturer; Earth Sciences, Royal Holloway University of London, United Kingdom

09/2014 – 08/2016 Lecturer; Geology, University College Cork, Ireland.

Nov. 2013 Visiting scientist (short project); Bayerisches Geoinstitut (BGI), University of Bayreuth, Germany.

08/2012 – 08/2013 Assistant Professor; Earth Sciences Department, Mount Royal University, Calgary, AB, Canada.

09/2010 – 08/2012 NSERC postdoctoral fellow; Earth Sciences Department, St. Francis Xavier University, Antigonish, NS, Canada.

MENTORING/ SUPERVISING

On-going: 3 PhD projects; 1 Postdoc project; 1 MRes project; 10 BSc Mapping projects.

Previous: 16 BSc Honours research projects; 11 MSc research projects, 3 MSci project; 10 BSc Mapping projects.

TEACHING:

Established courses/modules taught:

Undergraduate: Introduction to Geology (1st year), Plate Tectonics and Global Geophysics (2nd year), Igneous and Metamorphic Petrology (2nd year - coordinator), Igneous Petrology and Laboratory (3rd year - coordinator), Metamorphic Petrology and Laboratory (3rd year), Geohazards (3rd year - coordinator), Crustal Evolution of NW Britain (*field course* - 3rd year), Geology for Engineers (3rd year - coordinator), Advanced Field Geoscience Techniques (4th year), Advanced Igneous Processes (4th year), Economic Geology (4th year- coordinator), Mineral Resources (3rd year - coordinator), Planetary Geology and Geophysics (3rd year), Formation and Evolution of the

Continents (4th year), Scientific and Field Skills (*field course* - 2nd year), Advanced Concepts and Techniques in Geology (*field course* - 3rd year).

Postgraduate: Experimental Petrology, Ore Textures and Paragenesis.

Successfully introduced new courses/modules:

Undergraduate: Geoscience Research (4th year – taught in 2013), Geochemistry (4th year – taught in 2015), Economic Geology Blended Learning (online and in-class - 4th year – taught in 2016).

Postgraduate: Geology of Ore Deposits (taught in 2016).

Teaching development:

Attended: “Common Concerns and Strategies for Transitioning to Online Teaching!”, *webinar* 20/09/2014

“A National Dialogue on enhancing teaching in higher education: moving towards an Irish framework of professional development”, *workshop*, 21/04/2015.

“EUROSotl”, *conference*, 7-9/06/2015.

Certifications: “Postgraduate Certificate in Teaching and Learning in Higher Education”. October 2016.

SECURED AND APPLIED GRANTS:

Role	Title	Funding body	Amount	Dates / Status
PI	Hydrothermal Cell for experimentation with supercritical fluids.	Royal Society	£ 73,009	<i>Submitted May 2018</i>
PI	Hydrothermal experimentation of Energy Critical Metals partitioning in base metal sulphides	Leverhulme Trust – Research Project Grants	£ 297,000	<i>Submitted June 2018 – Approved for detailed stage July 2018</i>
PI	Customized petrographic microscope with CMOS camera for ore microscopy research&teaching	College of Science Royal Holloway University	£ 30,000	Granted, 25 April 2018
PI	Microtomography of silicate-sulphide aggregates	European Synchrotron Radiation Facility	£ 20,000	<i>To be submitted on September 2018</i>
Leader	EDS-WDS-CL high&low vacuum mode Scanning Electron Microscope provided with cryostat-stage and critical point dryer	College of Science Royal Holloway University	£ 450,000	<i>Submitted on January 8th 2018</i>
Co PI	Metallogenesis of Cu deposits in Palaeozoic sedimentary rocks, southern Ireland	EU-SFI	€ 106,351	Granted, 2016-2018
PI	The geochemistry of Waterford Copper Coast mineralisation	GSI**	€ 25,000	Granted, 2015-2017
PI	Olivine grain growth in partially molten Fe-S: A tool to decipher the formation of Pallasite meteorites	DFG via BGI***	n/a	Completed, 2015-2016
Co PI	Irish Metallogenesis of Cu deposits in Upper Palaeozoic sedimentary rocks, southern Ireland	EU-SFI	€146,600	Granted, 2015-2019

PI	Grain growth of olivine in molten/partially molten Fe-S alloys: A tool to enlighten the forming conditions of rounded-olivine pallasites	DFG via BGI***	n/a	Completed, 2013
PI	In-situ high-energy X-ray diffraction on water-bearing silicate melts. Experimentations with a Hydrothermal Diamond Anvil Cell (HDAC)	Dept. of Energy, USA	€ 58,800	Completed, 2010-2011

* Science Foundation Ireland

** Geological Survey of Ireland

*** Deutsche Forschungsgemeinschaft. Funds awarded through Bayerisches Geoinstitut Visiting Scientist Program.

EXPERIENCE WITH EXPERIMENTAL FACILITIES:

Hydrothermal Diacell; Earth Science Dept., University of Bristol, Bristol, United Kingdom. 2015.

Hydrothermal Diamond Anvil Cell (HDAC); Earth Science Dept., St. F.X. University, Antigonish, NS, Canada. 2010-2012.

Gas Mixing 1 atm furnace; Institute for Mineralogy and Petrology, ETH Zürich, Switzerland. 2007.

Single stage *centrifuging* piston cylinder; Institute for Mineralogy and Petrology, ETH Zürich, Switzerland. 2004-2008.

End-loaded piston cylinder with cell for in-situ electric impedance measurement (Solatron™ 1260 Phase-Gain-Analyzer); Institut für Geowissenschaften, J. W. Goethe Universität, Frankfurt am Main, Germany. 2006.

Multi-anvil apparatus Walker type; Department of Mineralogy and Petrography, University of Milan, Italy. 2001-2003.

EXPERIENCE WITH ANALYTICAL FACILITIES:

Electron Microprobe Analyser (Jeol JXA 8200); Institute for Mineralogy and Petrology, ETH Zürich, Switzerland. Training course April 2004, one week, responsible: Dr. Eric Reusser.

Electron Microprobe Analyser (Jeol JXA 8900); Università degli Studi di Milano, Italy. Training July 2014.

Electron Microprobe Analyser (Jeol JXA 8200) – Ore minerals and REE minerals; Université de Genève, Geneva, Switzerland. 2018, training by Dr. Martin Robyr.

Scanning Electron Microscope (CamScan CS-44) for acquisition of EBSD images; Institute of Physics, ETH Zürich, Switzerland. Training course Sept. 2005, six hours, responsible: Dr. Karsten Kunze

Laser Particle Analyser (Mastersizer 2000 Malvern Instruments Ltd.) for detection of powders grain size; Institute of Geology, ETH Zürich, Switzerland. 2005.

X-Ray powder Diffractometer (X'PERT PRO MPD, PANalytical); Physical Science Complex, St. F.X. University, Antigonish, NS, Canada. 2010.

Atomic Force Microscope-Scanning Probe Microscope (Veeco MultiMode 8 High-Performance SPM). Department of Earth Science, Dalhousie University, NS, Canada. Training course Dec. 2010, eight hours, instructor: Mr. Alan Tang.

Raman analyser (Renishaw InVia Raman Microspectrometer) for analyses and identification of crystalline and non-crystalline materials; Physical Science Complex, St. F.X. University, Antigonish, NS, Canada. 2011.

Synchrotron Light Source of third generation for acquisition of XRF, EXAFS and XANES spectra. Advanced Photon Source (APS), Argonne National Laboratories, Argonne, IL, USA. 2011.

Fourier Transform Infrared Spectrometer (Nicolet 6700 FTIR). Department of Chemistry, Mount Royal University, AB, Canada. 2013.

Portable XRF analyser (Bruker S1 Titan). Training course June 2013, Mount Royal University, AB, Canada.

LA-ICP-MS (Photon Machines Excite 193 nm excimer Ar-F laser, quadrupole Thermo iCapQc). Trinity College Dublin, Ireland. 2015.

LA-ICP-MS (193 nm excimer laser-ablation system coupled to an Agilent 7500ce/cs quadrupole ICPMS). Royal Holloway University, Egham, 2016.

SOFTWARE AND COMPUTER EXPERTISE

Software Office package (Word, Excel, PowerPoint, Access), Adobe package (Professional Writer, Photoshop, Illustrator, InDesign), CorelDRAW, ImageJ (digital image analyses), LabView, Grapher, SigmaPlot, MatLab, Crystal Sleuth, Pinnacle Studio, OriginLab, PerpleX, Fit2D, PDFgetX2, IgPet (Rockware), IFFEFIT, Athena, Artemis, Blackboard, ArcGIS, TriPLOT.

LANGUAGES

Italian: mother language; **English:** fluent (IELTS certificate 8.0); **German:** intermediate (B2 EU-Level certificate); **French:** intermediate; **Spanish:** basic.

PUBLICATIONS:

In preparation:

WESTWOOD, N., **SOLFERINO, G.F.D.** 2018 'Energy Critical Metals in the English Lake District'. To be submitted to *Journal of the Geological Society*.

Publications in peer-reviewed journals:

SOLFERINO, G.F.D., GOLABEK, G.J. 2018 'Olivine grain growth in partially molten Fe-S: A proxy for the genesis of pallasite meteorites'. *Revision submitted to Earth and Planetary Science Letters* in August 2018.

SOLFERINO, G.F.D., GOLABEK, G.J., NIMMO, F., SCHMIDT, M.W. 2015 'Fast grain growth of olivine in liquid Fe-S and the formation of pallasites with rounded olivine grains'. *Geochimica et Cosmochimica Acta*, vol. 162, 259-275.

SOLFERINO G., ANDERSON, A.J., 2014. 'Pressure determination in HDAC experiments with haplogranite glass plus water by laser interferometry'. *Chemical Geology*, vol. 388, pg. 48-58.

ANDERSON, A.J., YAN, H., MAYANOVIC, R.A., **SOLFERINO G.**, BENMORE, C., 2014. 'High Energy X-ray Diffraction of a Water Saturated Silicate Melt under Conditions of High Temperature and Pressure'. *High Pressure Research*, vol. 34, pg. 100-109.

MAYANOVIC, R.A., YAN, H., ANDERSON, A.J., **SOLFERINO, G.**, 2013. 'Investigation of the structural environment of Ta in a silicate glass and water system under high P-T conditions'. *Journal of Non-Crystalline Solids*, vol. 368, pg. 71-78.

SOLFERINO, G., ANDERSON, A.J., 2012. 'Thermal reduction of Molybdenite in water and Hydrogen Peroxide bearing solutions. Insights on redox conditions in Hydrothermal Diamond Anvil Cell (HDAC) experiments'. *Chemical Geology*, vol. 322-323, pg. 215-222.

SCHMIDT, M.W., FORIEN, M., **SOLFERINO, G.**, BAGDASSAROV, N., 2012. 'Settling and compaction.. cumulate formation'. *Contributions to Mineralogy and Petrology*, vol. 164, pg. 959-976.

- CONNOLLY, J.A.D., SCHMIDT, M.W., **SOLFERINO, G.**, BAGDASSAROV, N., 2009. 'Permeability of asthenospheric mantle and melt extraction rates at mid-ocean ridges'. *Nature*, vol. 462, pg. 209-212.
- BAGDASSAROV, N., **SOLFERINO, G.**, GOLABEK, G., SCHMIDT, M.W., 2009. 'Centrifuge assisted percolation of Fe-S melts.. core accretion'. *Earth and Planetary Science Letters*, vol. 288, pg. 84-95.
- BAGDASSAROV, N., GOLABEK, G., **SOLFERINO, G.**, SCHMIDT, M.W., 2009. 'Constraints on the Fe-S melt connectivity.. impedance measurements'. *Physics of the Earth and Planetary Interiors*, vol. 177, pg. 139-146.

Invited seminars (2010 onward):

- 24/11/2017: "Pallasites in the early Solar System". Presented at Birkbeck University, London, UK.
- 01/03/2017: "Control of fO₂ and pressure in Hydrothermal Diamond Anvil Cell experiments and potential application to Energy Critical Elements study". Presented at Cardiff University, Cardiff, UK.
- 09/11/2016: "Experiments to understand nature. Two case studies: 1. Meteorites 2. Supercritical fluids". Presented at Royal Holloway University, Egham, United Kingdom.
- 20/10/2015: "Insights into the formation of Pallasites, rare stony-iron meteorites yield by impact between planetesimals". National History Museum, London, United Kingdom.
- 08/05/2015. "Pallasite formation after a non-destructive impact. An experimental-, image analyses-, and numerical modelling-based study". Presented at Bayerisches Geoinstitut, Bayreuth, Germany.
- 06/03/2015. "Hydrothermal Diamond Anvil Cell development with a view on the structure of water-bearing polymerized melt, and side effects". Presented at Earth Science Department, University of Bristol, United Kingdom.
- 11/06/2014 "Accumulation versus Textural maturation: Two case studies". Presented at Earth Science Department, Georg August University Göttingen, Göttingen, Germany.
- 21/04/2013. "Crustal, mantle and planetesimal melting. Applications of experimental petrology to the understanding of terrestrial planets igneous activity and evolution". Presented at "Geolinga" interfaculty meeting, Mount Royal University, Calgary, AB, Canada.
- 14/04/2011. "Partially molten systems: Porosity, Permeability and Dynamics in Relevant Geological Settings". Presented at Earth Science Department, Dalhousie University, Halifax, NS, Canada.
- 12/01/2011. "Hydrothermal Diamond Anvil Cell study of silicate melts/fluids structure". Presented at Institute of Geochemistry and Petrology, ETH Zurich, Switzerland.

Conference papers:

- COPAGE, J., MEERE, P.A., **SOLFERINO, G.F.D.**, UNITT, R. (2017): 'The geochemistry of the Waterford Copper Coast mineralisation, Ireland', Applied Earth Science IMM Transactions section B · April 2017, DOI: 10.1080/03717453.2017.1306240.

Conferences presentations (2011 onward):

- SOLFERINO, G.F.D.**, GOLABEK, G.J. (2018) The formation of pallasite meteorites. A combined experimental and numerical study. *European Geosciences Union Meeting*, 13/04/2018, Vienna, Austria.
- LANG, J., MEERE, P.A., UNITT, R., JOHNSON, S., **SOLFERINO, G.F.D.** (2018) The timing of vein-hosted copper mineralisation from the Variscides of SW Ireland. *Irish Geology Research Meeting*, 9/03/2018, Cork, Ireland.
- LANG, J., MEERE, P.A., UNITT, R., JOHNSON, S., **SOLFERINO, G.F.D.** (2018) Vein-hosted Copper Deposits from SW Ireland. *Mineral Deposits Studies Group Meeting*, 04/01/2018, Brighton, United Kingdom.

- LANG, J., MEERE, P.A., **SOLFERINO, G.F.D.**, UNITT, R. (2017) Copper Metallogensis in Upper Palaeozoic sedimentary rocks from the Irish Variscides. *Goldschmidt conference*, Aug. 2017, Paris, France.
- SOLFERINO, G.F.D.**, GOLABEK, G.J. (2017): The origin of pallasites. A combined experimental and numerical approach. *American Geophysical Union Fall Meeting*, Dec. 2017, New Orleans, Louisiana USA.
- SOLFERINO, G.F.D.**, GOLABEK, G.J. (2017): Olivine plus partially molten iron-sulfide: The best proxy for the genesis of fragmented-, rounded-, and mixed-type-olivine pallasites. *European Geosciences Union Meeting*, 24/04/2017, Vienna, Austria.
- COPAGE, J., **SOLFERINO, G.F.D.**, MEERE, P.A. (2016) The Geochemistry of the Copper Coast Mineralization, County Waterford. *Mineral Deposits Studies Group Meeting*, 19/12/2016, Bristol, United Kingdom.
- LANG, J., MEERE, P.A., **SOLFERINO, G.F.D.**, UNITT, R. (2016) Copper Metallogensis in Upper Palaeozoic sedimentary rocks of southern Ireland. *Mineral Deposits Studies Group Meeting*, 19/12/2016, Bristol, United Kingdom.
- COPAGE, J., **SOLFERINO, G.F.D.**, MEERE, P.A. (2016) The Geochemistry of the Copper Coast Mineralization, County Waterford. *Annual Irish Geoscience Meeting*, 02/11/2016, Dublin, Ireland.
- LANG, J., MEERE, P.A., **SOLFERINO, G.F.D.**, UNITT, R. (2016) Copper Metallogensis in Upper Palaeozoic sedimentary rocks of southern Ireland. *Annual Irish Geoscience Meeting*, 02/11/2016, Dublin, Ireland.
- SOLFERINO, G.F.D.**, GOLABEK, G.J. (2016) Pallasites: New Experimental Data. *Experimental Mineralogy, Petrology, Geochemistry Symposium – EMPG XV*, 08/06/2016, Zurich, Switzerland.
- LANG, J., MEERE, P., **SOLFERINO, G.F.D.**, UNITT, R. (2016) Copper Metallogensis in Upper Palaeozoic sedimentary rocks of southern Ireland. *First Meeting of the Irish Centre for Applied Geosciences (iCRAG)*, 07/06/2016, Athlone, Ireland.
- GOLABEK, G.J., **SOLFERINO, G.F.D.**, SCHMIDT, M.W., NIMMO, F. (2015) On the origin of pallasites with rounded olivine grains, *ACCURETE Workshop*, 14/05/2015, Bayreuth, Germany.
- SOLFERINO, G.F.D.**, GOLABEK, G.J., NIMMO, F., SCHMIDT, M.W., (2015) Pallasite formation after a non-destructive impact. An experimental- and image analyses-based study. *European Geosciences Union meeting*, 14/04/2015, Vienna, Austria.
- SOLFERINO, G.**, ANDERSON, A.J, (2015) Pressure determination in HDAC experiments, the behaviour of water-silicate systems at high pressure, and implication for melt (glass) inclusion studies. *European Geosciences Union meeting*, 14/04/2015, Vienna, Austria.
- SOLFERINO, G.**, MUIR, S.L., (2013) Olivine annealing in molten iron-sulphide. A tool to interpret the origin of pallasites. *76th Meteoritical Society Meeting*, 29/07/2013, Edmonton, AB, Canada.
- MUIR, S.L., **SOLFERINO, G.**, (2013) Olivine grain growth in a Fe-S matrix. A tool to interpret formation of pallasite meteorites. *GAC-MAC, 2013*, 23/05/2012, Winnipeg, MB, Canada.
- SOLFERINO, G.**, ANDERSON, A.J, (2012) Pressure determination in Hydrothermal Diamond Anvil Cell via laser interferometry: Investigation of hydrothermal melting of haplogranitic glass - Invited. *AGU Fall Meeting, 2012*, 05/12/2012, San Francisco, CA, USA.
- SOLFERINO, G.**, ANDERSON, A.J, (2012) Thermal reduction of molybdenite and hematite in water and H₂O₂-H₂O solutions as a tool to determine oxygen fugacity in hydrothermal diamond anvil cell (HDAC) experiments. *GAC-MAC 2012*, 29/05/2011, St. John's, NL, Canada.
- SOLFERINO, G.**, ANDERSON, A.J, (2011) Thermal reduction of MoO₃ in sub- and supercritical water: Insights on redox conditions in Hydrothermal Diamond Anvil Cell (HDAC) experiments. *AGU 2011 Fall Meeting*, 07/12/2011, San Francisco, CA, USA.

Outreach:

- 'Birkbeck Society of Geological & Planetary Sciences Talks'. Invited presentation and follow up open discussion with academics, students, and alumni (cross-disciplinary). *Presentation title:* "The origin of pallasites meteorites from an experimental and numerical perspective". Held at Birkbeck University of London (UK). Date 24th November 2017.
- 'Applicants Visiting Day'. Held at Royal Holloway University of London (UK) on the following dates: 21st January, 11th February, 4th March of the year 2017.
- Doctoral Training Programme, Autumn 2016. Lectured to PhD candidates at Birkbeck University of London. Lecture title: "Volcanic Hazard: Vesuvius and Campi Flegrei". Date 26th October 2016.
- Culture Night 2015. Presented to the BEES School stand as demonstrator and organizer of the rock and minerals exhibition. Date: 18th September 2015.
- 2015 Spring Open day of UCC. Presented to the BEES School stand as invitee for the presentation round titled 'BEES School Cutting Edge Research'. Date: 17th April 2015.
- Open lecture: Title: "Italian Geology"; Venue: Cork Geological Association, evening lecture series; Date: 25th February 2015
- TV appearance with the broadcasted presentation: "The Italian Alps". Broadcasted by ACALATV (Antigonish, NS, Canada) on 23rd January 2012.
- Delivered a series of 14 open lectures as part of a continuing education programme: "Italian language and Italy". Antigonish Public Library, Antigonish, Nova Scotia, Canada 2011-12.

Memberships:

European Geosciences Union, American Geophysical Union, Mineralogical Society, Society for Economic Geologists, Geological Society of London. Society for Geology Applied to Mineral Deposits.

Referring:

European Research Council, H2020 Starting Grants, PE10 - Earth System Science; Journal of Geophysical Research; Nature Astronomy

Panels/committees/administration roles:

- Web coordinator, Dept. of Earth Sciences, Royal Holloway – Current
- Admission&Marketing Committee, Dept. of Earth Sciences, Royal Holloway – Current