

# CURRICULUM VITAE

Prepared: May 11, 2024

## Dr. Fred Gaidies

Full Professor  
Carleton University  
Department of Earth Sciences

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### Academic Background:

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| 2007 | Doctorate in Metamorphic and Theoretical Petrology (grade: summa cum laude) at Basel University (Switzerland).   |
| 2003 | Master's Equivalent in Applied Geosciences (grade: with distinction) at Technical University (TU) Berlin (Germany) and GeoForschungsZentrum (GFZ) Potsdam (Germany). |
| 1999 | Bachelor's Equivalent in Applied Geosciences at Technical University (TU) Berlin (Germany).  |

### Work Experience:

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|-------------------|---|
| 07/2021 – present | Full Professor, Department of Earth Sciences, Carleton University (Ottawa, Canada).                     |
| 2016              | Visiting Professor Metamorphic and Theoretical Petrology, University of Vienna, (Vienna, Austria).      |
| 07/2013 – 06/2021 | Associate Professor (tenured), Department of Earth Sciences, Carleton University (Ottawa, Canada).      |
| 07/2009 – 06/2013 | Assistant Professor (tenure-track), Department of Earth Sciences, Carleton University (Ottawa, Canada). |
| 08/2007 – 06/2009 | Postdoctoral Research Fellow, Department of Geosciences, University of Calgary (Canada).                |

2008	Visiting Professor of Theoretical Petrology, Department of Geosciences, University of Vienna (Austria).
2003 – 2007	Teaching assistant, Department of Geosciences, Basel University (Switzerland).
1998 – 2001	Teaching assistant, Department of Applied Geosciences, TU Berlin (Germany).

### Area(s) of Research Expertise:

Metamorphic Petrology; Mineralogy; Theoretical Petrology; X-ray micro-computed tomography

### Publications (graduate and undergraduate students denoted by \* and \*\*, respectively):

1. Li\*, Z.M.G., **Gaidies, F.**, Chen, Y.-C., Zhao, Y.-L., Wu, C.-M. (2024). Petrogenesis of sector-zoned garnet in graphitic metapelite from the Danba dome, eastern Tibetan Plateau (SW China). *Contributions to Mineralogy and Petrology*, DOI: 10.1007/s00410-024-02139-8.
2. Yogi\*, M.T.A.G, **Gaidies, F.**, Heldwein\*, O.K.A., Rice, A.H.N. (2024). Mechanisms and durations of metamorphic garnet crystallization in the lower nappes of the Caledonian Kalak Nappe Complex, Arctic Norway. *Journal of Metamorphic Geology*, DOI: 10.1111/jmg.12766.
3. Li\*, Z.M.G, Chen, Y.-C., **Gaidies, F.**, Zhao, Y.-L., Wu, C.-M. (2024). Identical metamorphic record in distinct petrochemical systems: case study of microscopically interlayered garnet amphibolite and metapelite from the Danba dome, SW China. *Lithos*, 468-469:107488.
4. **Gaidies, F.**, McCarron\*, T., Simpson, A., Easton, R.M., Glorie, S., Putlitz, B., Trebus\*, K. (2024). Polymetamorphism during the Grenvillian Orogeny in SE Ontario: Results from trace element mapping, in-situ geochronology, and diffusion geospeedometry. *Journal of Metamorphic Geology*, 42:35-61.
5. Chu, X., Akça, O., **Gaidies, F.**, Gennaro, I., Ji, W.Q. (2023). Thermal pulse induced by emplacement of Ramba leucogranites in southern Tibet. *Journal of Metamorphic Geology*, 41:121-141.

6. Soucy La Roche, R., Dyer<sup>\*</sup>, S., Zagorevski, A., Cottle, J., **Gaidies, F.** (2022). 150 Myr of episodic metamorphism recorded in the Yukon-Tanana Terrane, Northern Canadian Cordillera: Evidence from monazite and xenotime petrochronology. *Lithosphere*, doi:10.2113/2022/7708357.
7. Christison<sup>\*\*</sup>, B., **Gaidies, F.**, Pineda-Munoz, S., Evans, A., Fraser, D. (2022). Dietary niches of creodonts and carnivorans of the late Eocene Cypress Hills Formation. *Journal of Mammalogy*, 103:2-17.
8. **Gaidies, F.**, Heldwein<sup>\*</sup>, O., Yogi<sup>\*</sup>, T., Cutts, J., Smit, M., Rice, H. (2022). Testing the equilibrium model: An example from the Caledonian Kalak Nappe Complex (Finnmark, Arctic Norway). *Journal of Metamorphic Geology*, 40:859-886.
9. **Gaidies, F.**, George<sup>\*</sup>, F. (2021). The interfacial energy penalty to crystal growth close to equilibrium. *Geology*, 49:988-992.
10. **Gaidies, F.**, Morneau<sup>\*</sup>, Y., Petts, D., Jackson, S., Zagorevski, A., Ryan, J. (2021). Major and trace element mapping of garnet: Unravelling the conditions, timing and rates of metamorphism of the Snowcap assemblage, west-central Yukon. *Journal of Metamorphic Geology*, 39:133-164.
11. **Gaidies, F.** (2021). Disequilibrium microstructures of metamorphic rocks. In: Elias S, Alderton D (eds) *Encyclopedia of Geology*, 2nd edition. Elsevier, Amsterdam, doi:10.1016/B978-0-08-102908-4.00001-1.
12. George<sup>\*</sup>, F., **Gaidies, F.** (2020). Simultaneous operation of opposing reaction mechanisms: the influence of matrix heterogeneity on post-kinematic garnet crystallisation in an inverted metamorphic sequence. *Journal of Metamorphic Geology*, 38:743-769.  
This publication has been awarded the **Mike Brown Annual Early Career JMG Research Paper Prize** for its "scientific originality, rigour in research methodology, relevance and significance to understanding metamorphic processes and/or evolution of a metamorphic terrane".
13. McCarron<sup>\*</sup>, T., McFarlane, C.R.M., **Gaidies, F.** (2019). The significance of Mn-rich ilmenite and the determination of P-T paths from zoned garnet in metasedimentary rocks from the Western Cape Breton Highlands, Nova Scotia. *Journal of Metamorphic Geology*, 37:1171-1192.

14. Dziawa\*, C., **Gaidies, F.**, Percival, J., (2019). Conditions and Timing of Low Pressure – High Temperature Metamorphism in the Montresor Belt, Rae Province, Nunavut. *Canadian Journal of Earth Sciences*, 56:654-671.
15. George\*, F., **Gaidies, F.**, Boucher, B., (2018). Population-wide garnet growth zoning revealed by LA-ICP-MS mapping: implications for trace element equilibration and syn-kinematic deformation during crystallisation. *Contributions to Mineralogy and Petrology*, 173:74.
16. Powell, J., Schneider, D.A., Desrochers, A., Flowers, R.F., Metcalf, J., **Gaidies, F.**, Stockli, D.F. (2018). Low-temperature thermochronology of Anticosti Island: a case study on the application of conodont (U-Th)/He thermochronology to carbonate basin analysis. *Marine and Petroleum Geology*, 96:441-456.
17. Morneau\*, Y.E., **Gaidies, F.**, Ryan, J.J., Zagorevski, A. (2017). Estimates of garnet crystallization and rates of metamorphism for metapelites of the Snowcap assemblage, Yukon-Tanana terrane, Yukon. *Geological Survey of Canada, Current Research*, 2017-2.
18. George\*, F., **Gaidies, F.**, (2017). Characterisation of a garnet population from the Sikkim Himalaya: insights into the rates and mechanisms of porphyroblast crystallisation. *Contributions to Mineralogy and Petrology*, 127:57.
19. Chakraborty, S., Mukhopadhyay, D., Chowdhury, P., Rubatto, D., Anczkiewicz, R., Trepmann, C., **Gaidies, F.**, Sorcar, N., Dasgupta, S., (2017). Channel Flow and localized fault bounded slice tectonics (LFBST): Insights from petrological, structural, geochronological and geospeedometric studies in the Sikkim Himalaya, NE India. *Lithos*, 282-283:464-482.
20. Mukhopadhyay, D., Chakraborty, S., Trepmann, C., Rubatto, D., Anczkiewicz, R., **Gaidies, F.**, Dasgupta, S., Chowdhury, P., (2017). The nature and evolution of the Main Central Thrust: Structural and geochronological constraints from the Sikkim Himalaya, NE India. *Lithos*, 282-283:447-463.
21. **Gaidies, F.**, Milke, R., Heinrich, W., Abart, R., (2017). Metamorphic mineral reactions: Porphyroblast, corona and symplectite growth. In: Abart, R., Heinrich, W. (eds), Mineral reaction kinetics: microstructures, textures, chemical and isotopic signatures, *European Mineralogical Union Notes in Mineralogy*, 16:469-540.

22. **Gaidies, F.**, (2017). Nucleation in geological materials. In: Abart, R., Heinrich, W. (eds), Mineral reaction kinetics: microstructures, textures, chemical and isotopic signatures, *European Mineralogical Union Notes in Mineralogy*, 16:347-371.
23. Chakraborty, S., Anczkiewicz, R., **Gaidies, F.**, Rubatto, D., Sorcar, N., Faak, K., Mukhopadhyay, D., Dasgupta, S., (2016). A review of thermal history and timescales of tectonometamorphic processes in Sikkim Himalaya (NE India) and implications for rates of metamorphic processes. *Journal of Metamorphic Geology*, 34:785-803.
24. Petley-Ragan\*, A., **Gaidies, F.**, Pattison, D.R.M., (2016). A statistical analysis of the distribution of cordierite and biotite in hornfels from the Bugaboo contact aureole: Implications for the kinetics of porphyroblast crystallization. *Journal of Metamorphic Geology*, 34:85-101.
25. ElAgamy, N., Laliberte, J., **Gaidies, F.**, (2015). Quantitative analysis of fatigue cracks in laminated carbon fibre-reinforced polymer composites using micro-computed tomography. *Journal of Composite Materials*, doi:10.1177/0021998315608252.
26. **Gaidies, F.**, Petley-Ragan\*\*, A., Jones, P., Chakraborty, S., Dasgupta, S., (2015). Constraining the conditions of Barrovian metamorphism in Sikkim, India: P-T-t paths of garnet crystallization in the Lesser Himalayan Belt. *Journal of Metamorphic Geology*, 33:23-44.
27. McCarron\*, T., **Gaidies, F.**, McFarlane, C.R.M, Easton, R.M., Jones, P., (2014). Coupling thermodynamic modeling and high-resolution in-situ LA-ICP-MS monazite geochronology: Evidence for low pressure - high temperature metamorphism late in the Grenvillian history of southeastern Ontario. *Mineralogy and Petrology*, 108:741-758.
28. ElAgamy, N., Laliberte, J., **Gaidies, F.**, Goldach, J., 2014. Qualitative characterization of fatigue damage propagation in laminated carbon fibre reinforced polymers by using micro-computed tomography. *SAMPE Journal*.
29. Pattison, D.R.M., de Capitani, C., **Gaidies, F.**, 2011. Petrologic consequences of variations in metamorphic reaction affinity. *Journal of Metamorphic Geology*, 24:451-475.
30. **Gaidies, F.**, Pattison, D.R.M., de Capitani, C., 2011. Toward a quantitative model of metamorphic nucleation and growth. *Contributions to Mineralogy and Petrology*, 155:657-671.

31. **Gaidies, F.**, Krenn, E., de Capitani, C. and Abart, R., 2008. Coupling forward modelling of garnet growth with monazite geochronology: an application to the Rappold Complex (Austroalpine crystalline basement). *Journal of Metamorphic Geology*, 26:775-793.
32. **Gaidies, F.**, de Capitani, C., Abart, R., and Schuster, R., 2008. Prograde garnet growth along complex  $P$ - $T$ - $t$  paths: results from numerical experiments on polyphase garnet from the Wölz Complex (Austroalpine basement). *Contributions to Mineralogy and Petrology*, 155:673-688.
33. **Gaidies, F.**, de Capitani, C. and Abart, R., 2008. THERIA\_G: a software program to numerically model prograde garnet growth. *Contributions to Mineralogy and Petrology*, 155:657-671.
34. **Gaidies, F.**, Abart, R., de Capitani, C., Schuster, R., Connolly, J.A.D. and Reusser, E., 2006. Characterization of polymetamorphism in the Austroalpine basement east of the Tauern Window using garnet isopleth thermobarometry. *Journal of Metamorphic Geology*, 24:451-475.

Journals in which I have published are ranked as follows (Impact Factor 2021):

- (a) Geology (1 article): 6.3, Ranking: 1 of 47 (Geology).
  - (b) Marine and Petroleum Geology (1 article): 5.4.
  - (c) Journal of Metamorphic Geology (13 articles): 4.5, Ranking: 2 of 47 (Geology).
  - (d) Contributions to Mineralogy and Petrology (6 articles): 4.1, Ranking: 1 of 25 (Mineralogy).
  - (e) Lithos (3 articles): 4.0.
  - (f) Journal of Composite Materials (1 article): 3.2.
  - (g) Lithosphere (1 article): 3.1.
  - (h) Journal of Mammalogy (1 article): 2.3.
  - (i) Mineralogy and Petrology (1 article): 2.0.
  - (j) Canadian Journal of Earth Sciences (1 article): 1.6.
35. Editorial Material

**Gaidies, F.**, John, T., 2009. Conditions and processes during metamorphic and igneous petrogenesis. *Mineralogy and Petrology*, 97:145-147.

36. Meeting Abstracts
 

**Gaidies, F.**, George, F.R., Yogi\*, M.T.A.G, Li\*, Z.M.G., 2024. Probing chemical transport using porphyroblast populations: A means to decipher the mechanisms, conditions, and durations of metamorphic crystallization. GAC-MAC Annual Meeting (Brandon, MB). **Invited**

**presentation.**

Yogi\*, M.T.A.G, **Gaidies, F.**, Heldwein\*, O.K.A., Rice, A.H.N., 2024. Mechanisms and durations of metamorphic garnet crystallization in the lower nappes of the Caledonian Kalak Nappe Complex (Arctic Norway). EGU General Assembly (Vienna, Austria).

Whittingham\*, M., Herx\*, E., **Gaidies, F.**, Fraser, D., Maddin, H., 2022. Dietary ecology of early Amniotes and their relatives as explored through 3D surface modeling. GSA Connects (Denver, Colorado, USA).

Rice, A. H. N., **Gaidies, F.**, Heldwein\*, O. K. A., Yogi\*, M. T. A. G., Cutts, J. A., Smit, M. A., 2022. Using P-T-t estimates to identify and restore out-of-sequence thrusting in the lower part of the Kalak Nappe Complex (Nordkinnhalvøya, Sværholthavøya), internal Scandinavian Caledonides, Finnmark, N. Norway. EGU General Assembly (Vienna, Austria).

Soucy La Roche, R., Dyer\*, S., Zagorevski, A., Cottle, J., **Gaidies, F.**, 2021. Monazite, xenotime and  $\text{Al}_2\text{SiO}_5$  polymorphs, the perfect team to characterize polymetamorphism. Metamorphic Studies Group Research in Progress Meeting, in collaboration with the Mineralogical Society of Great Britain and Ireland, (virtual meeting).

Dyer\*, S., Soucy La Roche, R., **Gaidies, F.**, Cutts, J., Petts, D., Zagorevski, A., 2020. A new garnet fractionation modelling technique and its application to the Yukon-Tanana terrane of north-western British Columbia. Geological Society of America (GSA) Annual Meeting (Montreal, Canada).

George\*, F., **Gaidies, F.**, 2020. Post-kinematic and matrix-dependent garnet nucleation and growth in the inverted Barrovian metamorphic sequence of the Sikkim Himalaya. Metamorphic Studies Group Research in Progress Meeting, in collaboration with the Mineralogical Society of Great Britain and Ireland, (virtual meeting).

**Gaidies, F.**, George\*, F., 2020. The departure from equilibrium and the effective interfacial energy during synkinematic, interface-reaction controlled porphyroblastic growth. GeoConvention 2020, (Calgary, Canada).

Soucy La Roche, R., Dyer\*, S., Cottle, J., Zagorevski, A., **Gaidies, F.**, 2020. Timing of metastably coexisting  $\text{Al}_2\text{SiO}_5$  polymorphs crystallization in the northern Canadian Cordillera revealed by monazite and xenotime petrochronology. GeoConvention 2020, (Calgary, Canada).

Forshaw, J., Pattison, D., **Gaidies, F.**, 2020. Overstepping the garnet-in isograd in regional metamorphism. GeoConvention 2020, (Calgary, Canada).

Heldwein\*, O., **Gaidies, F.**, Hugh, R., 2020. Metamorphic P-T paths of Eastern Finnmark:

Towards a better understanding of the tectono-metamorphic evolution of the Kalak Nappe Complex. Nordic Geological Winter Meeting 2020, (Oslo, Norway).

Asenbaum, R., Petrishcheva, E., Racek, M., Lexa, O., **Gaidies, F.**, Abart, R., 2019. Sieve structure and secondary compositional zoning in garnet from mafic granulites of the Gföhl unit, Moldanubian zone, Lower Austria. MinPet2019 Biennial Meeting of the Austrian Mineralogical Society (Graz, Austria).

George\*, F., **Gaidies, F.**, 2019. Porphyroblastic microstructures and metamorphic grade: controls on systematic trends from a Himalayan inverted Barrovian sequence. Geological Society of America (GSA) Annual Meeting (Phoenix, AZ, USA). **Invited keynote presentation of session.**

Soucy La Roche, R., Dyer\*, S., Cottle, J., Zagorevski, A., **Gaidies, F.**, 2019. Monazite and xenotime laser ablation split-stream petrochronology sheds light on the complex metamorphic evolution of the Yukon-Tanana Terrane, northern Canadian Cordillera. Geological Society of America (GSA) Annual Meeting (Phoenix, AZ, USA).

Asenbaum, R., Petrishcheva, E., Racek, M., Lexa, O., **Gaidies, F.**, Abart, R., 2019. Secondary chemical zoning of partially resorbed garnet. V.M. Goldschmidt Conference (Barcelona, Spain).

Asenbaum, R., Petrishcheva, E., Racek, M., Lexa, O., **Gaidies, F.**, Abart, R., 2019. Corrosion of garnet at granulite facies conditions. EGU General Assembly Conference Abstracts 21, EGU2019-16353 (Vienna, Austria).

George\*, F., **Gaidies, F.**, 2018. 3D textural and geochemical porphyroblast analysis: unravelling the integrated history of nucleation, growth and deformation. EGU General Assembly Conference Abstracts 20 (Vienna, Austria). **Invited keynote presentation of session.**

George\*, F.R., **Gaidies, F.**, 2018. Chromium spirals in garnet: a record of deformation during crystallisation? Joint conference of the Tectonic and Metamorphic Studies Groups of The Geological Society of London and the Mineralogical Society (Plymouth, UK). **Award for best student presentation.**

Christison\*\*, B.E., **Gaidies, F.**, Pineda-Munoz, S., Evans, A., Fraser, D., 2018. Comparison of creodont and carnivoran dental morphology from the Calf Creek Local Fauna (late Eocene) of Saskatchewan. 6th Annual Meeting of the Canadian Society of Vertebrate Palaeontology (Ottawa, ON).

George\*, F.R., **Gaidies, F.**, 2017. Differential equilibration and intergranular diffusion of trace elements during rapid regional metamorphism: constraints from LA-ICP-MS mapping



of a garnet population. AGU Fall Meeting (New Orleans, USA).

Morneau\*, Y.E., **Gaidies, F.**, Ryan, J., Zagorevski, A., 2017. Reconstruction of the metamorphic P-T-t path of garnet-bearing rocks from the Snowcap Assemblage in the Stewart River area, west-central Yukon. GAC-MAC Annual Meeting (Kingston, Canada, May 2017).

George\*, F., **Gaidies, F.**, 2017. LA-ICP-MS trace element mapping: insights into the crystallization history of a metamorphic garnet population. EGU General Assembly Conference Abstracts 19, 9661 (Vienna, Austria).

George\*, F., **Gaidies, F.**, 2016. Rates and mechanisms of porphyroblast crystallization: Insights from a garnet-grade schist of the Lesser Himalaya. 2nd European Mineralogical Conference (Rimini, Italy).

McCarron\*, T., McFarlane, C., **Gaidies, F.**, 2016. P-T path of metamorphism for a garnet-zone schist in the western Cape Breton Highlands. The Atlantic Geoscience Society Annual Meeting (Truro, NS, Canada). **Award for best graduate paper.**

George\*, F., **Gaidies, F.**, 2016. Characterisation of a garnet population from the Sikkim Himalaya: implications for the mechanisms and rates of porphyroblast crystallisation. EGU General Assembly Conference Abstracts 18, 5040 (Vienna, Austria). **Outstanding Student Poster and PICO (OSPP) Award 2016.**

**Gaidies, F.**, Petley-Ragan\*, A., Pattison, D.R.M., 2016. The 3D distribution of cordierite and biotite in hornfels from the Bugaboo contact aureole (British Columbia, Canada). EGU General Assembly Conference Abstracts 18, 14084 (Vienna, Austria).

**Gaidies, F.**, McCarron\*, T., 2014. A garnet population in mica schist from the Grenville Province of SE Ontario: Inferences about its crystallization kinetics and metamorphic P-T history. Geological Society of America (GSA) Annual Meeting (Vancouver, Canada). **Invited keynote lecture of session.**

Petley-Ragan\*, A., **Gaidies, F.**, 2014. A textural study of the distribution of cordierite in metapelitic hornfels from the Bugaboo contact aureole (SE British Columbia): Implications for the mechanisms of metamorphic crystallization. Geological Society of America (GSA) Annual Meeting (Vancouver, Canada).

ElAgamy, N., Laliberte, J., **Gaidies, F.**, Goldach, J., 2014. Qualitative characterization of fatigue damage propagation in laminated carbon fibre reinforced polymers by using micro-computed tomography. Sampe Conference (Seattle, United States).

McCarron\*, T., McFarlane, C.R.M., **Gaidies, F.**, 2014. Timing of high-grade Grenvillian

metamorphism in southeastern Ontario from in-situ monazite trace element geochemistry and U-Pb geochronology. GAC-MAC Annual Meeting (Fredericton, Canada).

McCarron\*, T, **Gaidies, F.**, McFarlane, C.R.M., 2014. Quantifying timescales and rates of Grenvillian metamorphism: Coupling garnet growth modelling and in-situ monazite geochronology. GAC-MAC Annual Meeting (Fredericton, Canada).

McCarron\*, T, **Gaidies, F.**, 2013. The analysis of chemical zoning in a garnet population: Determination of the P-T-t path of Grenvillian metamorphism in southeastern Ontario. AGU Fall Meeting (San Francisco, USA).

McCarron\*, T, **Gaidies, F.**, 2013. Coupling garnet growth modeling and in situ LA-ICP-MS monazite geochronology: Unraveling the Grenvillian orogeny in the Mazinaw Domain of southeastern Ontario. GAC-MAC Joint Annual Meeting (Winnipeg, Canada).

**Gaidies, F.**, 2012. Toward a quantitative model of metamorphic nucleation. 22nd V.M. Goldschmidt Conference (Montreal, Canada). Abstract on CD. **Invited keynote lecture of session.**

**Gaidies, F.**, 2011. Towards a quantitative understanding of metamorphic nucleation and growth. 10th annual Advances in Earth Sciences Research Conference (Ottawa, Canada).

Pattison, D, **Gaidies, F.**, de Capitani, C, 2010. Petrologic consequences of variations in metamorphic reaction affinity. Geological Society of America Annual Meeting (Denver, CO, USA). Abstract on CD.

**Gaidies, F.**, Pattison, D, de Capitani, C, Baumgartner, L, 2010. On the kinetics of surface-controlled crystallization. GeoCanada (Calgary, AB, Canada). Abstract on CD.

Pattison, D, de Capitani, C, **Gaidies, F.**, 2009. Pressure-temperature-reaction affinity maps as a means to predict metamorphic reaction overstepping. Geological Society of America Annual Meeting (Portland, OR, USA). Abstract on CD.

**Gaidies, F.**, de Capitani, C, Abart, R, 2008. THERIA\_G: A numerical model to simulate prograde garnet growth. Geological Society of America Annual Meeting (Houston, TX, USA). Abstract on CD.

**Gaidies, F.**, de Capitani, C, Abart, R, Krenn, E, Schuster, R, 2008. Numerical simulation of garnet growth with THERIA\_G: theory and applications. European Geoscience Union General Assembly (Vienna, Austria), Geophysical Research Abstracts, 10.

**Gaidies, F.**, de Capitani, C, Abart, R, 2006. The influence of diffusional relaxation in garnet

on garnet composition during growth: A case study from the Austroalpine basement. German Mineralogical Society Annual Meeting (Hannover, Germany). Beiheft zum European Journal of Mineralogy, 18, 42.

**Gaidies, F.**, Abart, R., 2006. Characterization of polymetamorphism in the Austroalpine basement east of the Tauern Window using garnet isopleth geothermobarometry. International Mineralogical Association General Meeting (Kobe, Japan). Abstract on CD.

**Gaidies, F.**, Abart, R., de Capitani, C., Schuster, R., Connolly, J., 2006. Garnet isopleth geothermobarometry: A method to obtain P-T estimates for the Permian metamorphic event in the Wölz Tauern, Eastern Alps. MinPet 2005 (Schladming, Austria). Mitt. Österr. Miner. Ges., 151, 43.

### Research Funding:

1. Mechanisms of metamorphic microstructure formation, Natural Sciences and Engineering Research Council of Canada - Discovery Grant (NSERC-DG), Grant number: RGPIN-2020-04955 to Fred Gaidies (04/2020-03/2025), \$125,000.
2. Conditions, rates and mechanisms of fundamental metamorphic processes, Natural Sciences and Engineering Research Council of Canada - Discovery Grant (NSERC-DG), Grant number: RGPIN-2015-03829 to Fred Gaidies (04/2015-03/2020), \$135,000.
3. High-energy X-ray micro-computed tomography scanning system for Earth material research, Canadian Foundation for Innovation and Ontario Research Fund, Grant number: CFI-LOF 29863 to Fred Gaidies, \$469,000.
4. Kinetics of garnet nucleation and growth during metamorphism, Natural Sciences and Engineering Research Council of Canada - Early Career Researcher Supplement to Fred Gaidies (01/2012-03/2015), \$20,000.
5. Kinetics of garnet nucleation and growth during metamorphism, Natural Sciences and Engineering Research Council of Canada - Discovery Grant (NSERC-DG), Grant number: RGPIN/386491-2011 to Fred Gaidies (04/2010-03/2015), \$100,000.
6. Garnet growth during contact and regional metamorphism: Results from numerical experiments and field observations, Swiss National Foundation, Grant number: PBBS2-120550 to Fred Gaidies (08/2008), \$70,000.

## Other Evidence of Impact and Contributions to Research:

### 1. Reviewer for Funding Agencies and Journals

Natural Sciences and Engineering Research Council of Canada (NSERC), Czech Science Foundation (GACR), Austrian Science Fund (FWF), Journal of Metamorphic Geology, Contributions to Mineralogy and Petrology, Earth and Planetary Science Letters, Journal of Petrology, Mineralogy and Petrology, Gondwana Research, Lithos, American Mineralogist, Chemical Geology, European Journal of Mineralogy, and Geology.

Member of the Editorial Review Board of the Journal of Metamorphic Geology.

### 2. Invited Lecturer

The interfacial energy penalty to crystal growth close to equilibrium. International symposium honouring the contributions to petrology by Jamie Connolly, Peter Ulmer, Lukas Baumgartner. Syon (Switzerland). 2023

The interfacial energy penalty to crystal growth close to equilibrium. International Symposium on Processes in the Continental Crust. Department of Earth Sciences. Indian Institute of Science Education and Research Kolkata (India). 2021

Two-day online workshop for the Geochemical Society "PTt trajectory of metamorphic processes", 2020.

European Mineralogical Union School on Mineral Reaction Kinetics, Vienna, 2016.

Towards a quantitative understanding of metamorphic garnet nucleation and growth. University of Vienna, University of Graz, University of Leoben, University of Innsbruck (all Austria), Charles University Praha (The Czech Republic), 2016.

Towards a quantitative understanding of metamorphic garnet nucleation and growth. Geological Survey of Canada (Ottawa, Canada), 2013.

Kinetics of Geological Materials. German Mineralogical Society (Vienna, Austria), August 30th – September 3rd, 2010.

Processes and conditions of mineral formation in rocks. Geological Survey of Canada (Ottawa, Canada), 2010.

What do rock-forming processes tell us about large scale geodynamics? Stanford University (USA), 2008.

Processes and conditions of mineral formation in rocks. Uppsala University (Sweden), 2008.

Phase Equilibrium and Garnet Growth Modelling with THERIAK-DOMINO and THERIA\_G. Ruhr-University Bochum (Germany), 2008.

Garnet Crystallization: Theory and Applications. University of Calgary (Canada), 2008.

### 3. Keynote Lecturer of Conference Sessions

A garnet population in mica schist from the Grenville Province of SE Ontario: Inferences about its crystallization kinetics and metamorphic P-T history. Geological Society of America Annual Meeting, 2014.

Nucleation and its effects on geological processes. Goldschmidt Conference (Montreal, Canada), 2012.

Towards a quantitative understanding of metamorphic nucleation and growth. Advances in Earth Sciences Research Conference (Ottawa, Canada), 2011.

### Students Advised:

2023 - 2024	Jessica Tomacic, BScH ( <b>Recipient of the F. K. North Award for the best BScH student in the Earth Sciences</b> ): Exploring the origin of atoll garnet from Klubbukt in Repparfjorden (Finnmark, Arctic Norway)
2022 - present	Zhen Li, PhD ( <b>CSC scholar</b> , co-supervised by Prof. Dr. Chun-Ming WU, University of Chinese Academy of Sciences): Fundamental rock-forming processes and heat transfer during Barrovian- and Buchan-type metamorphism, with particular emphasis on Eastern Tibet
2021 - present	Kimberly Trebus, PhD: Conditions, timing, and mechanisms of metamorphic microstructure development during the Grenvillian Orogeny (SE Ontario, Canada)
2021 - 2022	Lauren MacLellan, BScH ( <b>recipient of the F. K. North Award for the best BScH student in the Earth Sciences, and recipient of Carleton's Senate Medal</b> ): The origin of sector-zoned crystals, Present Position: PhD Student at Dalhousie University
2020 - present	Maria Thereza Yogi, PhD ( <b>international OGS scholar</b> ): Rates and processes of metamorphic crystallization associated with the tectono-metamorphic evolution of the Caledonides in Finnmark (Arctic Norway)

2018 - 2020	Sabastien Dyer (co-supervised by Drs. R. Soucy La Roche and A. Zagorevski), MSc ( <b>NSERC scholar, University Medal nomination</b> ): The Early Jurassic metamorphic history of the Yukon-Tanana terrane of northwestern British Columbia: Insights from a new garnet fractionation modelling technique, Present Position: PhD student at University of Waterloo
2018 - 2020	Olivier Heldwein, MSc: Metamorphic evolution of the lower nappes of the Kalak Nappe Complex in Eastern Finnmark (Norway), Present Position: Graduate Student at University of Vienna
2014 - 2019	Freya George, PhD ( <b>Ontario Trillium scholar, international OGS scholar, and recipient of Carleton's Senate Medal</b> ): On the mechanisms, rates and conditions of mineral reactions associated with the metamorphism of the Lesser Himalayan Belt, Sikkim Himalayas, India, Present Position: Faculty Member at University of Bristol (UK)
2017 - 2018	Bridgit E. Christison (co-supervised), BScH: Comparison of creodont and carnivoran dental morphology from the Calf Creek local fauna (Late Eocene) of southwestern Saskatchewan, Present Position: MSc student, Carleton University
2016 - 2017	Balie Walker, MSc (withdrawn, <b>international OGS scholar</b> ): Timing and conditions of the formation of plagioclase-garnet intergrowth microstructures in granulites from Dunkelsteiner Wald (Austria)
2015 - 2017	Yannick Morneau, MSc: Metamorphic evolution of the Snowcap Formation of the Stewart River area, Yukon-Tanana terrane, Yukon, Canada, Present Position: Production Specialist, Lafarge Canada
2014 - 2016	Carolyn Dziawa, MSc: On the tectono-metamorphic history of metasediments from the Rae Province, Nunavut, Present Position: Radiocarbon Laboratory Technician, University of Ottawa
2014 - 2015	Lianna Vice, BScH: The texture and mineral chemistry of garnet in polymetamorphic micaschists from the Eastern European Alps: Implications for the mechanisms of metamorphic crystallization, Present Position: Precambrian Geoscientist at Ontario Geological Survey
2014 - 2015	Yannick Morneau, BScH: Analysis of elongated garnets from the Flinton Group of the Grenville Province, SE Ontario, Present Position: Production Specialist, Lafarge Canada
2013 - 2015	Arianne Petley-Ragan, MSc ( <b>NSERC scholar</b> ): Metamorphic processes and rock texture formation in the vicinity of the Bugaboo batholith, British Columbia, Present Position: Postdoctoral Research Fellow, University of Oslo, Norway

2013 - 2014	Neil Prose, BScH: A petrographic and geochemical analysis of graphite-bearing metapelites from the Myer Cave Formation, in the Grenville Province of SE Ontario Present Position: Mining industry
2013 - 2014	Carolyn Dziawa, BScH: Characterization of the crystal shape, chemistry and distribution of tabular garnet in schists from the Ore Chimney Mine area, Mazinaw Domain, Grenville Province, SE Ontario, Present Position: Radiocarbon Laboratory Technician, University of Ottawa
2011 - 2014	Brianna Sejourne, MSc (University of Ottawa, co-supervised): Behaviour of accessory monazite and age significance during metamorphism and partial melting during Grenville Orogeny: An example from Otter Lake Area, Central Metasedimentary Belt, QC
2012 - 2013	Naomi Ceppetelli, BScH: Geospeedometry: A study of Fe-Mg diffusion in metapelites of the Grenville orogen, Fernleigh Belt, Ontario
2012 - 2013	Arianne Petley-Ragan, BScH: New P-T estimates for garnet growth within the inverted metamorphic sequence in Sikkim, Himalaya, by isopleth thermobarometry, Present Position: Postdoctoral Research Fellow, University of Oslo, Norway
2011 - 2013	Travis McCarron, MSc ( <b>NSERC scholar, University Medal nomination</b> ): On the rates of metamorphic processes associated with the Grenville orogenesis, Mazinaw Domain, Grenville Province, Ontario, Present Position: Postdoc at SFX University
2011-2012	Ellen Leigh, BScH: Petrography and geochemistry of sillimanite-bearing schists from Ardoch-Plevna-Ompah area, Mazinaw Domain, Grenville Province, Ontario
2011-2012	Josh Simpson, BScH: New results on the P-T conditions of metamorphism of the Fernleigh Belt, Mazinaw Domain, Grenville Province, Ontario
2011-2012	Rebecca Pikor, BScH: Geochemistry and petrogenesis of iron oxides in metapelites of the Flinton Group, Mazinaw Domain, Grenville Province, Ontario
2010-2011	Laura Katz, BScH: Petrology of porphyroblastic metapelites from the Fernleigh area, Mazinaw Domain, Grenville Province, Ontario
2010-2011	Alana Mackinder, BScH: Petrology of metabasic and metafelsic rocks in the vicinity of the Robertson Lake Mylonite Zone, Grenville orogen, SE Ontario

**Courses Developed and Taught:**

ERTH 2102	Mineralogy to Petrology. Carleton University.
ERTH 2802	Introductory Field Geology - Grenville Province of SE Ontario. Carleton University.
ERTH 3207	Metamorphic Petrology and Processes. Carleton University.
ERTH 4003	Directed Studies. Carleton University.
ERTH 4507	Advanced Metamorphic Petrology. Carleton University.
ERTH 4708	Advanced Field Geology - Central Alps. Carleton University.
ERTH 5105	Thermodynamics, Kinetics and Metamorphic Petrology. Carleton University.
GP0-28-12	Petrogenesis. University of Vienna.
450007 UE	Topics in lithospheric research: Quantitative analysis of metamorphic P-T-t paths. University of Vienna.

**Teaching Awards:**

2017	Carleton University Faculty of Science Excellence in Teaching Award.
2014	Carleton University Faculty of Science Excellence in Teaching Award.

**Outreach Activities:**

2019	Invited talk at Eastern Ontario Natural History Society, Ottawa, Canada.
2019	Invited talk at Ottawa Lapsmith and Mineral Club, Ottawa, Canada.
2017	Science Cafe (Ottawa Public Library - Sunnyside Branch), Ottawa, Canada.

**Service to the University and Earth Sciences Community:**

2023	External Examiner of PhD thesis, Department of Earth Sciences, University of Toronto (Canada).
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2023	Expert Reviewer, tenure-track professorship "Petrochronology", Faculty of Natural Sciences, University of Graz (Austria) .
2022-2023	Member of Faculty Search Committee, Assistant Professor in Climate Change Mitigation Adaptation, Joint Hire Institute of Environmental and Interdisciplinary Science and the Department of Earth Sciences, Carleton University.
2021-2022	Member of Faculty Search Committee, Assistant Professor in Environmental Sedimentary Geochemistry, Department of Earth Sciences, Carleton University.
2021	External Examiner of PhD thesis, Department of Geosciences and the Environment, University of Lausanne (Switzerland).
2020-2023	Councillor, Mineralogical Association of Canada (MAC).
2020-2021	Member of Faculty Search Committee, Assistant Professor in Paleo-environmental Sedimentology, Department of Earth Sciences, Carleton University.
2020	Chair of special session: Metamorphic processes and their tectonic implications: constraints from nature and modelling. GeoConvention (Calgary, Canada), 2020 - cancelled due to COVID-19.
2018-2021	Graduate Student Advisor, Department of Earth Sciences, Carleton University.
2018-present	Director of Electron Probe Micro-Analysis Laboratory, Department of Earth Sciences, Carleton University.
2018-2019	Chair of Staff Hiring Committee, Microbeam Imaging and Analysis Specialist, Department of Earth Sciences, Carleton University.
2016-2017	Member of Tenure and Promotion Committee, Department of Earth Sciences, Carleton University.
2016-2017	Chair of Faculty Search Committee, Assistant/Associate Professor in Economic Geology, Department of Earth Sciences, Carleton University.
2016	Co-Chair of session: Chemo-mechanical mass transport in metamorphic, orogenic and planetary systems - from diffusion to large-scale tectonics. AGU Fall Meeting (San Francisco, USA).
2014	Co-Chair of session: Linking metamorphic processes with large-scale geodynamics. Geological Association of Canada and Mineralogical Association of Canada Annual Meeting (Fredericton, Canada).
2013-2017	Organizer of BScH classes (ERTH 4908/4909), Department of Earth Sciences, Carleton University.

2012-2013	Member of Faculty Search Committee, Assistant Professor in Isotope Geochemistry, Department of Earth Sciences, Carleton University.
2010-2013	Member of Tenure and Promotion Committee, Department of Earth Sciences, Carleton University.
2010	Co-Chair of session: Influence of reaction kinetics on rock microstructure, texture and microchemistry: Assessing the petrogenetic record. International Mineralogical Association Meeting (Budapest, Hungary).
2010	Co-Chair of session: Interplay between Thermodynamics, Kinetics and Deformation in Metamorphism. GeoCanada (Calgary, Canada).
2009-2012	Member of Endowment, Awards, Adjunct, Computer Facilities Committees, Department of Earth Sciences, Carleton University.
2009	Co-Chair of session: Kinetics of Igneous and Metamorphic Processes. Goldschmidt Conference (Davos, Switzerland).
2008	Co-Chair of session: Controls on Metamorphic Processes. European Geoscience Union Meeting (Vienna, Austria).