Karol Faehnrich

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Education

2017 – March 2023 (expected)	**Dartmouth College**, Department of Earth Sciences, Hanover, NH, United States Ph.D. candidate Thesis: Tectonic evolution of the northern margin of North America Advisor: Prof. Justin V. Strauss
2016 - 2017	**AGH University of Science and Technology**, Cracow, Poland Master of Science, Mining and Geology, Applied Mineralogy with Gemology Thesis: How fluids infiltrate through fractures and change metamorphic rocks - a case study from northern Spitsbergen Advisor: Prof. Jarosław Majka
2012 - 2016	**AGH University of Science and Technology**, Cracow, Poland Bachelor of Engineering, Mining and Geology Thesis: Structural and microstructural analysis of the Pinkie Unit, Prins Karls Forland, Svalbard Advisor: Prof. Maciej Manecki

Professional Experience

2017 – present	**Dartmouth College** *Graduate Researcher and Teaching Assistant*
2016 – 2017	**AGH University of Science and Technology** *Research Assistant*
2015	**AGH University of Science and Technology** *Field Assistant*
2015	**“GEOLEH” Geoengineering Company** *Inter, Exploration Geologist*

Publications

In preparation

Faehnrich K., McClelland W.C., Webb L., Rasbury T., Colpron M., and Strauss J.V., (*in prep*). Geochronological constraints on Early Cretaceous strike-slip opening of the Canada Basin, Arctic Ocean. *Tectonics*, v. xx, p. xxx–xxx.

Faehnrich, K., McClelland, W.C., Webb, L., Hadlari, T., Kośmińska, K., and Strauss, J.V., (in prep). Late Ediacaran–early Cambrian rifting along the northern margin of Laurentia: Constraints from the Yelverton Formation of Ellesmere Island, Canada. *Canadian Journal of Earth Sciences*, v. xx, p. xxx–xxx.

In review

Faehnrich K., Kośmińska K., Majka J., (in revisions). Mass transfer and element redistribution during chloritization of metamorphic biotite in a metapelite: insights from compositional mapping. *Mineralogia*, v. xx, p. xxx-xxx.

Published:

2022

Koch, M.M., **Faehnrich, K.**, McClelland, W.C., Crowley, J.L., Melchin, M.J., Beranek, L.P., and Strauss, J.V., 2022. Age and significance of the Fire Bay Formation: An Ordovician arc fragment within the Clements Markham Belt, Northwest Ellesmere Island. Canadian Journal of Earth Sciences, v. xx, p. xxx–xxx. https://doi.org/10.1139/cjes-2021-0129

Gołuchowska, K., Barker, A.K., Manecki, M., Majka, J., Kośmińska, K., Ellam, R.M., Bazarnik, J., **Faehnrich, K.** and Czerny, J., 2022. The role of crustal contamination in magma evolution of Neoproterozoic metaigneous rocks from Southwest Svalbard. *Precambrian Research*, v. 370, p.106521. https://doi.org/10.1016/j.precamres.2021.106521

2021

McClelland, W.C., Strauss, J.V., Colpron, M., Gilotti, J.A., **Faehnrich, K.**, Malone, S.J., Gehrels, G.E., Macdonald, F.A., Oldow, J.S., 2021. “Taters” versus “Sliders”: Evidence for a long-lived history of strike-slip displacement along the Canadian Arctic Transform System (CATS). *GSA Today*, v. 31, p. 4–11. https://doi.org/10.1130/GSATG500A.1

Faehnrich, K., McClelland, W.C., Colpron, M., Nutt, C.L., Miller, R.S., Trembath, M., and Strauss, J.V., 2021. Pre-Mississippian stratigraphic architecture of the Porcupine Shear Zone, Yukon and Alaska, and significance in the evolution of northern Laurentia. *Lithosphere*. https://doi.org/10.2113/2021/7866155

Wala, V.T., Ziemniak, G., Majka, J., **Faehnrich, K.**, McClelland, W.C., Meyer, E.E., Manecki, M., Bazarnik, J., and Strauss J.V., 2021. Neoproterozoic stratigraphy of the Southwestern Basement Province, Svalbard: Constraints on the Proterozoic–Paleozoic evolution of the North Atlantic-Arctic Caledonides. *Precambrian Research*, v. 358. https://doi.org/10.1016/j.precamres.2021.106138

Gibson, T.M., **Faehnrich, K.**, Busch, J.F., McClelland, W.C., Schmitz, M.D. and Strauss, J.V., 2021. A detrital zircon test of large-scale terrane displacement along the Arctic margin of North America. *Geology*, v. 49 (5), p. 545–550. https://doi.org/10.1130/G48336.1

2020

Faehnrich, K., Majka, J., Schneider, D., Mazur, S., Manecki, M., Ziemniak, G., Wala, V.T. and Strauss, J.V., 2020. Geochronological constraints on Caledonian strike–slip displacement in Svalbard, with implications for the evolution of the Arctic. *Terra Nova*, 32, p. 290– 299. https://doi.org/10.1111/ter.12461

Kośmińska, K., Spear, F.S., Majka, J., **Faehnrich K.**, Manecki, M., Piepjohn, K., Dallmann, W.K., 2020. Deciphering late Devonian-early Carboniferous P-T-t path of mylonitised garnet-mica schists from Prins Karls Forland, Svalbard. *Journal of Metamorphic Geology*, 38, p. 471– 493. https://doi.org/10.1111/jmg.12529

2018

Schneider D., **Faehnrich K.**, Majka J., Manecki M., 2018. $^{40}Ar/^{39}Ar$ geochronologic evidence of Eurekan deformation within the West Spitsbergen Fold and Thrust Belt. *in* Piepjohn, K., McClelland, W.C., Reinhardt, L. and Strauss, J.V., eds., Refining the Evolution of the Arctic: 25 Years of Circum-Arctic Structural Events: *Geological Society of America Special Papers*, v. 541., p. 153-168. https://doi.org/10.1130/2018.2541(08)

Conference Abstracts

2022

Faehnrich, K., McClelland, W.C., Webb, L.E., Rasbury, E.T., Colpron, M., and Strauss, J.V., 2022, Displacemnt history along the Porcupine Shear Zone and its role in the opening of the Canada Basin: International Conference on Arctic Margins: Ottawa, Canada.

Koch, M.M., McClelland, W.C., Gilotti, J.A., Kosminska, K., **Faehnrich, K.**, and Strauss, J.V., 2022, A Paleozoic accretion history: Igneous and detrital zircon signatures of the Kulutingwak and Danish River formations in the Yelverton Inlet-Phyllips Inlet region, Ellesmere Island, Nunavut, Canada: European Geophysical Union, Paper No. xx.

2021

Faehnrich, K., McClelland, W.C., Webb, L.E., Rasbury, E.T., Colpron, M., and Strauss, J.V., 2021, Thermochronological evidence for Cretaceous strike-slip displacement on the Porcupine shear zone, Alaska and Yukon: Geological Society of America Annual Meeting, Paper No. 199-6.

2020

Faehnrich, K., McClelland, W.C., Colpron, M., Nutt, C.L., Trembath, M., Miller, R.S., and Strauss, J.V., 2020, Stratigraphic architecture of the Porcupine shear zone, Yukon and Alaska, and its significance in the evolution of northern Laurentia: Cordilleran Tectonics Workshop, Anchorage, Alaska.

Miller, R., **Faehnrich, K.**, Colpron, M., McClelland, W.C., Johnson, B., Jones, J., and Strauss, J.V., 2020, Compilation of bedrock geology along the Alaska–Yukon border from the Arctic Ocean to the Yukon River: Cordilleran Tectonics Workshop, Anchorage, AK.

Trembath, M., **Faehnrich, K.**, Gilotti, J.A., Strauss, J.V., and McClelland, W.C., 2020, Structural characterization of the Porcupine Shear Zone in Arctic Alaska: Cordilleran Tectonics Workshop, Anchorage, Alaska.

Grotzinger H., Chen C.Y., Eyster Y., **Faehnrich K**., Hemingway J., Kasbohn J., Mateo P., Petrucciani A., Osorio-Rodriguez D., Runyon H., Grotzinger J.P., Jones D.S., Knoll A., 2020. Did the Columbia River flood basalts initiate the Miocene Climate Optimum? Constraining the timing of LIP volcanism and climate change using sedimentary mercury concentrations: Geological Society of America Southeastern and Northeastern Section Meeting, Paper No. 38-9.

Faehnrich K., McClelland W.C., Colpron M., Nutt L.C, Trembath M., Miller R.S. and Strauss J.V., 2020, The Porcupine shear zone, northern Yukon and Alaska – role in middle Paleozoic terrane translation and Mesozoic-Cenozoic reactivation during the opening of the Canada Basin. Circum-Arctic Structural Events Workshop, Hanover, Germany.

2019

Faehnrich, K., McClelland, W.C., Kośmińska, K., and Strauss, J.V., Geochemistry and tectonic setting of the Yelverton Formation, Ellesmere Island, Canada: A record of Ediacaran–Cambrian extension along the northern margin of Laurentia: American Geophysical Union Annual Meeting.

Gibson, T.M., **Faehnrich, K.**, Busch, J.F., McClelland, W.C., Schmitz, M., and Strauss, J.V., 2019, Testing the utility of detrital zircon geochronology across complex terrane boundaries: a case study from the northern Cordillera: American Geophysical Union Annual Meeting.

Faehnrich, K., McClelland, W.C., Colpron, M., Nutt, C.L., Trembath, M., Miller, R.S., and Strauss, J.V., 2019, Neoproterozoic–Paleozoic rocks of the Porcupine Shear Zone, Yukon and Alaska, and their significance in the evolution of northern Laurentia: Geological Society of America Annual Meeting, Phoenix.

Schneider D., Powell J., Piepjohn K., **Faehnrich K.**, and Barnes C., 2019, Resolving the timing of brittle Paleogene Eurekan deformation of the High Arctic: European Geophysical Union.

Piepjohn, K., and the **CASE-Team**, 2019, Tectonic map of the central and southwestern Pearya Terrane, Ellesmere Island, Canada: European Geophysical Union.

Koch, M.M., Strauss, J.V., **Faehnrich, K.**, and McClelland, W.C., 2019, Igneous and detrital zircon signatures of the Fire Bay Formation, Clements Markham Fold Belt, Northwest Ellesmere Island: Geological Society of America, Northeastern Section Meeting, Portland, Paper No. 328412.

Faehnrich, K., Majka, J., Schneider, D., Mazur, S., and Strauss, J.V., 2019, Caledonian strike-slip displacement in Svalbard, High Arctic – new age constraints from $^{40}Ar/^{39}Ar$ dating: Geological Association of Canada and Mineralogical Association of Canada Annual Meeting, Quebec City.

Busch J.F., Saylor M.H., Allen T.J., **Faehnrich K.**, John F. J.F. and Strauss J.V., 2019, Early Paleozoic Reef-Margin Sedimentation and Biostratigraphy of the Ogilvie Platform at Nadaleen Mountain, Yukon, Canada: Northeast Geobiology Meeting, Amherst, Massachusetts.

Faehnrich, K., Strauss, J.V., McClelland, W.C., Colpron, M., 2019, The Kaltag-Porcupine fault system of Yukon and Alaska – evaluating large-scale terrane displacement in the Arctic: Northeast Geobiology Meeting, Amherst, Massachusetts.

2018

Faehnrich, K., Strauss, J.V., McClelland, W.C., Colpron, M., and Israel, S., 2018, The Porcupine Shear Zone of
northern Yukon and Alaska: Cordilleran Tectonics Workshop, Whitehorse.

Piepjohn, K., and the **CASE-Team**, 2018, Tectonic map of the central and southwestern Pearya Terrane, Ellesmere Island, Canada: International Conference on Arctic Margins (ICAM), Stockholm, Sweden.

Wala, V.T., Strauss, J.V., Majka, J., Ziemniak, G., **Faehnrich, K.**, Meyer, E.E., Czerny, J., Bellefroid, E.J., Feng, X., and McClelland, W.C., 2018, Neoproterozoic stratigraphy of the Southwestern Basement Province, Svalbard: Constraints on the Proterozoic–Paleozoic evolution of the North Atlantic-Arctic Caledonides: American Geophysical Union, Paper No. T43I–3712.

2017

Faehnrich K., Majka J., Schneider D., Strauss J.V., Ziemniak G., Manecki M., Wala V.T., Czerny J., Late Caledonian shearing in SW Spitsbergen – new age constrains from $^{40}Ar/^{39}Ar$ muscovite geochronology: GSA Annual Meeting in Seattle, Washington, USA.

Wala V.T., Ceaser I.M., Ziemniak G., **Faehnrich K.**, Meyer E.E., Czerny J., Majka J., McClelland W.C., Strauss J.V., Neoproterozoic stratigraphy and provenance of Wedel Jarlsberg Land, Svalbard: new insights into the origin and transport history of the Southwestern province. GSA Annual Meeting in Seattle, Washington, USA.

McClelland W.C., Strauss J.V., Colpron M., **Faehnrich K.**, The Porcupine shear zone: a fundamental link between the Arctic and Cordilleran margins of Laurentia. GSA Annual Meeting in Seattle, Washington, USA.

Faehnrich K., Manecki M., Schneider D., Czerny J., Myhre P.I., Majka J., Kośmińska K., Barnes C., Maraszewska M., Eurekan deformation on Prins Karls Forland, Svalbard – new insights from $^{40}Ar/^{39}Ar$ muscovite dating. European Geosciences Union General Assembly 2017 (EGU 2017) Vienna, Austria.

Jakus N., Manecki M., **Faehnrich K.**, Młynarska M., Słupski P., Biosygnatures on olivines in search of past life on Mars. European Geosciences Union General Assembly 2017 (EGU 2017) Vienna, Austria.

2016

Faehnrich K., Kośmińska K., Majka J., Dwornik M., Fluid – rock interactions during metasomatism of metapelites from northern Spitsbergen. The XXIII Session of the Petrology Group of the Mineralogical Society of Poland in Stara Morawa, Poland

Faehnrich K., Kośmińska K., Majka J., Dwornik M., Mass balance of major elements during metasomatism of metapelites from northern Spitsbergen. GSA Annual Meeting in Denver, Colorado, USA

Faehnrich K., Manecki M., Schneider D., Czerny J., Myhre P.I., Majka J., Kośmińska K., Barnes C., Maraszewska M., A tectonic window into the crystalline basement of Prins Karls Forland, Svalbard. European Geosciences Union General Assembly 2016 (EGU 2016) Vienna, Austria

Maraszewska M., Manecki M., Schneider D., Czerny J., Myhre P.I., **Faehnrich K.,** Barnes C.,Metagabbro associated with the shear zone on Prins Karls Forland (Svalbard, Arctic). European Geosciences Union General Assembly 2016 (EGU 2016) Vienna, Austria

Research Funding

2020	GSA Student Geoscience Grant - $1,375
2019	AGeS2 Awards for Geochronology Student research - $8,690
2018	ExxonMobil/GSA Student Geoscience Grants - $5,000 (top 30 proposals out of 730)

Awards

2022	The Guarini School of Graduate and Advanced Studies Travel Award - $500 Gary Malone Award for Outstanding Graduate Student
2021	GSA Cordilleran Section Student Travel Grant - $350
2020	John A. Ebers 1961 Memorial Award for Outstanding Department Teaching Assistant Earth Sciences Department Award for Outstanding Publication
2019	GSA Structural Geology and Tectonics Division grant - $500
2016	Minister of Science and Higher Education of Poland Award for accomplishment in Science Professor A.M. Dziewonski scholarship recipient Rudolf Mock Award at XVIInd International Conference of Young Geologists Conference Travel Grant from GSA for International Participants at GSA Annual Meeting

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Field Experience

2022	**Varanger Penisula, Norway** (2 weeks) *Neoproterozoic to early Cambrian stratigraphy and provenance of clastic sequences exposed in Barents Sea Region and Tanafjord-Varangerfjord Region.*
2021	**Chandalar River, Brooks Range, Alaska** (3 weeks) *Devonian to Carboniferous stratigraphy, provenance, and style of deformation.*
2019	**Porcupine River, east-central Alaska** (3 weeks) *Mapping the Porcupine Fault System, structural observations, and Paleozoic to early Mesozoic stratigraphy.*
2018	**Porcupine River, east-central Alaska** (4 weeks) *Mapping the Porcupine Fault System, structural observations, and Neoproterozoic to Paleozoic stratigraphy.*
2018	**Wernecke Mountains, Yukon, Canada** (2 weeks) *The early Paleozoic platform margin reef and forereef deposits - age, depositional setting, and sequence stratigraphy.*
2017	**Ellesmere Island, Nunavut, Canada** (3 weeks) *Ediacaran to early Cambrian rift and passive margin deposits juxtaposed with Ordovician arc and back-arc basin.*
2017	**Porcupine River, Yukon, Canada** (2 weeks) *Mapping the Porcupine Fault System, structural observations, and Neoproterozoic to Paleozoic stratigraphy.*
2016	**Southwestern Spitsbergen, Svalbard Archipelago, Norway** (7 weeks) *Timing of displacement along the Vimsodden-Kosibapasset Shear Zone and Neoproterozoic stratigraphy.*
2015	**Prins Karls Forland, Svalbard Archipelago, Norway** (4 weeks) *Devonian and Paleogene deformation of the Neoproterozoic succession.*

Teaching and Mentorship

Teaching Assistant:
Dartmouth College

2021	EARS 58 Stratigraphy and Sedimentary Petrology
2020	EARS 33 Earth Surface Processes and Landforms
	EARS 2 Evolution of Earth and Life
2019	EARS 59 Igneous and Metamorphic Petrology
2017	EARS 6 Environmental Change

Field courses

2022	EARS 47 Field Methods: Resource and Earth Hazards Assessment - Owens Valley, California; Death Valley; Grand Canyon, Arizona (4 weeks)
2021	EARS 47 Field Methods: Resource and Earth Hazards Assessment - Owens Valley, California; Death Valley; Grand Canyon, Arizona (4 weeks)
2019	EARS 47 Field Methods: Resource and Earth Hazards Assessment - Owens Valley, California; Death Valley; Grand Canyon, Arizona (4 weeks)
2018	EARS 45 Field Methods: Techniques of Structural and Stratigraphic Analysis - Athabasca Glacier, Alberta, Canada; Bighorn Basin, Wyoming (4 weeks)
2018	EARS 58 Stratigraphy and Sedimentary Petrology - Sedimentary Basins of Spain: A Neogene to Cretaceous Transect (2 weeks)

Undergraduate Mentorship:

2020 – 2021	Shaalin Sehra - Undergraduate Research Assistant
2019 – 2020	Rebecca Miller - Undergraduate Research Assistant, Field Assistant in east-central Alaska
2018 – 2019	Charlotte Nutt - Undergraduate Research Assistant, Field Assistant in east-central Alaska

Outreach

Invited talks:

2021	“Plate Tectonics in the Arctic” - 6th grade students at Frances C. Richmond Middle School in Hanover, NH
2020	“Plate Tectonics in the Arctic” - 6th grade students at Frances C. Richmond Middle School in Hanover, NH
2019	"Tectonic Evolution of the Arctic Regions" - students at Hartford High School in White River Junction, VT

University and Professional Service

Dartmouth College

2021 – 2022 Chair of the Academic Committee, Executive Board, Graduate Student Council

- Managed >10,000$ in Professional Development Support Fund
- Organized a 3-Minute Thesis competition at Dartmouth College
- Policy development and advocacy

2019 – 2021 Representative for Earth Sciences Department, Graduate Student Council

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Additional Skills

- Wilderness First Aid and CPR - last certified in June 2021
- Basin programming in C, Matlab, R and Python
- Adobe Creative Suite – Illustrator, Photoshop, Lightroom
- ArcGIS, QGIS, basics of Mapbox