

Hannah J Blatchford, MSc, PhD Candidate (she/her)

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EDUCATION

University of Minnesota

Minneapolis, MN 2016-present
PhD, Geology (in progress)
Advisors: Drs. Donna L. Whitney,
Christian Teyssier
Dissertation (in progress):
*Reading the record of ultrahigh-
pressure terrane exhumation in
meters-scale shear zones, Western
Gneiss Region, Norway*

University of Vermont

Burlington, VT 2014-2016
MSc, Geology, 2016
Advisor: Dr. Keith A. Klepeis
Thesis: *The structural evolution of
a portion of the Median Batholith
and its host rock in central
Fiordland, New Zealand: Examples
of partitioned transpression and
structural reactivation*

Beloit College

Beloit, WI 2008-2012
BSc, Geology, 2012
magna cum laude
Advisor: Dr. Carl V. Mendelson
Thesis: *Geochemical
Characterization of Tidal Coves
of the Connecticut River Estuary*

PEER-REVIEWED PUBLICATIONS (INCL. SUBMITTED, IN PREP.)

6. **Blatchford, H.J.**, Whitney, D.L., Teyssier, C., Gordon, S.M., Kylander-Clark, A.R.C., (in prep.), Shear zone-hosted titanite and rutile monitor deformation, recrystallization, and changing P-T conditions in an exhumed (ultra)high-pressure metamorphic terrane: Otrøya, Western Gneiss Region, Norway: *Lithos*
5. **Blatchford, H.J.**, Small, G.S., Newville, C.N., Teyssier, C., Whitney, D.L., Michels, Z.D., Gordon, S.M., Kylander-Clark, A.R.C., (in review), Assessing the influence of deformation on Pb diffusion in titanite: Petrochronological and microstructural investigation of a sheared pegmatite from the Roan Window, Norway: *Earth and Planetary Science Letters*
4. Gordon, S.M., Kirkland, C.L., Reddy, S.M., **Blatchford, H.J.**, Whitney, D.L., Teyssier, C., Evans, N.J., and McDonald, B.J., 2021, Deformation-enhanced recrystallization of titanite drives decoupling between U-Pb and trace elements: *Earth and Planetary Science Letters*, v. 560, p. 116810, doi:[10.1016/j.epsl.2021.116810](https://doi.org/10.1016/j.epsl.2021.116810).
3. **Blatchford, H.**, Klepeis, K., Schwartz, J., Jongens, R., Turnbull, R., Miranda, E., Coble, M., Kylander-Clark, A., 2020, Interplay of Cretaceous transpressional deformation and continental arc magmatism in a long-lived crustal boundary, central Fiordland, New Zealand: *Geosphere*, doi:[10.1130/GES02251.1](https://doi.org/10.1130/GES02251.1).
2. Klepeis, K.A., Webb, L.E., **Blatchford, H.J.**, Jongens, R., Turnbull, R., and Schwartz, J.J., 2019, The age and origin of Miocene-Pliocene fault reactivations in the upper plate of an incipient subduction zone, Puysegur Margin, New Zealand: *Tectonics*, p. 2019TC005674, doi:[10.1029/2019TC005674](https://doi.org/10.1029/2019TC005674).
1. Klepeis, K., Webb, L., **Blatchford, H.**, Schwartz, J., Jongens, R., Turnbull, R., and Stowell, H., 2019, Deep Slab Collision during Miocene Subduction Causes Uplift along Crustal-Scale Reverse Faults in Fiordland, New Zealand: *GSA Today*, doi:[10.1130/GSATG399A.1](https://doi.org/10.1130/GSATG399A.1).

ABSTRACTS

18. **Blatchford, H.J.**, Whitney, D.L., Teyssier, C., Newville, C. N., 2021, A kitchen sink approach to recovering detailed exhumation histories: (Micro)structure, trace element thermobarometry, and petrochronology of incompletely retrogressed eclogite in Norway's Nørdoyane UHP domain, Abstract V45D-0156 presented at 2021 Fall Meeting, AGU, New Orleans, LA., 13-17 Dec.

17. **Blatchford, H.J.**, Fayon, A.K., Michels, Z. D., 2021, Microstructural and geochemical characterization of titanite deformed in torsion: Potential implications for petrochronology of deformed rocks, Geological Society of America Abstracts with Programs, v. 53, No. 6
16. **Blatchford, H.J.**, Small, G.D., Newville, C.E., Teyssier, C., Whitney, D.L., 2020, Petrochronology and microstructure of titanite across a sheared pegmatite dike from the Roan Window, Norway: Geological Society of America Abstracts with Programs, v. 52, No. 6.
15. Newville, C.E., **Blatchford, H.J.**, Teyssier, C., Whitney, D.L., 2020, Teamwork of shear zones during exhumation, the Roan Window, Norway: Geological Society of America Abstracts with Programs, v. 52, No. 6.
14. **Blatchford, H.J.**, Fayon, A.K., Fox, V.K., He, J., Loughlin, N., Monz, M.E., Newville, C.E., Taylor, J.M., 2020, Preparing undergraduate students for modern field work with a focus on scientific writing, digital mapping, and remote sensing: Geological Society of America Abstracts with Programs, v. 52, No. 6.
13. Newville, C.E., **Blatchford, H.J.**, Fayon, A.K., Fox, V.K., He, J., Loughlin, N., Monz, M.E., Taylor, J.M., 2020, The online canteen: Creating a field course community in a virtual reality: Geological Society of America Abstracts with Programs, v. 52, No. 6.
12. Fox, V.K., 2020, **Blatchford, H.J.**, Fayon, A.K., He, J., Loughlin, N., Monz, M.E., Newville, C.E., Taylor, J.M., 2020, Reality is virtual: Taking undergraduates on a field trip to Gale Crater, Mars: Geological Society of America Abstracts with Programs, v. 52, No. 6.
11. Dektar, E., Gordon, S.M., **Blatchford, H.J.**, Kylander-Clark, A.R., Whitney, D.L., 2019, Zircon Microstructures and Element Mobility: Insight into Multistage Deformation Within Shear Zones of the Western Gneiss Region, Norway, Abstract T43C-0437 presented at 2019 Fall Meeting, AGU, San Francisco, CA, 9-13 Dec.
10. **Blatchford, H.J.**, Teyssier, C., Whitney, D.W., Gordon, S.M., and Newville, C.N., 2019, Titanite petrochronology of retrogressed eclogite and gneiss in high-strain domains of the Western Gneiss Region, Norway: Geological Society of America Abstracts with Programs, v. 51, No. 5.
9. Newville, C. E., Teyssier, C., Whitney, D.L., and **Blatchford, H.J.**, 2019, Structure, kinematics, and strain partitioning of an exhumed high-pressure terrain: The Roan Window, Norway: Geological Society of America Abstracts with Programs, v. 51. No. 5
8. **Blatchford, H.J.**, Whitney, D.W., Teyssier, C., Gordon, S.M., and Hauge, D., 2018, The record of giant UHP terrane exhumation preserved in lithologically-diverse, meters-scale shear zones: An integrated trace element thermobarometry and microstructural study of eclogite and gneiss from the Western Gneiss Region, Norway: Geological Society of America Abstracts with Programs, v. 50, No. 6.
7. Gordon, S.M., Reddy, S.M., **Blatchford, H.**, Whitney, D.L., Kirkland, C.L., Teyssier, C., Evans, N.J., and McDonald, B., 2017, Deformation Enhanced Recrystallization of Titanite: Insight from the Western Gneiss Region Ultrahigh-Pressure Terrane, Abstract V12B-06 presented at 2017 Fall Meeting, AGU, New Orleans, LA., 11-15 Dec.
6. **Blatchford, H. J.**, Klepeis, K. A., Schwartz, J. J., Turnbull, R., Jongens, R., and Coble, M.A., 2017, Partitioning of strain in mid- and lower-crustal levels during an arc flare-up, Median Batholith, Fiordland, New Zealand: Geological Society of America Abstracts with Programs, v. 49. No. 6.
5. Klepeis, K., Webb, L. E., **Blatchford, H. J.**, Schwartz, J. J., Turnbull, R., and Jongens, R., 2017, Unraveling a history of repeated fault reactivations and differential uplift above a young subduction zone in SW New Zealand: Geological Society of America Abstracts with programs, v. 49. No. 6.

4. **Blatchford, H.J.**, Gilbert, J.B., Klepeis, K., Schwartz, J.J., Turnbull, R.E., Jongens, R., and Stowell, H.H., 2015, Oblique intra-arc convergence and transpression accompanying high-flux magmatism in the mid-lower crust of a Mesozoic continental arc in Fiordland, New Zealand: Geological Society of America Abstracts with Programs, v. 47, no. 7.
3. Dovick, M. A., Kulp T. R., Pilliod, D. S., Arkle, R. S., and **Blatchford, H. J.**, 2012, The behavior and transfer of arsenic and antimony from gold mining operations on aquatic systems, tadpoles and other organisms: Geological Society of America Abstracts with Programs, v. 44, no. 7, p. 340.
2. O'Connell, S, **Blatchford, H.**, Jacobacci, K., Martin, D., George, E., Abbott, T., and Hubbard, E., 2012, Three coves on the lower Connecticut River: Geological Society of America Abstracts with Programs, v. 44, no. 2, p. 84.
1. **Blatchford, H. J.**, 2012, Geochemical characterization of tidal coves of the Connecticut River Estuary: Proceedings of the Twenty-fifth Annual Keck Research Symposium in Geology, p. 281-286.

TEACHING EXPERIENCE (TA)

Petrology (UMN)

Field Geology (UMN)

- Introductory course: 2017, 2018, 2020 (co-developed online field course focusing on geologic mapping with QGIS)
- Advanced course: 2019

Introductory geology (UMN)

Solid Earth Geodynamics (UMN)

Structural Geology (UVM)

Field Geology (UVM)

Earth History (Beloit College, UVM)

TEACHING EXPERIENCE (LECTURER, INVITED TALKS, OTHER NON-TA)

Spring 2022, Geo Sci 414, Structural Geology: Instructor of record (UW-Milwaukee)

Fall 2021, Invited talk at Northwestern University NUANCE Center workshop on EBSD analysis

Fall 2019, ESCI 4501, Structural Geology: Co-lead field trip to the Baraboo syncline (UMN)

Spring 2019, ESCI 2302, Petrology: Delivered one week of lectures on metamorphic reactions and subduction zone processes (UMN)

Fall 2016, ESCI 1006, Oceanography: Wrote/delivered lecture to >150 students on El Niño and related processes (UMN)

Summer 2016, Governor's Institute of Vermont SEM instructor

Fall 2015, GEOL 101, Field geology: Wrote/delivered two weeks of lectures and took students on local field trips (UVM)

UNDERGRADUATE MENTORING

Fall 2021, Grace Walker: Petrographic and EPMA characterization of eclogites and gneisses from the Lanterman Range, Antarctica

Spring 2021, Paxton Buboltz: Application of the Ti-in-Quartz thermobarometer to quartzites of the Ruby Gap Duplex (I instructed Paxton in all lab-based portions of the project, from sample preparation to data processing; Dr. Christian Teyssier was the primary mentor)

Fall 2019 – Spring 2020, Grey Small: U-Pb titanite petrochronology and microstructural study of titanite from a mylonitized pegmatite dike: Roan window, Norway

Spring 2019, Sakinah Mohammed: Investigation of titanite geochemistry in retrogressed eclogites bodies and their host gneisses: Western Gneiss Region, Norway

Spring 2016, Mitchell Carson: Fault slip analysis of a multiply-reactivated fault system in central Fiordland, New Zealand

DEI, OUTREACH, AND SERVICE

GSA Connects 2021 technical session organizer (2021)
UMN ESCI Graduate Studies Committee (2021-2022)
URGE (Unlearning Racism in the Geosciences) participant (2021)
Skype a Scientist participating scientist (2021)
UMN ESCI Field Course Committee (2020-2021)
NSF Broader impacts project to develop UHP petrology lab and distribute to North American Schools (2019-2020)
Member of ESCI Tate Hall display committee (develop ESCI-themed displays for new ESCI building) (2019/2020)
GSA Bascom Mapping Award Committee student member (2019-2022)
GSA Student Advisory Council (2019-2022)
UMN ESCI graduate student faculty meeting representative (2019)
UMN Council of Graduate Students (COGS) department representative (2018)
UMN COGS graduate student travel grant reviewer (2018)
Various community outreach activities: Geology presentations to Minneapolis area public school students (2018), metamorphic rock discussion with local geology club (2019)
Field trip assistant, showed local geology and field geology teaching techniques to VT public school STEM teachers (2015, 2016)

HONORS AND AWARDS

TA award (UMN, 2021)	Graduate TA award (UVM, 2016)
Fisher Fellowship (UMN, 2021)	Walter S. Haven Geology Prize (Beloit, 2012)
Zoltai Fellowship (UMN, 2019)	Laboratory TA award (Beloit, 2012)
John W. Gruner Fellowship (UMN, 2018)	USGS/NAGT internship nomination (Beloit, 2011)
Forrest Fellowship (UMN, 2017)	Hank Woodard Endowed Scholarship (Beloit, 2011)

COMPETITIVE FUNDING (INCL. CONFERENCE TRAVEL GRANTS)

2019 MGPV student travel grant	2017 ExxonMobil/GSA Student Grant
2019 GSA Grad student research grant	Total 2015 GSA conference funding
UMN Career Development grant	UVM Graduate Student Senate grant
Total 2017 GSA conference funding	UVM Ronald Suiter Prize

PROFESSIONAL AFFILIATIONS

American Geophysical Union (member since 2018)	Geological Society of America (member since 2009)
AWG (member starting 2018)	Mineralogical Society of America (member since 2016)
European Geoscience Union (member since 2021)	NAGT (member since 2021)

WORKSHOP AND SHORT COURSE ATTENDANCE

AGU Sharing Science “Communicating Science with any audience”	October 2021
Teaching Quantitative Structural Geology (GSA Connects)	October 2021
Preparing Future Faculty (U Auburn)	May 2021
Thermodynamic modeling workshop	May 2021
Demonstrations of REE analysis software	February 2021
Detrital and Petrochronologic Applications of U-Pb Geochronology	2020 GSA annual meeting

and Lu-Hf and Trace/REE Geochemistry by Laser Ablation Inductively Coupled Plasma–Mass Spectrometry	
STRABOSPOT for metamorphic petrology	July 2020
Goldschmidt virtual diffusion workshop	June 2020
Arizona State University Annual SIMS workshop	January 3–5, 2019
NSF workshop on structural geology data standards and vocabulary	2018 AGU annual meeting
Petrochronology	2017 GSA annual meeting
Statistical treatment of structural geology data	2015 GSA annual meeting

RESEARCH QUALIFICATIONS

Lab, Microanalytical:

Thin section making, standard mineral separation and grain mounts, EPMA (EDS, WDS, mapping), CL/BSE imaging, EBSD, LA(SS)-ICP-MS

Software:

ArcGIS, QGIS, Isoplot, R, MATLAB, AZtec, MText, Photogrammetry programs (Autodesk Recap, CloudCompare), Adobe software suite

Field:

Structural and lithologic mapping, oriented sample collection, geochronology sample collection, drone-assisted mapping, backcountry camping, off-road driving, helicopter-accessed field work

EMPLOYMENT

Lecturer

Department of Geosciences, University of Wisconsin – Milwaukee Milwaukee, WI	Jan. 2022 – May 2022
EPMA lab manager (1/4 time), Department of Earth & Environmental Sciences University of Minnesota – Twin Cities, Minneapolis, MN	Dec. 2021 – present
Logging Geologist III Horizon Well Logging, LLC, Tulsa, OK	Jul. 2013 – Jul. 2014
NAGT/USGS Cooperative Field Training Program Intern Snake River Field Station, Boise, ID and SUNY Binghamton, Binghamton, NY	Jun. 2012 – Oct. 2012
Keck Geology Consortium Intern Wesleyan University, Middletown, CT	Jun. 2011 – Jul. 2011