Andrew J. Cross, Assistant Scientist II
Anonymous Trustee Early Career Fellow

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6/9/2025

APPOINTMENTS

2024–present	**Assistant Scientist II,** *Woods Hole Oceanographic Institution, USA*
2019–2024	**Assistant Scientist I,** *Woods Hole Oceanographic Institution, USA*
2018–2019	**Postdoctoral Researcher,** *University of Pennsylvania, USA*
2015–2018	**Postdoctoral Researcher,** *Washington University in St. Louis, USA*
2013–2014	**Visiting Researcher,** *Brown University, USA*
2011–2015	**Graduate Student,** *University of Otago, New Zealand*

EDUCATION

2011–2015	**Ph.D.**, Geophysics with Geology *University of Otago, New Zealand*
2007–2011	**M.E.Sci. (with First Class Honours)**, Geophysics with Geology *University of Liverpool, UK*

SUBMITTED MANUSCRIPTS

[25] Goddard, R. M., **Cross, A. J.**, Lloyd, G., Breithaupt, T., Kumamoto, K. M., Dyck, B., Chen, H., Parsons, A. & Bidgood, A. K. (in review for *Earth and Planetary Science Letters*). A microstructural signature of the coesite-quartz transformation: new insights from high-pressure experiments and electron backscatter diffraction.
Preprint: 10.31219/osf.io/czpx5_v1

[24] Skemer, P., **Cross, A. J.**, Foley, B. & Putirka, K. (in review for *Journal of Geophysical Research: Planets*). The effect of composition on shear localization in planetary lithospheres.

[23] Goddard, R. M., Kumamoto, K. M., Hansen, L. N., Wallis, D., **Cross, A. J.** & Thom, C. A. (in revision for *Journal of Geophysical Research: Solid Earth*). Validation of subgrain-size piezometry as a tool for measuring stress in polymineralic rocks.
Preprint: 10.22541/essoar.169755254.46171679/v1

[22] Hein, D., Hansen, L. N., Kumamoto, K. M., Chen, H., Nehring, A., Goddard, R. M., Breithaupt, T., **Cross. A. J.**, Thom, C. & Seyler, C. (in revision for *Journal of Geophysical Research: Solid Earth*). The role of dislocations in the anelasticity of the upper mantle.
Preprint: 10.22541/essoar.174326672.28941810/v1

[21] Molitor, Z., Jagoutz, O., Moser, A., Cruz-Uribe, A. & **Cross, A. J.** (in revision for *Geosphere*). The crustal structure and collisional history of the Alleghanian orogen in the Northeast USA

[20] Ghaffari, H. O., Peč, M., Mittal, T., **Cross, A. J.** & Mok, U. (in revision for *Journal of Geophysical Research: Solid Earth*). Brittle and crystal-plastic defect dynamics of calcite single crystals

PEER-REVIEWED PUBLICATIONS

[19] Tominaga, M., Walczak, M., Schrenk, M., Reilly, B., Konrad, K., Applegate, B., Dugan, B., Eguchi, N., Fornari, D., Freudenthal, T., Fulton, P., Kelley, S., Lang, S. Q., Manalang, D., Mix, A., Trask, R., Andrys, J., Beethe, S., Bridgham, H., Cabaniss, H., Cargill, S. K., Conroy, C. W., Costa, K., Cox, A., **Cross, A. J.**, Dawyer, D., Dodd, J., Donnelly, J., Finlayson, V., Hashim, M., Heaton, D., Hupp, B., Jackson, M., Jasper, C., Kitajima, H., Libman-Roshal, O., Lowery, C. M., Maletic, E., Marranzino, A. N., Mejía-Mercado, B., Morrow, T., Nana Yobo, L., Pallone, C., Panter, K., Patterson, M., Peccia, A., Ronge, T. A., Roth, E., Staro, A., Stelling, K., Todes, J. P., Tsang, M.-Y. & Wieman, S. T. (2025). The FUTURE of the US marine seafloor and subseafloor sampling capabilities. *AGU Advances*. 6(3), e2024AV001560. 10.1029/2024AV001560

[18] **Cross, A. J.**, Goddard, R. M., Kumamoto, K. M., Goldsby, D. L., Hansen, L. N., Chen, H., Hein, D., Thom, C. A., Nehring, M. A., Breithaupt, T. & Wallis, D. (2025). Direct observations of transient weakening during phase transformations in quartz and olivine. *Nature Geoscience*. 10.1038/s41561-025-01703-6

[17] Skemer, P., Couvy, H., **Cross, A. J.**, Littleton, J. A. H. & Bollinger, C. (2025). Large volume torsion (LVT) apparatuses for rock deformation at high pressure and temperature. *Review of Scientific Instruments*, 96, 023903. 10.1063/5.0221218

[16] Hao, M., Pommier, A., Codillo, E. A., Walter, M. J., **Cross, A. J.**, Hrubiak, R., Wagner, L., Thompson, A. R., Yang, J. & Backhouse, N. (2024). Electrical conductivity and sound velocities of talc under high pressure and high temperature conditions and application to the subducting Cocos plate. *Journal of Geophysical Research: Solid Earth*, 129, e2024JB029824. 10.1029/2024JB029824

[15] Seltzer, C., Llorens, M.-G. & **Cross, A. J.** (2024). Meltwater orientations modify seismic anisotropy in temperate ice. *Geophysical Research Letters*, 51, e2024GL110131. 10.1029/2024GL110131

[14] Fan, S., Wheeler, J., Prior, D. J., Negrini, M., **Cross, A. J.**, Hager, T. F., Goldsby, D. L. & Wallis, D. (2022). Using misorientation and weighted Burgers vector statistics to understand intragranular boundary development and grain boundary formation at high temperatures. *Journal of Geophysical Research: Solid Earth,* 127(8), e2022JB024497, 10.1029/2022JB024497

[13] Fan, S., **Cross, A. J.**, Prior, D. J., Goldsby, D. L., Hager, T. F., Negrini, M. & Qi, C. (2021). Crystallographic preferred orientation (CPO) development governs strain weakening in ice: insights from high-temperature deformation experiments. *Journal of Geophysical Research: Solid Earth,* 126(12), e2021JB023173, 10.1029/2021JB023173

[12] Fan, S., Prior, D. J., Hager, T. F., **Cross, A. J.**, Goldsby, D. L. & Negrini, M. (2021). Kinking facilitates grain nucleation and modifies crystallographic preferred orientations during high-stress ice deformation. *Earth and Planetary Science Letters*, 572, 117136, 10.1016/j.epsl.2021.117136

[11] Fan, S., Prior, D. J., **Cross, A. J.**, Goldsby, D. L., Hager, T. F., Negrini, M. & Qi, C. (2021). Using grain boundary irregularity to quantify dynamic recrystallization in ice. *Acta Materialia*, 209, 116810, 10.1016/j.actamat.2021.116810

[10] **Cross, A. J.**, Goldsby, D. L., Hager, T. F. & Smith, I. B. (2020). The rheological behavior of CO_2 ice: application to glacial flow on Mars, *Geophysical Research Letters*, 47(22), e2020GL090431, 10.1029/2020GL090431

[9] Fan, S., Hager, T. F., Prior, D. J., **Cross, A. J.**, Goldsby, D. L., Qi, C., Negrini, M. & Wheeler, J. (2020), Temperature and strain controls on ice deformation mechanisms: insights from the microstructures of samples deformed to progressively higher strains at −10, −20 and −30°C, *The Cryosphere*, 14, 3875–3905, 10.5194/tc-14-3875-2020

[8] **Cross, A. J.**, Olree, E., Couvy, H. & Skemer, P. A. (2020). How does viscosity contrast influence phase mixing and strain localization? *Journal of Geophysical Research: Solid Earth*, 125(8), e2020JB020323, 10.1029/2020JB020323

[7] **Cross, A. J.** & Skemer, P. (2019), Rates of dynamic recrystallization in geologic materials. *Journal of Geophysical Research: Solid Earth*, 124(2), 1324-1342, 10.1029/2018JB016201

[6] **Cross, A. J.**, Hirth. G. & Prior, D. J. (2017), Effects of secondary phases on crystallographic preferred orientations in mylonites. *Geology*, 45(10), 955-958, 10.1130/G38936.1

[5] **Cross, A. J.**, Prior D. J., Stipp, M. & Kidder, S. (2017), The recrystallized grain size piezometer for quartz: an EBSD-based calibration. *Geophysical Research Letters*, 44(13), 6667-6674, 10.1002/2017GL073836

[4] **Cross, A. J.** & Skemer P. (2017), Ultramylonite generation via phase mixing in high-strain experiments. *Journal of Geophysical Research: Solid Earth,* 122(3), 1744-1759, 10.1002/2016JB013801

[3] **Cross, A. J.**, Ellis, S. & Prior, D. J. (2015), A phenomenological numerical approach for investigating grain size evolution in ductiley deforming rocks. *Journal of Structural Geology*, 76, 22-34, 10.1016/j.jsg.2015.04.001

[2] **Cross, A. J.**, Kidder, S. & Prior, D. J. (2015), Using microstructures and TitaniQ thermobarometry of quartz sheared around garnet porphyroclasts to evaluate microstructural evolution and constrain an Alpine Fault geotherm. *Journal of Structural Geology*, 75, 17-31, 10.1016/j.jsg.2015.02.012

[1] Wheeler, J., **Cross, A.**, Drury, M., Hough, R. M., Mariani, E., Piazolo, S. & Prior, D. J. (2011), Time-lapse misorientation maps for the analysis of electron backscatter diffraction data from evolving microstructures. *Scripta Materialia*, 65(7), 600-603, 10.1016/j.scriptamat.2011.06.035

WHITE PAPERS AND OTHER ITEMS

Cross, A. J. & Goddard, R. M. (2025). Slab dynamics linked to transient weakening during mineral phase transitions. *Nature Geoscience*. 10.1038/s41561-025-01712-5

Goldsby, D., Zhu, W., Wang, Y. & **Cross, A. J.** (2022). Advancing understanding of ice rheology via X-ray beamline studies. *In-situ Studies of Rock Deformation (ISRD) Research Coordination Network*

Smith, I., Calvin, W. M., Smith, D. E., et al. (2021). Solar-system-wide significance of Mars polar science. *Planetary Sciences Decadal Survey 2023-2032*

RESEARCH FUNDING

01/2025–11/2025: WHOI Independent Research and Development (IR&D #31962), *Attenuation and creep properties of high-pressure ices: tidal heating and ice dynamics on Ocean Worlds.* **PI: A. J. Cross**. $83,922 total

12/2024–11/2025: WHOI Innovative Technology Program, *A new apparatus for high-stress ice deformation: design and validation*. **PI: A. J. Cross**; co-Is: Z. Berkowitz, M. Silvia. $99,898 total

01/2024–11/2024: WHOI Independent Research and Development (IR&D #30771), *Towards in-situ measurements of iceberg calving at the laboratory scale.* **PI: A. J. Cross**. $82,244 total

08/2023–07/2026: NSF Antarctic Sciences (OPP-2317263), *Microstructural evolution during superplastic ice creep.* **PI: A. J. Cross**. $494,195 total

04/2023–04/2024: Soft and Hybrid Nanotechnology Experiment Resource (SHyNE) SEED program, *Developing transmission Kikuchi diffraction (TKD) capabilities to "SHyNE" a light on nanotectonic processes.* **PI: A. J. Cross**. $2,495 total

01/2023–11/2023: WHOI Independent Research and Development (IR&D #29649), *Nanoscale controls on oceanic tectonics: developing tools for high-resolution microanalyses of oceanic ultramylonites.* **PI: A. J. Cross**. $73,677 total

12/2022–11/2025: NSF Marine Geology & Geophysics (OCE-2224725), *Strength of the oceanic lower crust: new experimental and microstructural constraints*. **PIs: A. J. Cross**, R. M. Goddard; co-I: V. Le Roux. $641,214 total

01/2022–11/2022: WHOI Independent Research and Development (IR&D #28578), *Probing the grain-scale origins of tidal heating in ocean worlds: a pilot study*. **PI: A. J. Cross**. $70,329 total

01/2021–11/2021: WHOI Independent Research and Development (IR&D #27518), *Development of a next-generation ice rheology apparatus*. **PI: A. J. Cross**. $75,425 total

09/2020–08/2025: NSF Geophysics (EAR-2023128), *Collaborative research: transformation plasticity as a transient creep mechanism in Earth's crust and mantle*. **PI: A. J. Cross**; co-Is: D. L. Goldsby, L. N. Hansen. $542,320 total ($389,328 to WHOI)

07/2020–06/2022: NSF Instrumentation & Facilities (EAR-2003389), *Upgrade of an electron backscatter diffraction system to establish a center for state-of-the-art microstructural analyses.* **PI: A. J. Cross**. $165,527 total

01/2020–06/2020: WHOI Independent Research and Development (IR&D #26476), *An experimental study of ice bicrystal deformation to illuminate the mechanisms of glacial flow*. **PI: A. J. Cross**. $70,611 total

PROFESSIONAL SERVICE AND ACTIVITIES

Chair, Physical Properties of Earth Materials (PPEM) AGU focus group, 2024–present

Steering committee, In-Situ Studies of Rock Deformation (ISRD) research coordination network, 2022–present

Lead organizer, Electron Backscatter Diffraction 2022 (EBSD 2022), virtual conference

Co-lead organizer, Electron Backscatter Diffraction 2020 (EBSD 2020), Ann Arbor, MI (postponed due to COVID-19 pandemic)

Panelist, "Important Issues Facing Early Career Researchers", Gordon Research Seminar on Rock Deformation, 2018

Organizing committee, Electron Backscatter Diffraction 2018 (EBSD 2018), Ann Arbor, MI

AGU Fall Meeting session organizer (* denotes primary convener role):

- *2024, Physical Properties of Earth Materials (PPEM): Deformation, Flow, and Failure
- 2024, Exploring Planetary Interiors: Unraveling the Dynamics, Thermal Evolution, and Mineralogy from Mantle to Core
- 2021, Modeling of the Cryosphere: Glaciers and Ice Sheets
- *2017, Recent Advances in Understanding Deformation Microstructures
- 2017, The Microphysics of Plate Boundary Deformation

Proposal reviewer:

National Science Foundation (EAR-Geophysics; EAR-Tectonics; EAR-Structure and Physics of the Solid Earth; EAR-Postdoctoral Fellowships; OCE-Marine Geology and Geophysics; OPP-Antarctic Sciences); NASA (Solar System Workings); European Research Council (ERC); Natural Environment Research Council (NERC); US Army Corps of Engineers (USAC)

Manuscript reviewer:

Contributions to Mineralogy and Petrology; Earth and Planetary Science Letters; Geodinamica Acta; Geological Journal; Geochemistry, Geophysics, Geosystems (G^3); Geology; Geophysical Journal International; Geophysical Research Letters; Geosphere; Icarus; Journal of Geophysical Research: Solid Earth; Journal of Glaciology; Journal of Metamorphic Petrology; Journal of Structural Geology; Nature Geoscience; Physics of the Earth and Planetary Interiors; Science; Science Advances; Solid Earth; Tectonics; Tectonophysics

WHOI SERVICE AND ACTIVITIES

Committee member, Mental health employee resource group, 2024–present
Planning committee member, MIT-WHOI annual geophysics retreat, 2024
Hiring committee (geochemistry/petrology), WHOI Geology & Geophysics department, 2024
Ad hoc reviewer, 2023 Innovative Technology proposals
Ad hoc reviewer, 2023 Technical Staff Training proposals
Chief People Officer hiring committee, 2022
Department safety committee, WHOI Geology & Geophysics department, 2021–present
Joint Committee for Marine Geology & Geophysics, MIT-WHOI Joint Program, 2021–present
Hiring committee (geophysics), WHOI Geology & Geophysics department, 2020
Faculty member, MIT-WHOI Joint Program, 2020–present

SUPERVISION, MENTORING, AND EDUCATION

Courses Taught (MIT-WHOI Joint Program):
12.703: Presenting Scientific Research (co-instructor w/ S. Lang); Spring 2025
Postdoctoral Researchers:
Cassandra Seltzer; 2025–present (co-mentored w/ C. McCarthy)
Subhajit Ghosh; 2024–2024
Rellie Goddard; 2021–2023
Graduate Students:
Namitha Kumar; MIT-WHOI Joint Program, 2024–present (co-supervised w/ V. Le Roux)
Caroline Needell; MIT-WHOI Joint Program, 2024–present (second generals advisor)
Maia Cohen; MIT-WHOI Joint Program, 2023–present
Rilee Thomas; MIT-WHOI Joint Program, 2022–present
Undergraduate Students:
Halley Wilkinson; WHOI Summer Student Fellowship, 2024
Namitha Kumar; WHOI Summer Student Fellowship, 2022 (co-supervised w/ V. Le Roux)
Visiting Investigators and Guest Students:
Kris Houdyshell; University of Minnesota Twin Cities, 2025–2026
Madi Fleming; University of Otago, 2024
Dohyun Kim; Postdoctoral Researcher, Korea Polar Research Institute (KOPRI), 2022–2023
Daeyeong Kim; Senior Research Scientist, Korea Polar Research Institute (KOPRI), 2022–2023
Thesis and examination committees (excluding own students):
Jean Clemente (MIT-WHOI; 2025); Natalie Hummel (MIT-WHOI; 2024–present); Cassandra Seltzer (MIT; 2023–2024); Travis Hager (University of Pennsylvania; 2023–2024); Zoe Molitor (MIT; 2023–2024); Joanna Millstein (MIT-WHOI; 2023); Jonas Kaare-Rasmussen (MIT-WHOI; 2023); Jae Deok Kim (MIT-WHOI; 2023–present)

INVITED TALKS

2024 University of Southern California, Department of Earth Sciences colloquium
2024 MIT, Department of Earth, Atmospheric, and Planetary Sciences geophysics seminar
2024 University of Wisconsin-Madison, Department of Geosciences seminar
2023 University of Minnesota Twin Cities, Earth and Environmental Sciences department seminar
2023 American Museum of Natural History; Earth and Planetary Sciences department seminar
2023 Chinese Academy of Sciences planetary science symposium (Session: T*he physical properties of materials under planetary extreme conditions*)
2022 Northwestern University; Earth and Planetary Sciences department seminar

2022 University of Wyoming; Department of Geology & Geophysics Distinguished Lecturer Series
2021 AGU 2021 (Session: *Effects of heterogeneities on strain localization in the crust and mantle)*
2021 GSA 2021 (Session: *Hot rocks: high-temperature microstructures from mantle to surface*)
2021 Collaborative Organization for Rock Deformation (CORD) research coordination network seminar
2021 MIT Chemical Oceanography, Geology, Geochemistry, and Geobiology (COG3) seminar
2020 MIT Experimental Rock Deformation group seminar
2020 GSA 2020 (Session T27: *Approaches for Extracting Shear Zone History from the Ductile Rock Record: Probing Their Initiation, Evolution, and Reactivation*)
2020 MIT Glaciology group seminar
2018 Lamont-Doherty Earth Observatory; Seismology, Geology, and Tectonophysics Seminar
2018 Woods Hole Oceanographic Institution; Geology and Geophysics department seminar
2016 Gordon Research Conference on Rock Deformation
2016 Electron Backscatter Diffraction (EBSD) 2016 conference
2015 Missouri University of Science and Technology; Department of Geosciences and Geological and Petroleum Engineering Seminar
2014 Brown University; Rock Deformation Laboratory brown bag seminar

AWARDS AND HONORS

2025 WHOI Early Career Scientist Award ($50,000 USD salary support)
2023 2nd place, Oxford Instruments NanoAnalysis Scientific Paper Award (Fan et al., 2022)
2021 Top 10% of papers downloaded from JGR Solid Earth (Fan, Cross, et al., 2021)
2015 University of Otago Exceptional Thesis award
2013 University of Otago international conference travel grant ($2,000 NZD)
2011–2014 University of Otago doctoral scholarship ($75,000 NZD stipend)
2009 University of Liverpool Morris Ranger Scholarship (£75 GBP)
2008–2011 University of Liverpool Attainment Scholarship (£4,500 GBP tuition support)

CONFERENCE ABSTRACTS (PAST THREE YEARS ONLY)

Fleming, M., Prior, D. J., **Cross, A. J.**, Goldsby, D. L., Fowler, J., Thomas, R., Bowman, H. & Pooley, B. (2025). Grain-size piezometer for ice with application to natural ice in Antarctica. *Geoscience Society of New Zealand (GSNZ) Annual Conference*

Skemer, P., **Cross, A. J.**, Foley, B. & Putirka, K. (2025). Compositional effects on shear localization in planetary lithospheres. *EGU General Assembly*

Goddard, R. M., **Cross, A. J.**, Lloyd, G., Breithaupt, T., Kumamoto, K. M., Dyck, B., Chen, H., Parsons, A. & Bidgood, A. K. (2025). A crystallographic signature of quartz after coesite: new insights from high-pressure experiments and EBSD. *Tectonic Studies Group (TSG) Annual Meeting*

Wilkinson, H., **Cross, A. J.**, Rybacki, E., Evans, B., Peč, M. & Morales, L. (2024). Quantifying calcite twin development across the brittle-to-ductile transition using electron backscatter diffraction (EBSD). *AGU Fall Meeting*

Thomas, R. E., **Cross, A. J.**, Prior, D. J., Fleming, M. & Palmer, M. (2024). Can superplastic creep produce a crystallographic preferred orientation in ice? *AGU Fall Meeting*

Skemer, P., Billings, K., **Cross, A. J.**, Ela, E. Foley, B. & Putirka, K. (2024). Compositional effects on shear localization in planetary lithospheres. *AGU Fall Meeting*

Seltzer, C., Llorens, M.-G. & **Cross, A. J.** (2024). Meltwater orientations modify seismic anisotropy in temperate ice. *AGU Fall Meeting*

Ghosh, S., **Cross, A. J.**, Hirth, G. & Meyers, C. (2024). Determining the rheological properties of natural, intermediate-composition plagioclase. *AGU Fall Meeting*

Ghaffari, H. O., Peč, M., Mittal, T., **Cross, A. J.** & Mok, U. (2024). Brittle and crystal-plastic defect dynamics of calcite single crystals. *AGU Fall Meeting*

Cross, A. J., Goddard, R. M., Kumamoto, K. M., Goldsby, D. L., Hansen, L. N., Chen, H., Hein, D., Thom, C. A. & Nehring, A. (2024). Phase transformations, transient weakening, and the fate of subducted oceanic lithosphere. *AGU Fall Meeting*

Thomas, R. E., **Cross, A. J.**, Prior, D. J., Fleming, M. & Palmer, M. (2024). Can superplastic creep produce a crystallographic preferred orientation (CPO) in ice? *Gordon Research Conference on Rock Deformation*

Seltzer, C., Llorens, M.-G., **Cross, A. J.**, Peč, M., Zimmerman, M. E. & Kohlstedt, D. L. (2024). Evolution of microstructural orientations after small strain intervals in partially molten rocks and ices. *Gordon Research Conference on Rock Deformation*

Kumar, N., **Cross, A. J.**, Le Roux, V. & Goddard, R. M. (2024). The strength of the oceanic lower crust: insights from ODP hole 735B, Southwest Indian Ridge. *Gordon Research Conference on Rock Deformation*

Ghosh, S., **Cross, A. J.**, Hirth, G. & Meyers, C. (2024). Determining the rheological properties of natural, intermediate-composition plagioclase. *Gordon Research Conference on Rock Deformation*

Fleming, M., Prior, D. J., **Cross, A. J.**, Goldsby, D. L., Pooley, B. & Bowman, H. (2024). Recrystallized grain-size and subgrain-size piezometer for ice with application to natural ice in Antarctica. *Gordon Research Conference on Rock Deformation*

Cohen, M., Averbuch, G. & **Cross, A. J.** (2024). Towards in-situ acoustic monitoring of ice deformation mechanisms. *Gordon Research Conference on Rock Deformation*

Cross, A. J., Goddard, R. M., Kumamoto, K. M., Goldsby, D. L., Hansen, L. N., Chen, H., Hein, D., Thom, C. A. & Nehring, A. (2024). Transient weakening during mineral phase transformations: implications for slab dynamics. *Gordon Research Conference on Rock Deformation*

Peč, M., Ghaffari, H.-O., Mittal, T., Mok, U., Chang, H., Evans, B., **Cross, A. J.** & Bernabé, Y. (2024). Microscopic defect dynamics during a brittle-to-ductile transition. *American Rock Mechanics Association (ARMA 2024)*

Molitor, Z., Jagoutz, O., **Cross, A. J.**, Cruz-Uribe, A. & Moser, A. (2024). Constraining the 3D geometry of conjugate orogenic strike-slip shear zones in the New England Appalachians. *GSA Northeastern Section Annual Meeting*

Skemer, P., Billings, K., Couvy, H., **Cross, A. J.** & Ela, E. (2023). Shear localization in planetary lithospheres: insight from high-strain deformation experiments. *AGU Fall Meeting*

Nehring, A., Hansen, L. N., Goddard, R. M., **Cross, A. J.**, Seyler, C., Hein, D. & Breithaupt, T. (2023). Developing a constitutive model for the brittle-ductile transitions zone of Earth's mantle using the deformation-DIA apparatus. *AGU Fall Meeting*

Hao, M., Codillo, E., Pommier, A., Walter, M. J., Hrubiak, R., **Cross, A. J.** & Thomson, A. R. (2023). Electrical conductivity and sound velocities of talc under high pressure and high temperature conditions. *AGU Fall Meeting*

Prior, D. J., Qi, C., Craw, L., **Cross, A. J.**, Fan, S., Goldsby, D. L., Hager, T. & Wang, Q. (2023). What controls crystallographic preferred orientations (fabrics) of deformed ice: constraints from laboratory experiments. *15th International Conference on Physics and Chemistry of Ice*

†Goddard, R. M., **Cross, A. J.**, Breithaupt, T., Wallis, D., Le Roux, V., Goldsby, D., Kumamoto, K., Hansen, L., Hein, D., Nehring, A. & Seyler, C. (2023). There and back again: using microscopy to unlock the secrets of the Earth's Interior. *3rd Annual Women in Microscopy Conference*

Kumar, N., **Cross, A. J.**, Le Roux, V. & Goddard, R. M. (2022). Determining the strength of the oceanic lower crust: a geochemical, microstructural, and rheological investigation of ODP hole 735B, Southwest Indian Ridge. *AGU Fall Meeting*

Hein, D., Hansen, L. N., **Cross, A. J.**, Goddard, R. M., Kumamoto, K. M., Thom, C., Chen, H., Nehring, A., Seyler, C. & Goldsby, D. L. (2022). Nonlinear viscoelasticity and transient creep of the upper mantle in response to large stress changes. *AGU Fall Meeting*

†Goddard, R. M., **Cross, A. J.**, Wallis, D., Goldsby, D. L., Le Roux, V., Kumamoto, K. M., Hansen, L. N. & Hein, D. (2022). Transient weakening and microstructures associated with the quartz-coesite phase transition. *AGU Fall Meeting*

Cohen, M., Ghaffari, H.-O., **Cross, A.** & Peč, M. (2022). From Mylonites to Cataclasites: an experimental study of a brittle-to-ductile transition for quartz-feldspar aggregates. *Gordon Research Conference on Rock Deformation*

Thomas, R. E., Prior, D. J., Kerr, G., Goldsby, D. L., **Cross, A. J.**, Hager, T. F., Negrini, M. & Fan, S. (2022). Water chemistry and ice mechanics. *Gordon Research Conference on Rock Deformation*

Hein, D., Hansen, L. N., Kumamoto, K. M., Thom, C., Goddard, R. M., **Cross, A. J.**, Chen, H. & Goldsby, D. L. (2022). Microstructural evolution in olivine aggregates undergoing high-stress forced oscillation. *Gordon Research Conference on Rock Deformation*

†Goddard, R. M., **Cross, A. J.**, Kumamoto, K. M., Bidgood, A. M., Parsons, A. J., Lloyd, G. E., Waters, D. J. & Hansen, L. N. (2022). Microstructural signatures of quartz-after-coesite: new insights from high-pressure experiments. *Gordon Research Conference on Rock Deformation*

Cross, A. J., Goddard, R. M., Kumamoto, K. M., Goldsby, D. L., Chen, H., Hansen, L., Thom, C. A. & Hein, D. (2022). There and Back Again: Transient weakening across the quartz-coesite phase transition revealed in synchrotron D-DIA experiments. *Gordon Research Conference on Rock Deformation*

Cohen, M., Ghaffari, H.-O., **Cross, A.** & Peč, M. (2022). From Mylonites to Cataclasites: an experimental study of the brittle-to-ductile transition of quartz-feldspar aggregates. *GSA Penrose Conference: The Geological Fingerprints of Slow Earthquakes*

Goddard, R. M., **Cross, A. J.**, Kumamoto, K. M., Bidgood, A. M., Parsons, A. J., Lloyd, G. E. & Waters, D. J. (2022). Microstructural signatures of the coesite-quartz transformation: new insights from EBSD analysis. *Electron Backscatter Diffraction 2022 (EBSD 2022)*