

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

10/27/2025

Department of Geology and Geophysics
Woods Hole Oceanographic Institution
266 Woods Hole Road, MS #08,
Woods Hole, MA 02543

E-mail: across@whoi.edu
Phone: (508) 289-3749
Web: www2.whoi.edu/site/ridl
Google Scholar: goo.gl/7kRvdU
ORCID: 0000-0002-7481-7588

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

- [27] **Cross, A. J.** (in review for *Tektonika*). Quantifying the intensity of crystallographic preferred orientation (CPO): some practical considerations and recommended practices.
Preprint: [10.31223/X55M9K](https://doi.org/10.31223/X55M9K)
- [26] 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](https://doi.org/10.22541/essoar.169755254.46171679/v1)
- [25] Skemer, P., **Cross, A. J.**, Foley, B. & Putirka, K. (revisions submitted to *Journal of Geophysical Research: Planets*). The effect of composition on shear localization in planetary lithospheres.
- [24] Ghaffari, H. O., Peč, M., **Cross, A. J.**, Mittal, T. & Mok, U. (revisions submitted to *Journal of Geophysical Research: Solid Earth*). Brittle and crystal-plastic defect dynamics of calcite single crystals. Preprint: [10.22541/essoar.175728316.69480012/v1](https://doi.org/10.22541/essoar.175728316.69480012/v1)

PEER-REVIEWED PUBLICATIONS

- [23] Goddard, R. M., **Cross, A. J.**, Lloyd, G., Breithaupt, T., Kumamoto, K. M., Dyck, B., Chen, H., Parsons, A. & Bidgood, A. K. (2025). A microstructural signature of the coesite-quartz

- transformation: new insights from high-pressure experiments and electron backscatter diffraction. *Earth and Planetary Science Letters*, 672, 119622. [10.1016/j.epsl.2025.119622](https://doi.org/10.1016/j.epsl.2025.119622)
- [22] Wilcots, J., Bergmann, K. D., Gilbert, P. U. P. A. & **Cross, A. J.** (2025). Nanoscale crystal fabric preserved in dolomite ooids at the onset of the Ediacaran Shuram excursion. *The Sedimentary Record*, 23(1), [10.2110/001c.145144](https://doi.org/10.2110/001c.145144)
- [21] Hein, D., Hansen, L. N., Kumamoto, K. M., Chen, H., Nehring, A., Goddard, R. M., Breithaupt, T., **Cross, A. J.**, Thom, C. & Seyler, C. (2025). The role of dislocations in the anelasticity of the upper mantle. *Journal of Geophysical Research: Solid Earth*, 130(10), e2025JB031674. [10.1029/2025JB031674](https://doi.org/10.1029/2025JB031674)
- [20] Molitor, Z., Jagoutz, O., Moser, A., Cruz-Urbe, A. & **Cross, A. J.** (2025). Permo–Carboniferous crustal structure and state of strain in the New England Appalachians, USA. *Geosphere*. [10.1130/GES02868.1](https://doi.org/10.1130/GES02868.1)
- [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](https://doi.org/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*, 18(6), 548–554. [10.1038/s41561-025-01703-6](https://doi.org/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](https://doi.org/10.1063/5.0221218)
- [16] Hao, M., Pommier, A., Codillo, E. A., Walter, M. J., **Cross, A. J.**, Hrubciak, 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1016/j.actamat.2021.116810)

- [10] **Cross, A. J.**, Goldsby, D. L., Hager, T. F. & Smith, I. B. (2020). The rheological behavior of CO₂ ice: application to glacial flow on Mars, *Geophysical Research Letters*, 47(22), e2020GL090431, [10.1029/2020GL090431](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1002/2016JB013801)
- [3] **Cross, A. J.**, Ellis, S. & Prior, D. J. (2015), A phenomenological numerical approach for investigating grain size evolution in ductilely deforming rocks. *Journal of Structural Geology*, 76, 22–34, [10.1016/j.jsg.2015.04.001](https://doi.org/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](https://doi.org/10.1016/j.jsg.2015.02.012)
- [1] Wheeler, J., **Cross, A.**, Drury, M., Hough, R. M., Mariani, E., Piazzolo, 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](https://doi.org/10.1016/j.scriptamat.2011.06.035)

MANUSCRIPTS IN PREPARATION

- Ela, E., Couvy, H., **Cross, A. J.** & Skemer, P. (in prep. for *Earth and Planetary Science Letters*).
Compositional controls on mylonite formation
- Cross, A. J.**, Rybacki, E., Wilkinson, H., Evans, B. & Peč, M. (in prep. for *Journal of Geophysical Research: Solid Earth*). An EBSD-based calcite twin paleopiezometer
- Kim, D., **Cross, A. J.**, Qi, C., Prior, D. J., Thomas, R. E. & Fleming, M. (in prep. for *Science Advances*).
Potential long-term impacts of microplastics waste on polar ice dynamics
- Needell, C., **Cross, A. J.**, Fleming, M., Prior, D. J. & Thomas, R. E. (in prep. for *Journal of Glaciology*).
Microstructural evolution of ice during plane-strain compression
- Seltzer, C., McCarthy, C., **Cross, A. J.**, Berkman, M., Walls, N. & Millstein, J. (in prep. for *Science*).
Saltwater exposure accelerates ice grain growth and increases fracture vulnerability
- Thomas, R. E., **Cross, A. J.**, Fleming, M. & Prior, D. J. (in prep. for *Geophysical Research Letters*).
Superplastic creep produces a crystallographic preferred orientation (CPO) in ice

WHITE PAPERS AND OTHER ITEMS

- Cross, A. J.** & Goddard, R. M. (2025). Slab dynamics linked to transient weakening during mineral phase transitions. *Nature Geoscience*, 18(6), 457–458. [10.1038/s41561-025-01712-5](https://doi.org/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):

- *2025, Physical Properties of Earth Materials (PPEM): From Transient to Steady-State Deformation
- *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 (G³); 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 Communications; 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

Teaching (MIT-WHOI Joint Program):

- 12.757 Climate Change Science: Climate Intervention and Geoengineering (guest lecturer),
Topic: The Cryosphere; Fall 2025
- 12.703: Presenting Scientific Research (co-instructor w/ S. Lang); Spring 2025, Fall 2025

Postdoctoral Researchers:

- Cassandra Seltzer; 2025–2026 (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–present
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: <i>The physical properties of materials under planetary extreme conditions</i>)
2022	Northwestern University; Earth and Planetary Sciences department seminar
2022	University of Wyoming; Department of Geology & Geophysics Distinguished Lecturer Series
2021	AGU 2021 (Session: <i>Effects of heterogeneities on strain localization in the crust and mantle</i>)
2021	GSA 2021 (Session: <i>Hot rocks: high-temperature microstructures from mantle to surface</i>)
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: <i>Approaches for Extracting Shear Zone History from the Ductile Rock Record: Probing Their Initiation, Evolution, and Reactivation</i>)
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)

- Seltzer, C., McCarthy, C., **Cross, A. J.**, Berkman, M., Walls, N. & Huntsman, C. (2026). Ice grain growth and Europa's cryospheric strength in the presence of saltwater infiltration. *Second Workshop on Ices in the Solar System*
- Wilkinson, H., **Cross, A. J.**, Rybacki E., Evans, B., & Peč, M. (2025). Microstructural evolution of Carrara marble in the semi-brittle regime. *AGU Fall Meeting*
- Thomas, R. E. & **Cross, A. J.** (2025). The effect of chemical impurities on the superplastic creep strength of ice: implications for natural ice flow laws. *AGU Fall Meeting*
- Seltzer, C., McCarthy, C., **Cross, A. J.**, Berkman, M. & Walls, N. (2025). Microstructural evolution of partially molten ice under stress and during static annealing. *AGU Fall Meeting*
- Panter, K., Berthod, C., Tominaga, M., Cannat, M., Prigent, C., Priene, J. & **Cross, A. J.** (2025). Widespread Sampling of Antarctic Mantle by Explosive Seafloor Volcanism, Western Ross Sea, Antarctica. *AGU Fall Meeting*
- Needell, C., **Cross, A. J.**, Fleming, M., Prior, D. J. & Thomas, R. (2025). Microstructural evolution of ice in a laterally-confined, plane-strain geometry. *AGU Fall Meeting*
- Ela, E., Hansen, L., Breithaupt, T., Chen, H., White, J., Hein, D., Nehring, A., **Cross, A. J.**, Goddard, R. & Seyler, C. (2025). Experimental constraints on low-temperature plasticity in polycrystalline and single-crystal plagioclase. *AGU Fall Meeting*
- Cross, A. J.**, Hein, D., Goldsby, D., Hansen, L., Chen, H., Breithaupt, T., Ela, E., Nehring, M. A. & Osinchuk, A. (2025). *In operando* constraints on the nonlinear viscoelasticity of ice-VI: application to tidal heating and ocean formation in icy satellites. *AGU Fall Meeting*
- Cross, A. J.**, Wilkinson, H., Rybacki, E., Evans, B. & Peč, M. (2025). Evaluating the application of electron backscatter diffraction (EBSD) to calcite twin paleopiezometry. *AGU Fall Meeting*
- Moser, A. C., Bonamici, C. E., Peč, M., Kitajima, K., **Cross, A. J.** & Levy, D. (2025). Dating deformation with titanite: an example from high-temperature, high-pressure deformation experiments. *GSA Annual Meeting*
- 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*
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