

Ellery Frahm

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CURRENT POSITIONS

Director, Yale Initiative for the Study of Ancient Pyrotechnology, Yale University — 2017-Present
Research Scientist & Lecturer, Anthropology Department, Yale University — 2017-Present

EDUCATION

Ph.D., Anthropology, University of Minnesota, advisor: Gilbert Tostevin — 2010
Best Dissertation Award in the Social and Behavioral Sciences and Education (2010-2012),
University of Minnesota Graduate School — 2012
M.S., Interdisciplinary Archaeological Studies, University of Minnesota — 2002
B.A., Grinnell College, Grinnell, Iowa — 1999

PAST POSITIONS

Visiting Assistant Professor, Anthropology Department, University of Minnesota — 2016
Courses: Introduction to Archaeology and Analysis of Stone Tool Technology
Research Fellow, Anthropology Department, Harvard University — 2015-2016
Postdoctoral Associate, Anthropology & Earth Sciences, University of Minnesota — 2014-2016
Visiting Researcher, Role of Culture in Early Expansions of Humans, Universität Tübingen — 2014
Marie Curie Research Fellow, Archaeology Department, University of Sheffield — 2012-2014
Two-year fellowship with the transnational Marie Curie network New Archaeological Research Network for Integrating Approaches in the Eastern Mediterranean (NARNIA)
Graduate Faculty, Anthropology Department, University of Minnesota — 2011-2013
Term appointment to co-advise a graduate student on her Master's research project
Lecturer, Anthropology Department, University of Minnesota — 2011
Courses: Anthropology of the Modern Middle East and Geoarchaeology
Research Associate/Fellow & Lab Manager, Earth Sciences, University of Minnesota — 2003-2011
Hired as a half-time Research Assistant in 2001 and promoted to a full-time Lab Manager and Research Fellow in 2003, to Senior Research Fellow in 2008, and to Research Associate in 2010

PUBLICATIONS

Peer-Reviewed Journal Articles

- Frahm, E.** Portable XRF of tempered ceramics: Representative elemental analyses of heterogeneous materials. Under review at *Journal of Archaeological Science*.
- Frahm, E., Sherriff, J., Wilkinson, K.N., Beverly, E.J., Adler, D.S., Gasparyan, B. Ptghni:** A new obsidian source in the Hrazdan River Basin, Armenia. Under review at *Journal of Arch Science: Reports*.
- Frahm, E., Hauck, T.C.** Origin of an obsidian scraper at Yabroud Rockshelter II (Syria): Implications for Near Eastern social networks in the early Upper Palaeolithic. Accepted pending revision, *Journal of Archaeological Science: Reports*.

April 2017

- Kandel, A.W., Gasparyan, B., Allué, E., Bigga, G., Bruch, A., Cullen, V.L., **Frahm, E.**, Ghukasyan, R., Gruwier, B., Jabbour, F., Miller, C.E., Taller, A., Vardazaryan, V., Vasilyan, D., Weissbrod, L. The earliest evidence for modern human behavior in Armenia at the Upper Paleolithic cave site of Aghitu-3. Accepted pending revision, *Journal of Human Evolution*.
- Monnier, G., **Frahm, E.**, Luo, B., Missal, K. 2017. Developing FTIR microspectroscopy for analysis of animal-tissue residues on stone tools. In press and online at *Journal of Archaeological Method and Theory*; doi:10.1007/s10816-017-9325-3.
- Frahm, E.**, Goldstein, S.T., Tryon, C.A. 2017. Late Holocene forager-fisher and pastoralist interactions along the Lake Victoria shores, Kenya: Perspectives from portable XRF of obsidian artifacts. *Journal of Archaeological Science: Reports* 11:717-742.
- Monnier, G., **Frahm, E.**, Luo, B., Missal, K. 2017. Developing FTIR microspectroscopy for analysis of plant residues on stone tools. *Journal of Archaeological Science* 78:158-178.
- Glaubergerman, P., Gasparyan, B., Wilkinson, K.N., **Frahm, E.**, Raczynski-Henk, Y., Haydosyan, H., Arakelyan, D., Karapetian, S., Nahapetyan, S., Adler, D.S. 2016. Introducing Barozh 12: A Middle Palaeolithic open-air site on the edge of the Ararat Depression, Armenia. *ARAMAZD: Armenian Journal of Near Eastern Studies* 9(2):7-20, 158-174.
- Frahm, E.**, Monnier, G.F., Jelinski, N.A., Fleming, E.P., Barber, B.L., Lambon, J.B. 2016. Chemical soil surveys at the Bremer Site (Dakota County, Minnesota, USA): Measuring phosphorous content of sediment by portable XRF and ICP-OES. *Journal of Archaeological Science* 75:115-138.
- Frahm, E.**, Feinberg, J.M., Monnier, G.F., Tostevin, G.B., Gasparyan, B., Adler, D.S. 2016. Lithic raw material units based on magnetic properties: A blind test with Armenian obsidian and application to the Middle Palaeolithic site of Lusakert Cave 1. *Journal of Archaeological Science* 74:102-123.
- Frahm, E.**, Campbell, S., Healey, H. 2016. Caucasus connections? New data and interpretations for Armenian obsidian in Northern Mesopotamia. *Journal of Archaeological Science: Reports* 9:543-564.
- Frahm, E.** 2016. Can I get chips with that? Obsidian sourcing down to the microdebitage with portable XRF. *Journal of Archaeological Science: Reports* 9:448-467.
- Frahm, E.**, Feinberg, J.M., Schmidt-Magee, B., Wilkinson, K.N., Gasparyan, B., Yeritsyan, B., Adler, D.S. 2016. Middle Palaeolithic lithic procurement behaviors at Lusakert Cave 1, Hrazdan Valley, Armenia. *Journal of Human Evolution* 91:73-92.
- Frahm, E.**, Feinberg, J.M. 2015. Reassessing obsidian field relationships at Glass Buttes, Oregon. *Journal of Archaeological Science: Reports* 2:654-665.
- Stillinger, M.D., Feinberg, J.M., **Frahm, E.** 2015. Refining the archaeomagnetic dating curve for the Near East: New intensity data from Bronze Age ceramics at Tell Mozan, Syria. *Journal of Archaeological Science* 53:345-355.
- Adler, D.S., Wilkinson, K.N., Blockley, S., Mark, D., Pinhasi, R., Schmidt-Magee, B.A., Nahapetyan, S., Mallol, C., Berna, F., Glaubergerman, P.J., Raczynski-Henk, Y., Wales, N., **Frahm, E.**, Jöris, O., MacLeod, A., Smith, V., Cullen, V., Gasparyan, B. 2014. Early Levallois technology and the transition from the Lower to Middle Palaeolithic in the Southern Caucasus. *Science* 345 (6204):1609-1613.
- Frahm, E.** 2014. Characterizing obsidian sources with portable XRF: Accuracy, reproducibility, and field relationships in a case study from Armenia. *Journal of Archaeological Science* 49:105-125.
- Frahm, E.**, Feinberg, J.M., Schmidt-Magee, B.A., Wilkinson, K.N., Gasparyan, B., Yeritsyan, B., Karapetian, S., Meliksetian, Kh., Muth, M.J., Adler, D.S. 2014. Sourcing geochemically identical obsidian: Multiscalar magnetic variations in the Gutansar volcanic complex and implications for Palaeolithic research in Armenia. *Journal of Archaeological Science* 47:164-178.
- Frahm, E.** 2014. Buying local or ancient outsourcing? Locating production of prismatic obsidian blades in Bronze-Age Northern Mesopotamia. *Journal of Archaeological Science* 41:605-621.
- Frahm, E.**, Schmidt, B., Gasparyan, B., Yeritsyan, B., Karapetian, S., Meliksetian, Kh., Adler, D.S. 2014. Ten seconds in the field: Rapid Armenian obsidian sourcing with portable XRF to inform excavations and surveys. *Journal of Archaeological Science* 41:333-348.

- Frahm, E.,** Doonan, R.C.P., Kilikoglou, V. 2014. Handheld portable X-ray fluorescence of Aegean obsidians. *Archaeometry* 56:228-260.
- Frahm, E.,** Feinberg, J.M. 2013. From flow to quarry: Magnetic properties of obsidian and changing the scales of archaeological sourcing. *Journal of Archaeological Science* 40:3706-3721.
- Frahm, E.,** Feinberg, J.M. 2013. Environment and collapse: Eastern Anatolian obsidians at Urkesh (Tell Mozan, Syria) and the third-millennium Mesopotamian urban crisis. *Journal of Archaeological Science* 40(4):1866-1878.
- Frahm, E.,** Feinberg, J.M. 2013. Empires and resources: Central Anatolian obsidian at Urkesh (Tell Mozan, Syria) during the Akkadian period. *Journal of Archaeological Science* 40(2):1122-1135.
- Frahm, E.,** Doonan, R.C.P. 2013. The technological versus methodological revolution of portable XRF in archaeology (review). *Journal of Archaeological Science* 40(2):1425-1434.
- Frahm, E.** 2013. Is obsidian sourcing about geochemistry or archaeology? A reply to Speakman and Shackley (commentary). *Journal of Archaeological Science* 40(2):1444-1448.
- Frahm, E.** 2013. Validity of “off-the-shelf” handheld portable XRF for sourcing Near Eastern obsidian chip debris. *Journal of Archaeological Science* 40(2):1080-1092.
- Frahm, E.** 2012. Distinguishing Nemrut Dağ and Bingöl A obsidians: Geochemical and landscape differences and the archaeological implications. *Journal of Archaeological Science* 39:1435-1444.
- Frahm, E.** 2012. Evaluation of archaeological sourcing techniques: Reconsidering and re-deriving Hughes’ four-fold assessment scheme. *Geoarchaeology: An International Journal* 27(2):166-174.
- Frahm, E.** 2012. Non-destructive sourcing of Bronze-Age Near Eastern obsidian artefacts: redeveloping and reassessing electron microprobe analysis for obsidian sourcing. *Archaeometry* 54(4):623-642.

Book Sections

- Healey, H., **Frahm, E.** In press. Chapter on the lithic assemblage at Tell Atchana and its geological sources. *Tell Atchana, Ancient Alalakh, Volume 2* (K. Aslihan Yener, editor).
- Frahm, E.** 2016. Scanning electron microscopy (SEM). *Encyclopedia of Geoarchaeology* (A. Gilbert, editor), Springer, pp. 755-764.
- Frahm, E.** 2015. Scanning electron microscopy (SEM). *Archaeology of Food: An Encyclopedia* (K. Bescherer Metheny and M.C. Beaudry, editors), Vol. 2, Alta Mira, pp. 450-451.
- Frahm, E.** 2014. Keeping up with the excavations: Rapid obsidian sourcing in the field with portable XRF. *The NARNIA Project: Integrating Approaches to Ancient Material Studies* (V. Kassianidou and M. Dikomitou-Eliadou, editors), University of Cyprus, pp. 262-272.
- Frahm, E.** 2014. Chapter 8: What constitutes an obsidian “source”? Landscape and geochemical considerations and their archaeological implications. *Twenty-Five Years on the Cutting Edge of Obsidian Studies* (C. Dillian, ed.), IAOS, pp. 49-70.
- Frahm, E.** 2014. Chapter 19: Fifty years of obsidian sourcing in the Near East: Considering the archaeological *zeitgeist* and legacies of Renfrew, Dixon, and Cann. *Twenty-Five Years on the Cutting Edge of Obsidian Studies* (C. Dillian, editor), IAOS, pp. 169-188.
- Frahm, E.** 2013. Scanning electron microscopy (SEM): Applications in archaeology. *Encyclopedia of Global Archaeology* (C. Smith, editor), Springer Press, pp. 6487-6495.

TEACHING

Instructor of Record

Yale University

Geoarchaeology

Introduction to Archaeological Laboratory Sciences

University of Minnesota

Introduction to Archaeology (ANTH 3001)
Anthropology of the Modern Middle East (ANTH 3021W/5021W)
Analysis of Stone Tool Technology (ANTH 5269)
Electron Microprobe Theory & Practice (ESCI/MATS 5353)
Geoarchaeology (ANTH 5990 & ESCI 5980)

Field Courses & Schools

Contributor/Staff, Field School in Armenian Prehistory, University of Connecticut — 2011, 2015-17
Co-organizer & Instructor, Outside the Lab: pXRF in the Field - Planning and Undertaking *In Situ* Geochemical Surveys, a week-long Marie Curie course at archaeological sites in Cyprus — 2013
Co-organizer & Contributor, Magnetic and Geochemical Characterization of *In Situ* Obsidian, New Mexico, a four-week field school held within the framework of the Keck Consortium — 2013

Marie Curie Short Courses

Co-organizer & Instructor, Introduction to Portable XRF in Archaeology, a five-day course held at the University of Sheffield within the framework of the NARNIA Project — 2013
Experimental Archaeology Facilitator, Introduction to the Archaeometallurgy of Cyprus, a five-day course held at the University of Cyprus within the framework of the NARNIA Project — 2012
Instructor, Understanding Archaeological Ceramic Research Design, a five-day course held at the University of Sheffield within the framework of the NARNIA Project — 2012

Other Teaching

Co-organizer & Instructor, Introduction to Portable XRF in the Earth, Environmental, and Archaeological Sciences, a two-day workshop at the University of Minnesota — 2015
Advisor, Laboratory Methods in Archaeology (ANTH 4007) — 2011
Curriculum Developer, Energy and the Environment (PHYS 1001W) — 2001, 2002
Teaching Assistant, Energy and the Environment (PHYS 1001W) — 2000-2001
Award: Outstanding Teaching Assistant, University of Minnesota — 2001

Select Guest Lectures

Course: Human Ecology, Yale University — 2017
Course: Ancient Civilizations of Mesoamerica, Yale University — 2017
Course: Microarchaeology, University of Minnesota — 2016
Course: Archaeological Science, Franklin & Marshall College — 2014
Course: Science, Nationalism, Ethics, and Cultural Property, Carleton College — 2014
Course: Material Culture, University of Manchester — 2012
Course: Anthropology of the Middle East, University of Minnesota — 2008
Course: Analysis of Stone Tool Technology, University of Minnesota — 2008

Education Coursework

Pedagogy for Anthropology (ANTH 8217), University of Minnesota — 2001
Topics in Curriculum and Instruction (C&I 5540), University of Minnesota — 1999, 2000

RESEARCH & FIELDWORK

Pleistocene Archaeology, Geochronology, and Environment of the Southern Caucasus (PAGES) Project, director: Keith Wilkinson (University of Winchester) — 2016-Present
Lithic Residue Analysis, co-PI with Gilliane Monnier (University of Minnesota) — 2015-Present
Kenyan Obsidian Resources and Landscapes (KORAL), co-director with Christian Tryon (Harvard University), studying Late Stone Age pastoralist/forager-fisher interactions — 2014-Present

Stone Age of the Vorotan River Valley Project and Tübingen-Armenian Paleolithic Project (TAPP), PIs include Andrew Kandel (Tübingen) and Boris Gasparyan (IAE) — 2012-Present

Palaeolithic Populations in Armenia and Turkey: Expanding Archaeological Understanding (PLATEAU) Project, director: Philip Glauberman (Middle East Technical University) — 2012-Present

New Archaeological Research Network for Integrating Approaches to Ancient Material Studies in the Eastern Mediterranean (NARNIA) Project, Work Package 7 co-PI with Roger Doonan (University of Sheffield), project coordinator: Vasiliki Kassianidou (University of Cyprus) — 2012-2013

Obsidian Resources and Landscapes of Palaeolithic Armenia, co-director with Daniel Adler (UConn) and Boris Gasparyan (Institute of Archaeology and Ethnography, Armenia) — 2011-Present

Hrazdan Gorge Palaeolithic Project, directors: Daniel Adler (UConn) and Boris Gasparyan (Institute of Archaeology and Ethnography, Armenia) — 2011-Present

Obsidian Technology and Trade in Northern Mesopotamia, project collaborators: Stuart Campbell and Elizabeth Healey (University of Manchester) — 2011-2013

Magnetic Obsidian: Lithic Technology and Exchange Networks (MOLTEN) Project, co-director with Joshua Feinberg (Institute for Rock Magnetism, University of Minnesota) — 2008-Present

Obsidian Artifact Hydration: Chronology and Palaeoenvironment, collaborator: Phillip D. Ihinger (University of Wisconsin-Eau Claire) — 2008-2011

Ceramics at Tell Mozan: Chronology and Technology, collaborators: Marianna Nikolaidou (UCLA), Marilyn Kelly-Buccellati (Cal State), and Joshua Feinberg (Minnesota) — 2006-2011

Bronze-Age Obsidian Industry of Tell Mozan, site directors: Giorgio Buccellati (UCLA) and Marilyn Kelly-Buccellati (California State University, Los Angeles) — 2005-2010

Old Copper Culture Project, director: George Rapp (University of Minnesota-Duluth) — 2001-2003

Miscellaneous research/fieldwork in England, Greece, Cyprus, Armenia, Minnesota, and Oregon

ADVISING & MENTORING

Master's Advising

Michele Stillingner, Department of Anthropology, University of Minnesota — 2011-2013
Co-advisor: Katherine Hayes, Department of Anthropology, University of Minnesota
Award: University of Minnesota's Distinguished Master's Thesis in the Social Sciences

Select Undergraduate Mentoring

Michelle Muth, Rice University, co-mentor: Joshua Feinberg (Minnesota) — 2013
Giselle Conde, UW-Eau Claire, co-mentor: Phillip Ihinger (UWEC) — 2008-2011
Steven Newman, University of Minnesota, co-mentor: Joshua Feinberg (Minnesota) — 2011
Amy Hillis, Macalester College, co-mentor: Joshua Feinberg (Minnesota) — 2010
Charissa Johnson, University of Minnesota, co-mentor: Joshua Feinberg (Minnesota) — 2008-2010

Select Laboratory Assistant Supervising

Travis Tenner (graduate student), Earth Sciences, University of Minnesota — 2006-2010
Meagan Thompson (undergraduate), Earth Sciences, University of Minnesota — 2004-2005
Samantha Heck (undergraduate), Earth Sciences, University of Minnesota — 2003-2004

LEADERSHIP & SERVICE

Recent Activities

Funding Committee Member; Anthropological, Environmental, and Geological Interdisciplinary Sciences (AEGIS) Group, University of Minnesota — 2016
Outreach Committee Member; Anthropological, Environmental, and Geological Interdisciplinary Sciences (AEGIS) Group, University of Minnesota — 2015-2016

Volunteer on a project to test lead and other toxic metals in Minneapolis-St. Paul neighborhoods, including Soil Kitchen community outreach events with free soil sample testing — 2015-2016
Mentoring/advising via Grinnell's First Generation College Students organization — 2014-2016

Program Evaluation

Volunteer on the evaluation team for the Science Museum of Minnesota's Community Partnerships Serving Science Project with local science-based organizations and clubs — 2003-2007

Professional Society Leadership

Vice President & Executive Board (2011-2012), *President & Chief Executive Officer* (2012-2014), and *Past President & Executive Board* (2014-2015), International Association for Obsidian Studies
Co-chair, Geoarchaeology Interest Group, Society for American Archaeology — 2009-2010
Student Representative, Management Board, GSA Archaeological Geology Division — 2005-2009

Departmental Committees

Analytical Facilities Committee, Earth Sciences, University of Minnesota — 2003-2011
Departmental Safety Committee, Earth Sciences, University of Minnesota — 2003-2011

Manuscript & Grant Reviewing

Manuscript reviewer — *Journal of Archaeological Science* (n=12); *Journal of Field Archaeology* (1);
ACS Books' Archaeological Chemistry (2); *Archaeometry* (2); *Antiquity* (1); *Geoarchaeology* (3);
PLoS ONE (1); 7th International Conference on the Chipped and Ground Stone Industries of the
PPN Proceedings (1); *PaleoAnthropology* (2); *American Mineralogist* (2); British Archaeological
Reports (1); *Journal of Archaeological Science: Reports* (9); *Quaternary Research* (2); *Scientific
Reports* (2); *STAR* (1); *Quaternary International* (1)
Grant reviewer — NSF Doctoral Dissertation Improvement Grant Program (n=2); NSF Major
Research Instrumentation Grant Program (1); Leakey Foundation (1)

Conference Session Organization

Obsidian from Magma to Artifact: Geological and Archaeological Perspectives, Oral and Poster
Sessions, Geological Society of America Meeting, co-organized with Joshua Feinberg — 2009

Select Other Activities

Collected and shared archaeological research news at the Geo • Arch • Sci website — 2007-2013
Gave high-school students tours of laboratories at the University of Minnesota — 2003-2011
Briefed the new Norwegian ambassador to Syria on the country and its cultures — 2008

AWARDS, SUPPORT, AND GRANTS

Honors & Awards

Best Dissertation Award in the Social and Behavioral Sciences and Education (2010-12), University
of Minnesota Graduate School; winner after nomination by the department — \$1000 — 2012
Graduate Research Award, Sigma Xi, University of Minnesota Chapter — \$500 — 2010

Scholarships

Full tuition and fees — Regents' Scholarship, University of Minnesota — 2003-2009

Consultancy

\$600,000+ of external support (commercial and academic consultancy) for a microscopy laboratory,
including funding for undergraduate and graduate research assistants — 2003-2011

Research & Travel Grants

\$4500 — Grants from the Michael Coe Fund, Yale University — awarded to Frahm to support
conference travel as well as fieldwork in Armenia — 2017

- A High-Resolution Chronology for Early Humans in the Southern Caucasus*. Investigator with Keith Wilkinson (University of Winchester) and Daniel Adler (UConn), Leverhulme Trust award of £387,792 to the PAGES Project; Leverhulme PDRA fellowship declined — 2016
- \$43,820 — Thermo Fisher Scientific Niton XL3t 950 Mining Analyzer. Co-PI with Joshua Feinberg (Earth Sciences), Gilbert Tostevin (Anthropology), and Kyungsoo Yoo (Soil, Water, & Climate); \$30,674 (70%) from Grant-in-Aid of Research, Artistry, and Scholarship Program, University of Minnesota and \$13,146 (30%) from multi-departmental matches — 2015
- \$2000 — Grant from the Alexander Dubcek Fund, Global Programs and Strategy Alliance, University of Minnesota — awarded to Frahm to support fieldwork in Armenia — 2014
- \$4000 — Visiting Research Fellowship, Institute for Rock Magnetism, funded by the NSF, awarded to Frahm to conduct magnetic sourcing of Armenian obsidian artifacts — 2013
- \$58,400 — *Magnetic and Geochemical Characterization of In Situ Obsidian*, Research Opportunities for Undergraduates Program; Keck Consortium Grant — co-authored with Robert Sternberg (Franklin & Marshall), Joshua Feinberg (Minnesota), and M. Steven Shackley (New Mexico) to support fieldwork in New Mexico and subsequent student projects — 2013-2014
- \$1060 — Learned Societies Grants, University of Sheffield — awarded to Frahm — 2012-2013
- \$32,000 — Award of \$19,200 (60%) from Grant-in-Aid of Research University of Minnesota and \$12,800 (40%) via matches — awarded to Hirschmann (Earth Sciences) and Frahm — 2009
- \$50,000 — Subsidy Program for Archaeological Research, Electron Microprobe Lab, Department of Earth Sciences, University of Minnesota — analytical subsidy awarded to Frahm — 2008-2009
- \$4700 — Research Grants, Graduate School & Anthropology, University of Minnesota — awarded to Frahm for dissertation research on the Tell Mozan lithic assemblage — 2008-2010
- \$20,000 — Award of \$10,000 (50%) from Grant-in-Aid of Research; University of Minnesota and \$10,000 (50%) via matches — awarded to Whitney (Earth Sciences) and Frahm — 2008
- \$1200 — Travel Grants, Anthropology, University of Minnesota — awarded to Frahm — 2007-2009
- \$200 — Student Travel Award, Archaeological Sciences of the Americas Symposium — 2004

SELECT PRESS COVERAGE

- Digs Reveal Stone-Age Weapons Industry With Staggering Output, *National Geographic*, [April 2015](#)
- Point-and-Shoot Obsidian Analysis, *Archaeology Magazine*, [January/February 2014](#)
- Year in Science (Five leading science themes of 2013), NBC News, [28 December 2013](#)
- Sourcing Obsidian Tools, *World Archaeology Magazine*, [October/November 2013](#)
- High-Definition Obsidian, *Archaeology Magazine*, [September/October 2013](#)
- How Today's Archaeologists Kick Indiana Jones' Butt, LiveScience, [30 September 2013](#)
- Archaeological Technology: Rapid Diggers, *The Economist*, Babbage Blog, [22 September 2013](#)
- BBC Radio Sheffield's "Expert Slot," *Paulette Edwards' Show*, 13 September 2013
- High-Definition Sourcing Pinpoints Ancient Obsidian Quarries, *EARTH Magazine*, [Sept 2013 issue](#)
- BBC World Service's *Science in Action* with Jon Stewart, "Cities," [week of 23 May 2013](#)
- A King's Overreaching, Traced in Black Glass, *Wall Street Journal*, [16 March 2013 issue](#)
- Fall of an Ancient Empire Linked to Crisis in Syria, *Nature News*, 21 Feb 2013, [doi:10.1038/nature.2013.12486](https://doi.org/10.1038/nature.2013.12486) and *Nature Middle East*, 18 Feb 2013, [doi:10.1038/nmiddleeast.2013.25](https://doi.org/10.1038/nmiddleeast.2013.25)
- Obsidian and Empire, *Archaeology Magazine*, [January/February 2013 issue](#)
- Glass Acts from an Ancient World, *The Star*, [10 September 2012 issue](#)

PRESENTATIONS, REPORTS, AND OTHER PUBLICATIONS

Book Review

- Frahm, E.** 2012. Invited review of *The Field Description of Igneous Rocks* (Jerram and Petford 2011), *Sedimentary Rocks in the Field: A Practical Guide* (Tucker 2011), and *Field Geophysics* (Milsom and Eriksen 2011). *Geoarchaeology* 27(2): 176-179.

Select Professional Bulletins

- Frahm, E.** 2013. Obsidian Sourcing, Dating, and Technology in the New World: Readings from American Antiquity and Latin American Antiquity (1962-2012). *International Association for Obsidian Studies Bulletin* 48 (Winter):21-26.
- Frahm, E.** 2011. Climate Change, Globalization, and Other “Modern” Issues in Ancient Syria (Feature Article). *Syrian Studies Association Bulletin* Volume 16, Issue 2.
- Frahm, E.,** Nikolaidou, M., Kelly-Buccellati, M. 2008. Using Image Analysis Software to Correlate Sherd Scans in the Field and X-ray Element Maps in the Laboratory. *Bulletin of the Society for Archaeological Sciences* 31(2):8-12.

Recent Conference Presentations (Last 5 Years)

- Brittingham, A., Hren, M.T., Kandel, A.W., **Frahm, E.,** Gasparyan, B., Hartman, G. 2016. Climate impact on human behavior in the Upper Paleolithic of the Armenian Highlands. Geological Society of America annual meeting, Denver, Colorado, 25-28 September.
- Adler, D.S., Wilkinson, K.N., Blockley, S., **Frahm, E.,** Mark, D., Mallol, C., Nahapetyan, S., Beverly, E., Gasparyan, B. 2016. Nor Geghi 1: Its Middle Pleistocene Geological Context and Relevance to Palaeolithic Archaeology in the Southern Caucasus. The INQUA-SEQS 2016 Meeting: Quaternary Sedimentation and Paleolithic Human Occupation in Armenia and South Georgia, Yerevan, Armenia, 3-11 September.
- Glauberman, P.J., Gasparyan, B., Wilkinson, K.N., **Frahm, E.,** Nahapetyan, S., Arakelyan, D., Raczynski-Henk, Y., Haxydosyan, H., Adler, D.S. 2016. Barozh 12: Stratified Middle Palaeolithic Occupations in an Upper Pleistocene Flood Plain Setting at the Edge of the Ararat Depression, Armenia. The INQUA-SEQS 2016 Meeting: Quaternary Sedimentation and Paleolithic Human Occupation in Armenia and South Georgia, Yerevan, Armenia, 3-11 September.
- Malinsky-Buller, A., Glauberman, P.J., Beverly, E., Sherriff, J., Wilkinson, K., **Frahm, E.,** Nahapetyan, S., Gasparyan, B., Adler, D.S. 2016. Alapars 1: A new long-term paleoenvironmental and prehistoric record from the Hrazdan Gorge, Armenia. The INQUA-SEQS 2016 Meeting: Quaternary Sedimentation and Paleolithic Human Occupation in Armenia and South Georgia, Yerevan, Armenia, 3-11 September.
- Glauberman, P.J., Gasparyan, B., Kuhn, S., Wilkinson, K., **Frahm, E.,** Raczynski-Henk, Y., Haydosyan, H., Nahapetyan, S., Arakelyan, D., Adler, D.S. 2016. Technological Divergence at the Crossroads? Comparing the Obsidian Middle Palaeolithic in the Armenian Volcanic Highlands and Central Anatolia. European Society for Human Evolution meeting, Madrid, 15-17 September.
- Kandel, A.W., Gasparyan, B., **Frahm, E.** 2016. Transport patterns of Armenian obsidian based on pXRF analysis of Upper Paleolithic artifacts from Aghitu-3 Cave. European Society for Human Evolution meeting, Madrid, 15-17 September.
- Adler, D.S., Wilkinson, K.N., Blockley, S., Mark, D., **Frahm, E.,** Schmidt-Magee, B., Glauberman, P., Raczynski-Henk, Y., Jöris, O., Gasparyan, B. 2015. Early Levallois Technology and the Transition from the Lower to Middle Palaeolithic in the Southern Caucasus. International ROCEEH Conference on Human Expansions, Frankfurt, Germany, 13-17 July.
- Frahm, E.** 2015. Exploring Hominin Cognition via Palaeolithic Obsidian Provisioning, Transport, and Technology. Session: Exotic, Lustrous, and Colorful: Obsidian in Symbol, Society and Ceremony. Society for American Archaeology Annual Meeting, San Francisco, 15-19 April.
- Frahm, E.,** Adler, D.S., Feinberg, J.M., Wilkinson, K., Gasparyan, B. 2015. Developing Geochemical and Magnetic Studies of Obsidian Lithic Assemblages: A Case Study in the Hrazdan Valley, Central Armenia. Paleoanthropology Society Meeting in San Francisco, 13-14 April.
- Adler, D.S., Wilkinson, K., Blockley, S., Mark, D., **Frahm, E.,** Schmidt-Magee, B.A., Glauberman, P.J., Raczynski-Henk, Y., Jöris, O., Gasparyan, B. 2015. Early Levallois Technology and the Transition from the Lower to Middle Paleolithic in the Southern Caucasus. Paleoanthropology Society Meeting in San Francisco, California, 13-14 April.
- Wilkinson, K., Adler, D.S., Blockley, S., **Frahm, E.,** Mark, D., Mallol, C., Nahapetyan, S., Gasparyan, B. 2015. Paleolandscape Context for Lower-Middle Paleolithic Activity in the Hrazdan Valley, Central Armenia. Paleoanthropology Society Meeting in San Francisco, 13-14 April.

- Glaubergerman, P., Gasparyan, B., Kuhn, S., Wilkinson, K., **Frahm, E.**, Raczynski-Henk, Y., Haydosyan, H., Napapetyan, S., Arakelyan, D., Adler, D.S. 2015. Hominin Population Dynamics and Dispersals in the Armenian Highlands and Anatolia: New Data from Barozh 12, a Middle Paleolithic Open-Air Site on the Edge of the Ararat Depression, Armenia. Paleanthropology Society Meeting in San Francisco, California, 13-14 April.
- Glaubergerman, P.J., Gasparyan, B., Wilkinson, K.N., **Frahm, E.**, Raczynski-Henk, Y., Adler, D.S. 2014. Dissecting Palimpsests at Barozh 12: Ongoing Research at a New Middle Palaeolithic Open-Air Site on the Edge of the Ararat Depression, Armenia. XVII Mundial Congress of Prehistoric and Protohistoric Sciences, World UISPP Congress, Burgos, Spain, 1-7 September.
- Frahm, E.** 2014. Where Obsidian Sourcing Isn't Long-Distance Trade: Landscapes, Provisioning Strategies, and Organization of Space. Session: The Gold Anniversary of Obsidian Sourcing: Fifty Years of Research Around the World. Society for American Archaeology, Austin, TX, 23-27 April.
- Feinberg, J.M., **Frahm, E.**, Muth, M.J. 2013. Magnetic Studies of Archaeological Obsidian: Variability of Eruptive Conditions within Obsidian Flows is Key to High-Resolution Artifact Sourcing. Session: Magnetic Studies of Igneous Processes. American Geophysical Union, Fall Meeting, San Francisco, California, 9-13 December.
- Stillinger, M.D., Feinberg, J.M., **Frahm, E.** 2013. Archaeomagnetic Dating of Bronze Age Pottery in Syria: New Intensity Data for 2300 to 1000 BCE. Magnetic Studies of Igneous Processes. American Geophysical Union, Fall Meeting, San Francisco, California, 9-13 December.
- Frahm, E.** 2013. Portable XRF Applications in Archaeology. Recent Developments in the Interdisciplinary Study of Ancient Materials from the Eastern Mediterranean Symposium. University of Cyprus, Nicosia, Cyprus, 7-8 November.
- Glaubergerman, P., Gasparyan, B., Wilkinson, K., **Frahm, E.**, Raczynski-Henk, Y., Adler, D.S. 2013. Barozh 12: A New Middle Palaeolithic Open-Air Site on the Edge of the Ararat Plain, Armenia. The Role of the Southern Caucasus on Early Human Evolution and Expansion: Refuge, Hub or Source Area? Tbilisi, Georgia, 15-20 October.
- Adler, D.S., Wilkinson, K., Blockley, S., Mark, D., Pinhasi, R., Schmidt, B., Yeritsyan, B., **Frahm, E.**, Gasparian, B. 2013. Early Evidence for Levallois Technology and the Transition from the Lower to Middle Palaeolithic in the Caucasus: New Data from Nor Geghi 1, Armenia. The Role of the Southern Caucasus on Early Human Evolution and Expansion: Refuge, Hub or Source Area? Tbilisi, Georgia, 15-20 October.
- Frahm, E.** 2013. Obsidian Resources and Landscapes of Palaeolithic Armenia: Human Mobility, Subsistence, and Settlement. Human Development in Landscapes Symposium, Christian-Albrechts-Universität zu Kiel, Kiel, Germany, 22 August.
- Kandel, A.W., Gasparyan, B., Bruch, A.A., Deckers, K., **Frahm, E.**, Nahapetyan, S., Weissbrod, L. 2013. Onwards and Upwards in the Caucasus: A Multidisciplinary Approach to Understanding the Lifeways of the Earliest Modern Humans in Armenia. European Geosciences Union, 8-12 April.
- Frahm, E.** 2013. Place, Practice, and pXRF: Merging Archaeological Fieldwork and Labwork. Session: Improving XRF Methods for the Geochemical Characterization of Archaeological Materials. Society for American Archaeology Annual Meeting, Honolulu, 3-7 April.
- Kandel, A.W., Gasparyan, B., **Frahm, E.**, Taller, A., Weissbrod, L. 2013. Latest Results from Aghitu-3, an Early Upper Paleolithic Cave Site in Armenia. Hugo Obermaier Society for Quaternary Research and Archaeology of the Stone Age Meeting, Vienna, 2-6 April.
- Frahm, E.** 2012. Environmental Archaeology and Obsidian Studies: Progress and Prospects. Session: A World of Obsidian: Sourcing, Dating, and Beyond. Society for American Archaeology Annual Meeting, Memphis, Tennessee, 18-22 April.
- Stillinger, M.D., Feinberg, J.M., **Frahm, E.** 2011. Magnetic Intensity Dating of Pottery from Ancient Urkesh, Tell Mozan, Syria. Students in Archaeology: Presentations of Recent Fieldwork. Archaeological Institute of America, Minnesota Chapter, 22 October.
- Stillinger, M.D., Feinberg, J.M., **Frahm, E.** 2011. Archaeointensity Dating of Pottery Sherds from the Ancient City of Urkesh, Tell Mozan, Syria. Session: Topics in Geoarchaeology: Reconstructions of Ancient Landscapes and Paleoenvironments. Geological Society of America Conference, Minneapolis, Minnesota, 9-12 October. *Richard Hay Student Award, Archaeological Geology Division of the Geological Society of America.*

Conde, G., Ihinger, P.D., **Frahm, E.** 2011. Chemical Exchange Accompanying Obsidian-Perlite Transition in the Natural Environment. Session: Volcanology. Geological Society of America Annual Meeting, Minneapolis, Minnesota, 9-12 October.

Recent Invited Lectures (Last 5 Years)

Putting People in Their Place: Landscape and Resource Use During Climatic, Social, and Evolutionary Change. Colorado College Anthropology Department seminar, 16 October 2015.

Putting Neanderthals in their Place: Mobility, Provisioning, and Landscape Use in Palaeolithic Armenia. Old World Archaeology Beer Hour, University of Connecticut, 4 December 2014.

Putting Neanderthals in their Place: Mobility, Provisioning, and Landscape Use in Palaeolithic Armenia. Archaeology Program Seminar Series, Harvard University, 3 December 2014.

Neanderthals and Magnetite: Spatial and Behavioral Patterns in Obsidian Magnetism at Gutansar Volcano, Armenia. Institute for Rock Magnetism Lecture, University of Minnesota, 15 May 2014.

Understanding Neanderthal Lifeways in Palaeolithic Armenia: Geochemistry, Magnetism, and Technology of Obsidian Tools. 16th Annual Geoarchaeology Lecture, Department of Earth and Environment, Franklin & Marshall College, 11 April 2014.

Stone Tools, Ray Guns, and Rock Magnetism: A Multidisciplinary Approach to Hominin Lithic Technology in Palaeolithic Armenia. Archaeological Sciences Graduate Group Colloquium, University of Minnesota, 18 April 2014.

Understanding Lifeways and Ecology in Palaeolithic Armenia: Geochemistry, Magnetism, and Technology of Neanderthals' Obsidian Tools. Carleton College, Geology Department Invited Lecture, 18 February 2014.

Stone Tools, Ray Guns, and Rock Magnetism: A Multidisciplinary Approach to Understanding Hominin Lifeways and Pleistocene Ecology in Palaeolithic Armenia. University of Iowa, Department of Earth and Environmental Sciences Seminar Series, 14 February 2014.

Spatial Patterning in Obsidian Magnetic Properties of the Gutansar Volcanic Complex in Armenia. Institute for Rock Magnetism Lecture, University of Minnesota, 24 July 2013.

Kandel, A.W., Gasparyan, B., Bruch, A.A., Deckers, K., **Frahm, E.**, Nahapetyan, S., Weissbrod, L. The Upper Paleolithic Settlement of the Armenian Highlands. Institute of Archaeology Lecture Series, Hebrew University, 30 April 2013.

Humans as a Geological Transport Mechanism: Tracing the Movement of Lithic Resources across the Ancient Near Eastern Landscape. Geological Society of Minnesota Lecture, 24 October 2011.

What Can Obsidian Reveal About Past Environments and Landscapes? Quaternary Paleoecology Seminar Series. Department of Earth Sciences, University of Minnesota, 28 September 2011.

No Matter How You Slice It: Stone Tools during the Bronze Age in Upper Mesopotamia. Archaeological Institute of America Lecture, Lawrence University, 9 May 2011.

Other Presentations (Last 5 Years)

Putting People in Their Place: Resources, Environment, and Land Use in Palaeolithic Armenia. University of Minnesota Archaeology Consortium seminar series, 16 October 2015.

Muth, M.J., Feinberg, J.M., **Frahm, E.**, Stillinger, M.D. Magnetic Differentiation of Obsidian Volcanism at Glass Buttes, Oregon. NSF-Research Experience for Undergraduates University of Minnesota, Earth Sciences Summer Internship Poster Session. 9 August 2013.

Conde, G., Ihinger, P.D., **Frahm, E.** Chemical Effects of Glass Hydration in the Natural Environment. University of Wisconsin-Eau Claire Student Research Day, 30 April 2012. *Award: First Place, Earth and Life Sciences.*

The Bronze-Age Obsidian Industry of Tell Mozan and Current Issues in Near Eastern Obsidian Sourcing. University of Minnesota Archaeology Consortium seminar series, 25 March 2011.

Discussion and analysis of "The Syrian Bride." Undergraduate Anthropology Club Movie Night, University of Minnesota, 24 March 2011.

Select Research Reports

Report on on-site geochemical surveying at Politiko-*Phorades* for the Archaeological Research Unit, University of Cyprus, 2013.

Report on on-site geochemical surveying and obsidian sourcing at Keryneia-*Achaea* for the 6th Ephoria of Prehistoric and Classical Antiquities in Patras, Greece, 2012.

Report on on-site geochemical surveying at Korinthos-*Archea* for the 4th Ephoria of Prehistoric and Classical Antiquities in Corinth, Greece, 2012.

Reports for the European Commission on Work Package 7 of the New Archaeological Research Network for Integrating Approaches to Ancient Material Studies network, 2012-2013.

Obsidian artifact source assignments for Kenan Tepe, Domuz Tepe, and Tell Atchana, 2011.

Research report for the International Institute for Mesopotamian Area Studies Board, 2008.

Obsidian Research. The Temple Terrace of Urkesh: An In-House Report on the 19th Season, 2007.

900+ entries and files for Unit J3, Urkesh Global Record on-line excavation database, 2006-2011.

600+ scientific reports for commercial and academic consultancy (~1-2 reports/week), 2001-2011.