

# Ellery Frahm

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Yale University, Anthropology Department  
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## CURRENT POSITIONS

*Director*, Yale Initiative for the Study of Ancient Pyrotechnology (Y-PYRO), Council on Archaeological Studies & Department of Anthropology, Yale University — 2017-Present  
*Research Scientist (Faculty)*, Department of Anthropology, Yale University — 2017-Present  
Hired as *Associate Research Scientist* in 2017 and promoted to *Research Scientist* in 2019  
*Lecturer (Secondary Appointment)*, Department of Anthropology, Yale University — 2017-Present  
*Curatorial Affiliate*, Anthropology Division, Peabody Museum of Natural History — 2018-Present  
*Core Faculty*, Council on Middle East Studies, MacMillan Center, Yale University — 2022-Present  
*Co-Editor-in-Chief*, Journal of Archaeological Science: Reports — 2021-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., Physics, Grinnell College, Grinnell, Iowa — 1999

## PAST POSITIONS

*Senior Research Associate*, Department of Anthropology, University of Minnesota — 2017-2018  
*Assistant Professor (Temporary)*, Department of Anthropology, University of Minnesota — 2016  
*Research Fellow*, Department of Anthropology, Harvard University — 2015-2016  
*Postdoctoral Associate*, Department of Anthropology, University of Minnesota — 2015-2016  
*Research Associate*, Institute for Rock Magnetism, Department of Earth and Environmental Sciences, University of Minnesota — 2014  
*Visiting Researcher*, The Role of Culture in Early Expansions of Humans (ROCEEH), Heidelberg Academy of Sciences and Humanities at the University of Tübingen — 2014  
*Marie Curie Experienced Research Fellow*, Archaeology Dept, University of Sheffield — 2012-2014  
Two-year postdoctoral fellowship with the transnational Marie Curie network *New Archaeological Research Network for Integrating Approaches to Ancient Material Studies* (NARNIA)  
*Graduate Faculty*, Department of Anthropology, University of Minnesota — 2011-2013  
*Lecturer*, Department of Anthropology, University of Minnesota — 2011  
*Research Associate/Senior Fellow/Fellow/Assistant*, Department of Earth and Environmental Sciences, University of Minnesota — 2001-2011  
Served as the Manager and Principal Analyst of a state-of-the-art electron microscopy and X-ray microanalysis lab; hired as a half-time *Research Assistant* in 2001 and promoted to a full-time *Research Fellow* in 2003, *Senior Research Fellow* in 2008, and *Research Associate* in 2010

## PUBLICATIONS

### Peer-Reviewed Journal Articles

\* Denotes student author

Kuhn, E.E.H.\*, Choi, M.\*, Wuellner, E.\*, Brody, L.R., **Frahm, E.** Establishing the Baltic origins of archaeological amber beads from Dura-Europos (Syria) using Non-Destructive DRIFTS. Under review. Preprint available at SSRN: <http://dx.doi.org/10.2139/ssrn.4207806>.

October 2022

- McMillan, R., Waber, N., Ritchie, M., **Frahm, E.** 2022. Introducing SourceXplorer, an open-source statistical tool for guided lithic sourcing. *Journal of Archaeological Science*, 144, 105626, <https://doi.org/10.1016/j.jas.2022.105626>.
- Frahm, E.**, Carolus, C.M.\*, Cameron, A.\*, Berner, J.\*, Brown, H.\*, Cheng, J.\*, Kalodner, J.\*, Leggett, J.\*, Natale, A.\*, Seibert, S.\*, Sparks-Stokes, D.\*, Wuellner, E.\* 2022. Introducing the BRICC (Bricks and Rocks for Instruments' Ceramic Calibration) sets: Open-source calibration materials for quantitative X-ray fluorescence analysis. *Journal of Archaeological Science: Reports*, 43, 103443.
- Frahm, E.**, Adler, D.S., Gasparyan, B., Luo, B., Mallol, C., Pajović, G., Tostevin, G.B., Yeritsyan, B., Monnier, G. 2022. Every contact leaves a trace: documenting contamination in lithic residue studies at the Middle Palaeolithic sites of Lusakert Cave 1 (Armenia) and Crvena Stijena (Montenegro). *PLoS ONE*, <https://doi.org/10.1371/journal.pone.0266362>
- Gill, J.\*, Adler, D.S., Raczynski-Henk, Y., **Frahm, E.**, Sherriff, J.E., Wilkinson, K.N., Gasparyan, B. 2021. The techno-typological and 3D-GM analysis of Hatis-1: A Late Acheulian open-air site on the Hrazdan-Kotayk Plateau, Armenia. *Journal of Palaeolithic Archaeology* 4, 29, <https://doi.org/10.1007/s41982-021-00105-5>
- Frahm, E.**, Martirosyan-Olshansky, K., Sherriff, J.E., Wilkinson, K.N., Glauberman, P., Raczynski-Henk, Y., Gasparyan, B., Adler, D.S. 2021. Geochemical changes in obsidian outcrops with elevation at Hatis volcano (Armenia) and corresponding Lower Palaeolithic artifacts from Nor Geghi 1. *Journal of Archaeological Science: Reports* 38, 103097, [doi.org/10.1016/j.jasrep.2021.103097](https://doi.org/10.1016/j.jasrep.2021.103097)
- Frahm, E.**, Carolus, C.M.\* 2021. End of the line? Obsidian at Umm Qseir, a Halafian farmstead in the Syrian steppe. *Journal of Archaeological Science: Reports* 38, 103035, <https://doi.org/10.1016/j.jasrep.2021.103035>
- Malinsky-Buller, A., Glauberman, P., Ollivier, V., Lauer, T., Timms, R., **Frahm, E.**, et al. 2021. Short-term occupations at high elevation during the Middle Paleolithic at Kalavan 2 (Republic of Armenia). *PLoS ONE* 16(2), e0245700, [doi.org/10.1371/journal.pone.0245700](https://doi.org/10.1371/journal.pone.0245700)
- Frahm, E.**, 2020. Variation in Nemrut Dağ obsidian at Pre-Pottery Neolithic to Late Bronze Age sites (or: all that's Nemrut Dağ obsidian isn't the Sicaksu source). *Journal of Archaeological Science: Reports* 32, 102438, [doi.org/10.1016/j.jasrep.2020.102438](https://doi.org/10.1016/j.jasrep.2020.102438)
- Malinsky-Buller, A., Glauberman, P., Wilkinson, K., Li, B., **Frahm, E.**, Gasparyan, B., Timms, R., Adler, D.S., Sherriff, J., 2020. Evidence for Middle Palaeolithic occupation and landscape change in Central Armenia at the open-air site at Alapars-1. *Quaternary Research*, 1-25, [doi.org/10.1017/qua.2020.61](https://doi.org/10.1017/qua.2020.61).
- Glauberman, P., Gasparyan, B., Wilkinson, K., **Frahm, E.**, Nahapetyan, S., Arakelyan, D., Raczynski-Henk, Y., Haydosyan, H., Adler, D. 2020. Late Middle Paleolithic Technological Organization and Behavior during MIS 3 at the Open-Air Site of Barozh 12, Armenia. *Journal of Palaeolithic Archaeology* 3, 1095–1148, [doi.org/10.1007/s41982-020-00071-4](https://doi.org/10.1007/s41982-020-00071-4).
- Frahm, E.**, Owen Jones, C.\*, Corolla, M.\*, Wilkinson, K.N., Sherriff, J.E., Gasparyan, B., Adler, D.S. 2020. Comparing Lower and Middle Palaeolithic lithic procurement behaviors within the Hrazdan basin of central Armenia. *Journal of Archaeological Science: Reports* 32, 102389, [doi.org/10.1016/j.jasrep.2020.102389](https://doi.org/10.1016/j.jasrep.2020.102389).
- Gasparyan, B., Adler, D.S., Wilkinson, K.N., Nahapetyan, S., Egeland, C.P., Glauberman, P.J., Malinsky-Buller, A., Arakelyan, D., Arimura, M., Dan, R., **Frahm, E.**, Haydosyan, H., Azizbekyan, H., Petrosyan, A., Kandel, A.W. 2020. Study of the Stone Age in the Republic of Armenia, Part 1: Lower Palaeolithic. Special Issue: Armenian Archaeology – Past Experiences and New Achievements. *ARAMAZD: Armenian Journal of Near Eastern Studies* 10, 1-60.
- Frahm, E.**, Tryon, C.A. 2019. Origin of an Early Upper Palaeolithic obsidian burin at Ksar Akil (Lebanon): evidence of greater connectivity ahead of the Levantine Aurignacian? *Journal of Archaeological Science: Reports* 28, 102060, [doi.org/10.1016/j.jasrep.2019.102060](https://doi.org/10.1016/j.jasrep.2019.102060).
- Frahm, E.** 2019. Introducing the Peabody-Yale Reference Obsidians (PYRO) sets: Open-source calibration and evaluation standards for quantitative X-ray fluorescence analysis, *Journal of Archaeological Science: Reports* 27, 101957, [doi.org/10.1016/j.jasrep.2019.101957](https://doi.org/10.1016/j.jasrep.2019.101957).
- Frahm, E.**, Kandel, A.W., Gasparyan, B. 2019. Upper Palaeolithic settlement and mobility in the

- Armenian highlands: agent-based modeling, obsidian sourcing, and lithic analysis at Aghitu-3 Cave. *Journal of Paleolithic Archaeology* 2: 418-465, doi.org/10.1007/s41982-019-00025-5.
- Frahm, E.**, Lassen, A.W., Wagensohn, K. 2019. Gods and demons, Anatolia and Egypt: Obsidian sourcing of Mesopotamian amulets and cylinder seals using portable XRF. *Journal of Archaeological Science: Reports* 24: 978-992, doi.org/10.1016/j.jasrep.2019.03.025.
- Frahm, E.**, Brody, L.R. 2019. Origins of obsidian at the “Pompeii of the Syrian Desert:” Sourcing lithic artifacts from the Yale-French excavations at Dura-Europos. *Journal of Archaeological Science: Reports* 24, 608-622, doi.org/10.1016/j.jasrep.2019.02.024.
- Frahm, E.**, Tryon, C.A. 2018. Origins of Epipalaeolithic obsidian artifacts from Garrod’s excavations at Zarzi cave in the Zagros foothills of Iraq. *Journal of Archaeological Science Reports* 21, 472-485, doi.org/10.1016/j.jasrep.2018.08.001.
- Frahm, E.** 2018. Ceramic studies using portable XRF: From experimental tempered ceramics to imports and imitations at Tell Mozan, Syria. *Journal of Archaeological Science* 90, 12-38, doi.org/10.1016/j.jas.2017.12.002.
- Frahm, E.**, Tryon, C.A. 2018. Later Stone Age toolstone acquisition in the Central Rift Valley of Kenya: Portable XRF of Eburran obsidian artifacts from Leakey’s excavations at Gamble’s Cave II. *Journal of Archaeological Science: Reports* 18, 475-486, doi.org/10.1016/j.jasrep.2018.01.042.
- Monnier, G., **Frahm, E.**, Luo, B., Missal, K.\* 2018. Developing FTIR microspectroscopy for analysis of animal-tissue residues on stone tools. *Journal of Archaeological Method and Theory* 25:1-44.
- 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. 2017. The earliest evidence for Upper Paleolithic occupation in the Armenian Highlands at Aghitu-3 Cave. *Journal of Human Evolution* 110:37-68.
- Frahm, E.**, Sherriff, J., Wilkinson, K.N., Beverly, E.J., Adler, D.S., Gasparyan, B. 2017. Ptghni: A new obsidian source in the Hrazdan River Basin, Armenia. *Journal of Archaeological Science: Reports* 14:55-64.
- Frahm, E.**, Hauck, T.C. 2017. Origin of an obsidian scraper at Yabroud Rockshelter II (Syria): Implications for Near Eastern social networks in the early Upper Palaeolithic. *Journal of Archaeological Science: Reports* 13:415-427.
- 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, doi.org/10.1016/j.jasrep.2017.01.001.
- 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, doi.org/10.1016/j.jas.2016.12.004.
- Glauber, P., Gasparyan, B., Wilkinson, K.N., **Frahm, E.**, Raczyński-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, E. 2016. Caucasus connections? New data and interpretations for Armenian obsidian in Northern Mesopotamia. *Journal of Arch. 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.A.,\* 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, doi.org/10.1016/j.jhevol.2015.10.008.
- 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., Glauberman, P.J.,\* Raczyński-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, doi.org/10.1126/science.1256484.
- 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.A.,\* 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? (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.

### Non-Reviewed Articles

- Frahm, E.** 2020. What is (and isn't) the “moonstone obsidian” from Sevan, Armenia? *International Association for Obsidian Studies Bulletin* 65:22-27.
- Frahm, E.** 2017. First hands-on tests of an Olympus Vanta portable XRF analyzer to source

Armenian obsidian artifacts. *International Association for Obsidian Studies Bulletin* 58:8-23.

- Frahm, E.,** Feinberg, J.M. 2015. Adding geochemistry to the IRM toolkit: Acquisition of a portable X-ray fluorescence spectrometer. *The IRM Quarterly* 25(4):1,9-11.
- 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* 48:21-26.
- Frahm, E.** 2013. Gegham style: Applying obsidian magnetic studies in central Armenia. *The IRM Quarterly* 23(2):2-3.
- Frahm, E.** 2011. Climate change, globalization, and other “modern” issues in ancient Syria (feature article). *Syrian Studies Association Bulletin* 16(2).
- Frahm, E.,** Nikolaidou, M., Kelly-Buccellati, M. 2008. Using image analysis software to correlate sherds in the field and X-ray element maps in the laboratory. *Bulletin of the Society for Archaeological Sciences* 31(2):8-12.
- Frahm, E.** 2007. Microanalytical characterization of native copper artifacts in order to differentiate raw material sources. *Microscopy and Microanalysis* 13(S02):1108-1109.

### Book Sections

- Frahm, E.,** Adler, D.S., Gasparian, B. Forthcoming. Obsidian use during the Palaeolithic in the Armenian Highlands. *Sourcing Obsidian* (F.-X. Le Bourdonnec, M. Orange, M.S. Shackley, eds.).
- Frahm, E.** Forthcoming. Scanning electron microscopy (SEM). *Encyclopedia of Geoarchaeology, 2nd Edition* (A. Gilbert, P. Goldberg, R.D. Mandel, V. Aldeias, eds.), Springer.
- Frahm, E.** 2020. Geological sources of Tell Atchana obsidian artifacts. *Tell Atchana, Alalakh, Volume 2: The Late Bronze Age II City, 2006-2010 Excavation Seasons* (K.A. Yener, M. Akar, M.T. Horowitz, editors), pp. 177-187. Koç University Press.
- Frahm, E.** 2019. Seen through a glass darkly: Reexamining connections between Mesopotamia and the Caucasus. *Between Syria and the Highlands: Studies in Honor of Giorgio Buccellati and Marilyn Kelly-Buccellati* (Stefano Valentini, Guido Guarducci, editors), SANEM 3: Studies on the Ancient Near East and the Mediterranean, pp. 198-211.
- 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, editor), 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.

### Book Reviews

- Frahm, E.** 2021. Invited review of *The Archaeologist's Laboratory: The Analysis of Archaeological Evidence, 2nd Ed.* (Banning 2020). *American Antiquity*, <https://doi.org/10.1017/aaq.2021.15>
- 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.

## TEACHING

### Instructor of Record

#### *Yale University (alphabetical order)*

Archaeological Ceramics II (ANTH 390/ARCG 386 & ANTH/ARCG 786)  
Archaeology of Death (ANTH/ARCG 953 reading course)  
Geoarchaeology (ANTH/ARCG/ESC 336/636)  
Introduction to Archaeological Lab Sciences (ANTH/ARCG 316L & 716L)  
Introduction to Experimental Archaeology (ANTH/ARCG 253 & 559)  
Magnetism in Archaeology and Paleoanthropology (ARCG 200/630 & ANTH 201/645)  
Palaeolithic Archaeology (ANTH/ARCG 953 reading course)  
Western Asia during the Hallstatt Plateau (ANTH/ARCG 953 reading course)

#### *University of Minnesota (alphabetical order)*

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

### Field Courses & Schools

*Instructor*, Ground-Penetrating Radar, Cotzumalhuapa, Guatemala, Yale University — 2018  
*Field Staff*, Field School in Armenian Prehistory, University of Connecticut — 2011, 2015-2017  
*Co-organizer*, Planning and Undertaking *In Situ* Geochemical Surveys, Cyprus — 2013  
*Co-organizer*, Magnetic and Geochemical Characterization of Obsidian, New Mexico — 2013

### Workshops

*Co-organizer*, Spectroscopy of Cultural Heritage Materials: Choosing the Right Technique(s), Peabody Museum of Archaeology and Ethnology, Harvard University — 2018  
*Co-organizer*, Introduction to Portable XRF in Archaeology, University of Sheffield — 2013  
*Experimental Archaeology Facilitator*, Introduction to the Archaeometallurgy of Cyprus — 2012  
*Instructor*, Understanding Archaeological Ceramic Research Design, University of Sheffield — 2012

### Other Teaching

*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

#### *Yale University*

Courses: Archaeology of Trade and Exchange, Human Ecology, Archaeological Ceramics, Lithic Technology, Ancient Civilizations of Mesoamerica, Great Hoaxes and Fantasies in Archaeology, Seals and Sealing in the Ancient Near East, Anthropology of Mobile Societies, Human Evolution, Great Civilizations of the Ancient World

#### *University of Minnesota*

Courses: Microarchaeology (2016), Anthropology of the Modern Middle East (2008), Analysis of Stone Tool Technology (2008)

#### *Other institutions*

Courses: Agent-Based Modeling (Senckenberg Museum, Frankfurt, 2019), Archaeological Science (Franklin & Marshall, 2014), Science, Nationalism, Ethics, and Cultural Property (Carleton College, 2014), Material Culture (University of Manchester, 2012)

## Select Professionalization

Faculty Teaching Academy, Center for Teaching and Learning, Yale University — 2018-2019

Summer Institute on Course (Re)Design, Center for Teaching and Learning, Yale University — 2018

## Graduate Coursework in Education

Pedagogy for Anthropology (ANTH 8217), University of Minnesota — 2001

Topics in Curriculum and Instruction (C&I 5540), University of Minnesota — 1999, 2000

## RESEARCH & FIELDWORK

*TransCause: Investigating Pleistocene population dynamics in the Southern Caucasus*, ERC-funded project; director: Ariel Malinsky-Buller (Hebrew University of Jerusalem) — 2020-Present

*Rhyolite sourcing at Liangchengzhen and other archaeological sites, Shandong Province, China*, co-PI with Anne Underhill (Yale) and Geoffrey Cunnar (State of New Mexico) — 2019-Present

*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) — 2015-2016

*Reconstructing Prehistoric Lifeways at the Bremer Site, Dakota County, Minnesota, through Microarchaeology*, director: Gilliane Monnier (University of Minnesota) — 2015-2016

*Kenyan Obsidian Resources and Landscapes (KORAL)*, co-director with Christian Tryon (Harvard University), studying Late Stone Age pastoralist/forager-fisher interactions — 2014-Present

*Tübingen-Armenian Paleolithic Project (TAPP)*, PIs include Andrew Kandel (Tübingen University) and Boris Gasparyan (Institute of Archaeology and Ethnography, Armenia) — 2012-Present

*Palaeolithic Populations in Armenia and Turkey: Expanding Archaeological Understanding (PLATEAU) Project*, director: Philip Glauberman (Middle East Technical University) — 2012-2015

*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) — 2012-2014

*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, 2017

*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

### Yale University

#### Master's Level

Kefilwe Rammutloa, thesis reader, 2017-2018

Kathryn de Luna, thesis reader, 2018-2019  
Rachel Logan, thesis reader, 2018-2019  
Patrick Wiley, thesis reader, 2018-2019  
Brian Fiallo, thesis reader, 2019-2021  
Elora Kuhn, thesis reader, 2019-2021  
MinJoo Choi, thesis reader, 2019-2021  
Elizabeth Wuellner, thesis reader, 2019-2022

*Post-Baccalaureate Research Education Program (PREP)*  
Dominique Sparks-Stokes, program mentor, 2020-2021

#### *Doctoral Level*

Lingyi Zeng (deceased), committee member, 2017-2020  
Qingzhu Wang, committee member, 2018-2021  
Michael Corolla, committee member, 2018-Present  
Hannah Keller, committee member, 2019-Present  
Christina Carolus, committee member, 2019-Present  
Adrian Natale, committee member, 2020-Present  
Alyssa Enny, committee member, 2021-Present  
Jing Cheng, committee member, 2021-Present  
Qi Zhou, committee member, 2022-Present

#### *Undergraduates*

Daniel Qin, senior thesis, 2022  
Sophia DeSchiffart, senior thesis, 2021-2022  
*Award: Michael D. Coe Prize for Best Senior Thesis*  
Caderyn Owen-Jones, senior thesis, 2018-2019  
*Award: Michael D. Coe Prize for Best Senior Thesis*  
James Wilkins, senior thesis, 2018-2019

## **University of Minnesota**

#### *Master's Level*

Michele Stillinger, co-advisor, 2011-2013  
*Award: University of Minnesota's Distinguished Master's Thesis in the Social Sciences*

#### *Undergraduates & Interns*

Michelle Muth, summer intern, Rice University, 2013  
Steven Newman, University of Minnesota, 2011  
Amy Hillis, summer intern, Macalester College, 2010  
Giselle Conde, University of Wisconsin-Eau Claire, 2008-2011  
Charissa Johnson, University of Minnesota, 2008-2010

## **LEADERSHIP & SERVICE**

### **Program Evaluation**

Evaluation team member 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

## University Committees

Provost's Committee on Conflict of Interest, Yale University — 2021-Present

## Departmental Committees

Senior Essay Prize Selection Committee, Anthropology, Yale University — 2018

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=24); *Journal of Archaeological Science: Reports* (32); *Journal of Field Archaeology* (2); *American Chemical Society's Archaeological Chemistry* (2); *Archaeometry* (6); *Antiquity* (4); *Geoarchaeology* (5); *PaleoAnthropology* (2); *American Mineralogist* (2); *PLoS ONE* (2); *British Archaeological Reports* (1); *Quaternary Research* (2); *Scientific Reports* (2); *STAR: Science & Technology of Archaeological Research* (1); *Quaternary International* (3); *Archaeological and Anthropological Sciences* (3); *Applied Radiation and Isotopes* (2); *Journal of Human Evolution* (2); *Bulletin of the Peabody Museum of Natural History* (1); *American Anthropologist* (2); *Microscopy & Microanalysis* (1); *Open Archaeology* (1); *Gazi University Journal of Science* (1); *Journal of Archaeological Method and Theory* (1); *Neolithic in Syria*, SENEPSE Special Issue (1); *Journal of African Archaeology* (2)

Grant reviewer — NSF Doctoral Dissertation Research Improvement Program (n=2); NSF Major Research Instrumentation Program (1); NSF Archaeometry Program (1); NSF Archaeology Program (3); Leakey Foundation (3)

## Conference Session Organization

Archaeometry in the Service of African Archaeology, Society of Africanist Archaeologists (SAfA) 24th biennial conference — 2018

What's Hot in Pyrotechnology? Controlling Fire from Campfires to Craftspeople. Society for American Archaeology (SAA), co-organized with Lingyi Zeng and Michelle Young — 2018

Obsidian from Magma to Artifact: Geological and Archaeological Perspectives. Geological Society of America (GSA) annual meeting, co-organized with Joshua Feinberg — 2009

## Select Other Activities

Mentor, Yale's First-Generation and/or Low-Income (FGLI) support network, part of the Yale FGLI Advocacy Movement & Yale Quest Scholars Network — 2020-Present

Archaeology Faculty Coordinator, Anthropology Anti-Racist Reading Group — 2020-Present

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

Testing for lead and other toxic metals in Minneapolis-St. Paul neighborhoods — 2015-2016

Mentoring/advising via Grinnell's First Generation College Students organization — 2014-2016

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 an analytical laboratory, including funding for undergraduate and graduate research assistants — 2003-2011

## Research, Teaching, and Travel Grants

\$139,900 — Instructional equipment grant, Provost for Research Office, Yale University — 2021

\$25,000 — CURE (Course-based Undergraduate Research Experiences) class development grant, Howard Hughes Medical Institute's Campus Grant to Yale University — 2018-2019

\$45,000 — Instructional equipment grant, Provost for Research Office, Yale University — 2017

\$8550 — Total grants from the Albers-Coe-Hazard Funds, Yale University — awarded to Frahm to support conference travel, field equipment, and fieldwork — 2017-2018

*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 and Environmental Sciences, University of Minnesota — 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

Pyrotechnology (Firemaking), Ologies Podcast with Alie Ward, [28 September 2021](#).

Who were we and what were we thinking? A return to offices frozen in time, *The Washington Post*, Maura Judkis' Style column, [28 April 2021](#).

The Real Dragonglass: Not Just the Stuff of Fantasy, Obsidian Chronicles Our Deep Past, *Discover Magazine*, June 2019 issue — excerpts online as "The Real Story Behind Game of Thrones' Dragonglass," *The Crux*, *Discover Blogs*, [12 April 2019](#).

Study uses fire to examine Kenyan migration patterns, Yale Daily News, [27 February 2018](#)

Tool sharpens focus on Stone Age networking in the Middle East, *Science News*, [23 May 2017](#)

Paleolithic Obsidian Transported Long Distances, *Archaeology Magazine* Headlines, 10 [May 2017](#)

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 Science & Tech, [22 Sept 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

### Select Conference Presentations

- Glauberman, P., Gasparyan, B., **Frahm, E.**, Wilkinson, K., Sherriff, J., Arakelyan, D., Nahapetyan, S., Adler, D., 2022. Update on Middle Paleolithic settlement dynamics in the Armenian Highlands. 63rd Conference of the Hugo Obermaier Society, Berlin.
- Kovach, T.Z., Raczynski-Henk, Y., **Frahm, E.**, Gill, J.P., Wilkinson, K.N., Petrosyan, A., Gasparyan, B., Adler, D.S. 2022. Preliminary Lithic Technological Analysis of Solak-1, an Open-air Upper Paleolithic site in the Armenian Highlands. Paleoanthropology Society Annual Meeting, Denver, Colorado. 22-23 March.
- Glauberman, P., Gasparyan, B., **Frahm, E.**, Wilkinson, K.N., Sherriff, J., Arakelyan, D., Nahapetyan, S., Adler, D.S. 2020. Middle Paleolithic technological organization and land use in Armenia, a preliminary synthesis. Hugo Obermaier Society for Quaternary Research and Archaeology of the Stone Age. *Conference cancelled due to COVID-19*.
- Frahm, E.** 2019. Imports vs. Imitations: A Case Study in Portable XRF for Ceramic Studies. Integrative Approaches to Ceramic Anthropology in Early China: New Directions in Pottery Research. Tang Center for Early China, Columbia University, 14-15 November.
- Glauberman, P., Gasparyan, B., Adler, D.S., Wilkinson, K.N. **Frahm, E.** 2019. Middle Paleolithic technological uniformity in the Armenian Highlands: implications for hominin population dynamics. International Symposium on Paleoanthropology in Commemoration of the 90th Anniversary of the Discovery of the First Skullcap of Peking Man. 2-4 December, Beijing, China.
- Malinsky-Buller, A., Sherriff, J., Glauberman, P., **Frahm, E.**, Petrosyan, A., Arakelyan, D., Timms, R., Hawkins, H. Blockley, S. Adigyozyan, A., Joannin, S., Gur-Arieh, S., Kesejyan, S., Shahinyan, S., Marreiros, J., Lauer, T., Pop, E., Knul, M., Triller, B., Ullman, M., Gasparyan, B. 2019. Ararat 1: A new Middle Palaeolithic cave in Ararat Depression, Armenia. ArmConference 2019: International Conference "Caves as Natural and Cultural Monuments" dedicated to the 35th anniversary of the Speleological Center of Armenia. 11-13 September, Yerevan, Armenia.
- Glauberman, P., Gasparyan, B., Adler, D.S., **Frahm, E.**, Wilkinson, K., Malinsky-Buller, A., Arakelyan, D., Nahapetyan, S. 2019. Beyond the Dripline: Middle Paleolithic Cave Sites and Landscape-Scale Settlement Dynamics in Armenia. ArmConference 2019: International Conference "Caves as Natural and Cultural Monuments" dedicated to the 35th anniversary of the Speleological Center of Armenia. 11-13 September, Yerevan, Armenia.
- Malinsky-Buller, A., Glauberman, P., Ollivier, V., Bellier, O., Lauer, T., Timms, R., **Frahm, E.**, Arakelyan, D., Ghukasyan, R., Marreiros, J., Kindler, L., Triller, B., Calandra, I., Paixao, E., Knul, M., Brittingham, A., Joannin, S., Nora, D., Nir, N., Krakovsky, M., Gaspryan, B. 2019. Seasonal subsistence and seasonal land use adaptations in the Armenian volcanic highlands during the Middle Paleolithic: Excavations at Kalavan 2. INQUA (International Union for Quaternary

- Research), Dublin, Ireland, 25-31 July.
- Demidenko, Y.E., Hauck, T., **Frahm, E.** 2019. "And even one warrior is in the field": an importance of Yabrud II (Syria) obsidian artifact for understanding of EUP human dispersal events beyond the East Mediterranean Levant. International Obsidian Conference. Budapest, Hungary. 27-29 May.
- Frahm, E.**, Adler, D., Tushabramishvili, N. 2019. Walking from New York City to Knoxville: Origins of Late Pleistocene obsidian artifacts at Ortvale Klde (Georgia) and increased scales of interaction from the Middle to Upper Palaeolithic. Paleoanthropology Society Meeting, Albuquerque, New Mexico, 9-10 April.
- Frahm, E.** 2019. Beyond the Technical Revolution: Epistemological Shifts in Archaeological XRF (or: "The World of XRF Will Never Be the Same Again"). Society for American Archaeology Annual Meeting, Albuquerque, New Mexico, 10-14 April.
- Frahm, E.** 2018. Advances in portable XRF for obsidian sourcing in Eastern Africa. Archaeometry in the Service of African Archaeology. Society of Africanist Archaeologists (SAfA) 24th biennial conference, Toronto, Canada, 18-21 June.
- Glauberman, P., Gasparyan, B., Kuhn, S., **Frahm, E.**, Wilkinson, K., Li, B., Raczynski-Henk, Y., Haydosyan, H., Arakelyan, D., Adler, D. 2018. Technological divergence at the crossroads? Middle Paleolithic technology in the Armenian volcanic highlands and Central Anatolia, implications for hominin population dynamics. UISPP, XVIIIe Colloque, Paris, 4-9 June.
- Frahm, E.** 2018. Pack your boots, trowel, and ray gun: Advances in portable XRF for archaeological science. Session: Next Generation Archaeological Science. Society for American Archaeology Annual Meeting, Washington, D.C., 11-15 April.
- Luo, B., Monnier, G., **Frahm, E.**, Missal, K. 2017. FTIR Microscopic Analysis of Plant and Animal Tissue Residues on Stone Tools. SciX, Reno, Nevada, 8-13 October.
- Adler, D.S., Wilkinson, K.N., Blockley, S., **Frahm, E.**, Mark, D., Mallol, C., Nahapetyan, S., Beverly, E., Glauberman, P.J., Raczynski-Henk, Y., Gill, J., Knul, M., Timms, R., Gasparyan, B. 2017. The Relevance of Nor Geghi 1 (Armenia) to the Behavioral and Technological Evolution of Middle Pleistocene Hominins in the Southern Caucasus. European Society for Human Evolution annual meeting, Leiden, 21-23rd September.
- Glauberman, P., Gasparyan, B., **Frahm, E.**, Li, B., Raczynski-Henk, Y., Haydosyan, H., Arakelyan, D. 2017. Late Middle Paleolithic technological organization in the Armenian volcanic highlands: a case study from the site of Barozh 12. European Society for Human Evolution annual meeting, Leiden, 21-23rd September.
- Malinsky-Buller, A., Glauberman P.J., Beverly, E.J., Sherri, J., **Frahm, E.**, Nahapetyan, S., Karapetyan, S., Wilkinson, K., Gasparyan, B., Adler, D.S. 2017. Alapars 1 - A New Middle/Upper Pleistocene Paleoenvironmental and Archaeological Record from Armenia. European Society for Human Evolution annual meeting, Leiden, 21-23rd September.
- 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., Gasparian, 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., Gasparian, B., Wilkinson, K.N., **Frahm, E.**, Nahapetyan, S., Arakelyan, D., Kaczynski-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., Gasparian, 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.
- Anderson, N.T., Steenberg, J., Walters, A., Retzler, A., **Frahm, E.**, Feinberg, J.M., Dworkin, S.I., Cowan, C., Runkel, A. 2015. High-resolution Chemostratigraphy Through a Nearshore, Mixed Carbonate-Shale Succession of Late Ordovician Age (Sandbian-Katian) in the Laurentian Cratonic Interior. American Geophysical Union, Fall Meeting, December.
- 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.
- Glauberman, P., Gasparyan, B., Kuhn, S., Wilkinson, K., **Frahm, E.**, Raczynski-Henk, Y., Haydosyan, H., Nahapetyan, 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. Paleoanthropology Society Meeting in San Francisco, California, 13-14 April.
- Glauberman, 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.
- Glauberman, 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, AA., 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.

### Select Invited Lectures

- Data in the Archaeological Sciences: Archaeologists' 21-Century Toolkits. Featured Presenter and Faculty Panelist, Day of Data, Yale Virtual Conference, 3-4 December 2020.
- Ray Guns and Broken Pots: Revealing Bronze-Age Imports and Imitations at Tell Mozan, Syria. Archaeology Research Center, University of Southern California, 3 February 2020.
- What can microscopic magnetic minerals reveal about Palaeolithic lifeways? Eberhard Karls University of Tübingen, 17 May 2019.
- From *Heidelbergensis* to the Roman Empire: Recent studies of social connectivity via obsidian artifact sourcing. Eberhard Karls University of Tübingen, 16 May 2019.
- What can microscopic magnetic minerals reveal about Neanderthal lifeways? Trinity College, Environmental Studies Colloquium, 8 March 2019.
- Frontiers in Archaeological Instrumentation. Yale Day of Instrumentation, 16 November 2018.
- A Neanderthal, a human, and a turtle walk across a landscape: Reconstructing Palaeolithic mobility in Southwest Asia. Archaeology Seminar Series, Boston University, 17 October 2018.
- Faster, Stronger, Smarter: Next-Generation Portable XRF in the Archaeological Sciences. Frontiers in Archaeological Sciences international workshop, Center for Human Evolutionary Studies, Rutgers University, 23-25 October 2017.
- 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.

### Select Other Presentations

Mobility and Settlement at Aghitu-3 Cave in the Armenian Highlands: Agent-Based Modeling, Obsidian Sourcing, and Lithic Analysis. Council on Archaeological Studies Brown Bag Series, 7 December 2018.

Faster, Stronger, Smarter: Advances in Portable XRF for Cultural Heritage Studies. Yale Institute for the Preservation of Cultural Heritage (IPCH) Internal Seminar Series, 4 October 2017.

The Stone Age Was Complex Too: Mobility, Provisioning, and Environment in the Southern Caucasus and East African Rift. Yale Council on Archaeological Studies Brown Bag Series, 22 Sept 2017.

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.

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

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