Sara J. Elliott

Professional Summary

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Professional Preparation

Academic Background

MS Department of Geosciences, Pennsylvania State University, 2012

B.S. Department of Geological Sciences, University of Miami, May 2010

Professional Appointments

Research Scientist Associate III, Bureau of Economic Geology, The University of Texas at Austin (April 2018-Present)
Specializing in Scanning Electron Microscopy, especially SEM-Cathodoluminescence

Research Scientist Associate II, Bureau of Economic Geology, The University of Texas at Austin (April 2013-2018)
Specializing in Scanning Electron Microscopy, especially SEM-Cathodoluminescence

Graduate Research Assistant, Pennsylvania State University (January 2011-August 2012)

Teaching Assistant, Pennsylvania State University (August-December 2010)
"The Earth System and Global Change," general education course, Earth 002: 75 students.

Student Research Assistant, Marine Geology and Geophysics Department, Rosenstiel School of Marine and Atmospheric Science, University of Miami (November 2008-May 2010)
Resulted in senior thesis: "Sediment and faunal analysis of the Zanclean flood mixed siliciclastic-carbonate Gurabo Formation, Central Dominican Republic"

Geological sciences tutor, University of Miami Athletics Department (September 2009-January 2010)
Assisted student athletes with comprehension of basic scientific principles, with emphasis on geology and environmental science.

Petrophysics lab assistant, Rosenstiel School of Marine and Atmospheric Science, University of Miami (January-May 2009)
Prepared limestone core samples for porosity and geochemical analyses pertaining to groundwater flow research.

Theses

Subfossil leaves reveal a new upland hardwood component of the pre-European Piedmont landscape, Lancaster County, Pennsylvania. Masters Thesis, Pennsylvania State University, 2012.

Sediment and faunal analysis of the Zanclean flood mixed siliciclastic-carbonate Gurabo Formation, Central Dominican Republic. Senior Thesis, Marine Geology and Geophysics Department, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 2010.

Areas of Expertise

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Cathodoluminescence

Paleoecology

Petrography

Photoshop/Illustrator

SEM

SEM-Based Point Counting

Structural Diagenesis

Awards

Awards and Honorary Societies

AAPG Top 10 Poster Presentation for "Bedding-Parallel Fractures in Shales: Characterization, Prediction, and Importance," AAPG Annual Convention and Exhibition, Denver, Colorado, June 2015

Early Career Development Publication Award, Bureau of Economic Geology, The University of Texas at Austin, 2015

Geological Society of America Student Research Grant, 2011-2012

P.D. Krynine Research Scholarship, Department of Geosciences, Pennsylvania State University, 2011-2012

Bowman-Foster-Ashe Academic Tuition Scholarship, University of Miami, 2006-2010

Florida Bright Futures Academic Scholars Award, 2006-2010

Service

Published Interviews

Elliott, S. J., 2018, "Real fractured rock is so complex it's time for new fracturing models." Society of Petroleum Engineers, 19 September 2018; https://www.spe.org/en/jpt/jpt-article-detail/?art=4645 [Elliott quoted therein].

Elliott, S., 2013, "Buried leaves reveal precolonial eastern U.S. forests and guide stream restoration." Science Daily, www.sciencedaily.com/releases/2013/11/131113182545.htm, 13 November 2013 [Elliott quoted therein].

Elliott, S., 2013, "Fossil leaves reveal pre-colonial forests." Futurity - Earth and Environment, http://www.futurity.org/fossil-leaves-reveal-pre-colonial-forests/, 14 November 2013 [Elliott heavily quoted therein].

Elliott, S., 2013, "Research allows reconstruction of pre-colonial landscape in Eastern U.S." Popular Archaeology, http://popular-archaeology.com/issue/09012013/article/research-allows-reconstruction-of-precolonial-landscape-in-eastern-u-s, 13 November 2013 [Elliott quoted therein].

Elliott, S., 2013, "What America's forests looked like 400 years ago." Discovery News, http://news.discovery.com/earth/plants/what-americas-forests-looked-like-before-colonization-131113.htm, 13 November 2013 [Elliott quoted therein].

Elliott, S., 2013, "What America's forests looked like before Europeans arrived." Scientific American, http://www.scientificamerican.com/article/what-americas-forests-looked-before-europeans-arrived/, 13 November 2013 [Elliott heavily quoted therein].

Outreach Activities

Explore UT "Find Gold" activity: Volunteered to teach children about density by panning for gold, The University of Texas at Austin, 2018.

Judge: 5th Annual JSG Student Research Symposium, The University of Texas at Austin, February 6, 2016.

Presentations

Invited Presentations

Core Fracture Description of the Hydraulic Fracture Test Site (HFTS1) Slant Core, Reagan Co., Midland Basin, Texas: presented to The University of Texas at Austin, Hildebrand Department of Petroleum and Geosystems Engineering, presented at Graduate Student Seminar Series, September 9, 2019.

Core Fracture Description of the Hydraulic Fracture Test Site (HFTS1) Slant Core, Reagan Co., Midland Basin, Texas: presented to Texas A&M Petroleum Engineering Graduate Student Seminar Series, presented at Texas A&M University, College Station, September 3, 2019.

Cathodoluminescence applications in geosciences using a Zeiss Sigma field emission SEM: presented to Texas Society for Microscopy, presented at Annual Meeting, Austin, Texas, February 2015.

Presentations

Fracture Description of the HFTS-2 Slant Core, Delaware Basin, West Texas: presented at URTeC, Houston, Tex., July 2021.

Deformation bands as fluid pathways in outcrops of Lajas Formation tight-gas sandstone, Neuquén Basin, Argentina: presented to Fracture Research and Application Consortium (FRAC), presented at Annual Sponsors' Meeting, Austin, Tex., November 2019.

SEM-based compositional and microtextural analysis of deformation bands--examples from the Lajas Fm. Tight Gas Sandstone: presented to Fracture Research and Application Consortium (FRAC), presented at Annual Sponsors' Meeting, Austin, Tex., November 2019.

Structural-diagenetic analysis of cataclastic zones in glauconite sandstone, Vienna Basin, Austria: presented to Fracture Research and Application Consortium (FRAC), presented at Annual Sponsors' Meeting, Austin, Tex., November 2019.

HFTS 1 EOR: 5TW Core Proppant Results: presented to HFTS 1 Consortium, presented at Core Laboratories, Houston, Tex., July 18, 2019.

Update on Fracture Description Work for the HFTS1 EOR Project: presented to HFTS1 Consortium by WebEx, January 23, 2019.

Analysis and Distribution of Proppant Recovered from Fracture Faces in the HFTS Slant Core Drilled through a Stimulated Reservoir: presented to Fracture Research and Application Consortium Annual Sponsors' Meeting, Casper, Wyo., September 17-19, 2018.

Slip behavior of a subduction zone: preliminary inferences from quartz and calcite filled veins (hydrofractures) in an exhumed accretionary wedge, Shimanto belt, Japan: presented to Fracture Research and Application Consortium, presented at Annual Sponsors' Meeting, Austin, Texas, October 2017.

What controls quartz cementation in cataclastic deformation bands and other faulted structures?: presented to Fracture Research and Application Consortium, presented at Annual Sponsors' Meeting, Lost Pines, Texas, September 2016.

Quantifying the texture, composition, and coupled chemical-mechanical diagenesis of deformation bands within sandstone reservoir outcrop analogs of assorted detrital compositions, Southwestern USA: presented to Fracture Research and Application Consortium, presented at Annual Sponsors' Meeting, Austin, Texas, September 2015.

Core analysis of shales: beef vs. bivalves: presented to Fracture Research and Application Consortium, presented at Annual Sponsors' Meeting, Balcones Springs, Texas, September 2014.

Characterizing a pre-Colonial Piedmont riparian forest using sub-fossil leaves: West Branch Little Conestoga Creek, Southeastern Pennsylvania: presented to Penn State Department of Geosciences, presented at Annual Graduate Colloquium, University Park, Pennsylvania, March 2012.

Activities of a Professional Nature

Professional Societies

American Geophysical Union, 2013 - Present

Geological Society of America, 2010 - Present

Nature Conservancy, 2012 - Present

SEPM-AAPG (2017-present)

Activities of a Professional Nature

Hosted SEM workshop for graduate students in Digital Rock Physics class (Petroleum & Geosystems Engineering Department - Dr. Masa Prodanovic) (February 2018)

Funding

Research Support

Co-PI: GTI Hydraulic Fracture Test Site (HFTS) EOR Project (2018-2019; $99K).

Co-PI: GTI/NETL Hydraulic Fracture Test Site (HFTS), NETL (October 15, 2015-December 31, 2016; $205K).

Researcher: Early Career Publication Support Grant, Bureau of Economic Geology, The University of Texas at Austin (September 2015-August 2016; $4000).

Co-PI: Structural Diagenesis Fellowship, GDL Foundation (2016, $2000.00).

Publications

Peer Reviewed Journal Articles

Fulcher, S. A., Jordan, T. E., Laubach, S. E., Elliott, S. J., and Herrera, V. N., 2026, Improving borehole fracture characterization using oriented sidewall cores for geothermal assessment - an example in central New York State USA: Geothermics, v. 136, no. 103589, 39 p., http://doi.org/10.1016/j.geothermics.2025.103589.

Hooker, J. N., Luciano, S., Fisher, D. M., Smye, A. J., Hashimoto, Y., Hosokawa, T., and Elliott, S. J., 2026, Veining style and size-scaling behavior throughout the generation and exhumation of subduction mélange: evidence from Japan and Alaska: Journal of Structural Geology, v. 203, no. 105607, 14 p., http://doi.org/10.1016/j.jsg.2025.105607.

Elliott, S. J., Forstner, S. R., Wang, Q., Corrêa, R., Shakiba, M., Fulcher, S. A., Hebel, N. J., Lee, B. T., Tirmizi, S. T., Hooker, J. N., Fall, A., Olson, J. E., and Laubach, S. E., 2025, Diagenesis is key to unlocking outcrop fracture data suitable for quantitative extrapolation to geothermal targets: Frontiers in Earth Science, v. 13, no. 1545052, 38 p., http://doi.org/10.3389/feart.2025.1545052.

Kyle, J. R., Quintero, T. R., Ukar, E., Miller, N. R., Elliott, S. J., and Colbert, M., 2023, Dolomite cement microstratigraphy: a record of brine evolution and ore precipitation mechanisms, upper Knox Group, Tennessee and Kentucky, USA: Geology, v. 51, no. 4, p. 392-396, http://doi.org/10.1130/G50689.1.

Elliott, S.J., Grettenberger, C.L., Donovan, M.P., Wilf, P., Walter, R.C., and Merritts, D.J., 2016,

Riparian and valley-margin hardwood species of pre-colonial Piedmont forests: a preliminary study of subfossil leaves from White Clay Creek, southeastern Pennsylvania, USA: Palaeontologia Electronica, v. 19.1.2A, 26 p., palaeo-electronica.org/content/2016/1379-pre-colonial-piedmont-forests.

Elliott, S. J., Wilf, P., Walter, R. C., and Merritts, D. J., 2013, Subfossil leaves reveal a new upland hardwood component of the pre-European Piedmont landscape, Lancaster County, Pennsylvania: PLoS ONE, v. 8, no. 11, 26 p., http://doi.org/10.1371/journal.pone.0079317.

Peer Reviewed Book Chapters

Gale, J. F. W., Elliott, S.J., Rysak, B. G., and Laubach, S. E., 2023, The critical role of core in understanding hydraulic fracturing, in Neal, A., Ashton, M., Williams, L. S., Dee, S. J., Dodd, T. J. H. and Marshall, J. D., eds., Core values: the role of core in twenty-first century reservoir characterization: Geological Society of London, Special Publication, v. 527, no. 1, 16 p., http://doi.org/10.1144/SP527-2021-198.

Non Peer Reviewed Journal Articles

Elliott, S. J., and Gale, J. F. W., 2018, Study evaluates proppant distribution in HFTS Wolfcamp wells: American Oil & Gas Reporter, https://www.aogr.com/magazine/frac-facts/frac-facts-december-2018.

Gale, J. F. W., Elliott, S. J., and Laubach, S. E., 2018, Hydraulic fractures in core from stimulated reservoirs: core fracture description of HFTS slant core, Midland Basin, West Texas: URTeC paper no. 2902624, 18 p., http://doi.org/DOI 10.15530/urtec-2018-2902624.

Guidebooks

Eichhubl, P., and Elliott, S., 2014, Structural diagenesis field trip--Las Vegas, Valley of Fire, San Rafael Desert, Green River, Moab, and Grand Junction, The University of Texas at Austin, Bureau of Economic Geology, 95 p.

Contract Reports

Elliott, S. J., and Eichhubl, P., 2019, St. Ulrich Sandstone SEM petrography and structural-diagenetic analysis: final report and accompanying presentation prepared for OMV, Vienna, Austria, 73 slides plus 9 p.

Gale, J. F. W., and Elliott, S. J., 2019, Fracture description and proppant analysis in the Laredo Sugg E 197 5TW slant well cores: final report prepared for GTI-NETL Project No. DE-FE0024292: Hydraulic Fracture Test Site (HFTS) EOR, under contract no. S592 (subcontract), 45 p.

Gale, J. F. W., Baumgardner, R., Bhandari, A., Darvari, R., Dommisse, R., Eichhubl, P., Elliott, S. J., Fall, A., Flemings, P., Hamlin, H. S., Landry, C. J., Mohanty, K., Nicot, J.-P., Polito, P., Prodanovic, M., Ramiro-Ramirez, S., Reed, R. M., Rowe, H., Ruppel, S. C., and Sivil, J. E., 2019, Multi-faceted study of water cut in the Permian Wolfcamp in the Delaware Basin, West Texas: final report prepared for Shell, under contract no. UT OSP# 201503146-001, 292 p.

Gale, J. F. W., and Elliott, S. J., 2018, Fracture Spatial Organization and Proppant Analysis. Subcontract S5 for GTI Project No. 21686: Hydraulic Fracture Test Site (HFTS): Final Report 2.

Gale, J. F. W., Elliott, S. J., and Laubach, S. E., 2017, Fracture Characterization. Subcontract S5 for GTI Project No. 21686: Hydraulic Fracture Test Site (HFTS): Final Report.

Elliott, S., and Eichhubl, P., 2015, Flow properties of deformation bands in sandstone reservoir outcrop analogs: Final Report prepared for Shell, 28 p.

Fall, A., Laubach, S. E., Elliott, S. J., and Ukar, E., 2015, Fractures in Devonian sandstone reservoirs, Subandean fold and thrust belt, Northern Bolivia: Final Report prepared for TOTAL, France, 59 p.

Elliott, S., Eichhubl, P., and Landry, C. J., 2014, Flow properties of deformation bands in sandstone reservoir outcrop analogs: Annual Report prepared for Shell, 29 p.

Published Abstracts

Gale, J. F. W., Elliott, S. J., and Laubach, S. E., 2019, Direct observation of hydraulic fractures in the Hydraulic Fracture Test Site (HFTS) slant core, Reagan Co., Midland Basin, Texas: insights into distribution, morphology, intensity and interaction with natural discontinuities (ext. abs.): Canadian Society of Petroleum Geologists (CSPG) William C. Gussow Geoscience Conference, Banff, Canada, October 15-17, 6 p.

Gale, J. F. W., Elliott, S. J., Li, J. Z., and Laubach, S. E., 2019, Natural fracture characterization in the Wolfcamp Formation at the Hydraulic Fracture Test Site (HFTS), Midland Basin, Texas (ext. abs.): Proceedings of the Unconventional Resources Technology Conference (URTeC), Denver, Colo., no. 644, 16 p., http://doi.org/10.15530/urtec-2019-644.

Elliott, S. J., and Gale, J. F. W., 2018, Analysis and distribution of proppant recovered from fracture faces in the HFTS slant core drilled through a stimulated reservoir (abs.): Proceedings of the Unconventional Resources Technology Conference (URTeC), Houston, Tex., no. 2902629, 10 p., http://doi.org/10.15530/urtec-2018-2902629.

Gale, J. F. W., Elliott, S. J., and Laubach, S. E., 2018, Hydraulic fractures in core from stimulated reservoirs: core fracture description of HFTS slant core, Midland Basin, West Texas (abs.): Proceedings of the Unconventional Resources Technology Conference (URTeC), Houston, Tex., no. 2902624, 18 p., http://doi.org/10.15530/urtec-2018-2902624.

Elliott, S. J., Fisher, D. M., Ukar, E., Ramirez, G., and Forstner, S., 2017, Slip behavior of a subduction zone: preliminary inferences from quartz and calcite filled veins (hydrofractures) in an exhumed accretionary wedge, Shimanto belt, Japan (abs.): Geological Society of America Abstracts with Programs, v. 49, no. 6, http://doi.org/doi: 10.1130/abs/2017AM-306581.

Elliott, S. J., O'Brien, C., and Eichhubl, P., 2017, Structural and diagenetic evolution of deformation bands in contractional and extensional tectonic regimes and implications for sandstone diagenesis (abs.): AAPG Datapages/Search and Discovery Article No. 90291, AAPG Annual Meeting, Houston, Texas, 2-5 April; http://www.searchanddiscovery.com/abstracts/html/2017/90291ace/abstracts/2608921.html.

Gale, J. F. W., Ukar, E., Wang, Q., and Elliott, S.J., 2016, Bedding-parallel fractures in shales (abs.): AAPG Search and Discovery Article, no. 90259.

Elliott, S. J., and Eichhubl, P., 2015, Quantifying the texture, composition, and coupled chemical-mechanical diagenesis of deformation bands within sandstone reservoir outcrop analogs of assorted detrital compositions, Southwestern USA (abs.): AGU Fall Meeting abstract, no. MR41D-2693.

Gale, J. F. W., Ukar, E., Elliott, S.J., and Wang, Q., 2015, Bedding-parallel fractures in shales: characterization, prediction and importance (abs.): AAPG Annual Meeting, Denver, Colorado.

O'Brien, C., Eichhubl, P., and Elliott, S. J., 2015, Microstructural analysis of coupled mechanical and chemical diagenetic processes in deformation bands in sandstone (abs.): AGU Annual Meeting abstract, no. MR41D-2694.

Elliott, S. J., Eichhubl, P., and Landry, C. J., 2014, Effects of coupled structural and diagenetic processes on deformation localization and fluid flow properties in sandstone reservoirs of the southwestern United States (abs.): AGU Fall Meeting abstract MR23A-4336.

Elliott, S., Eichhubl, P., and Landry, C. J., 2014, Effects of coupled structural and diagenetic processes on deformation localization and flow properties of deformation bands in sandstone (abs.): EGU General Assembly, no. EGU2014-9363.

Elliott, S., Wilf, P., Merritts, D., and Walter, R.C., 2013, Subfossil leaves reveal a new upland hardwood component of the pre-European Piedmont landscape, Lancaster County,

Pennsylvania (abs.): Geological Society of America National Meeting, Denver, Colorado, v. 45, no. 7, p. 246.

Elliott, S., 2011, Preliminary characterization of a pre-colonial Piedmont riparian forest using subfossil leaves: Little Conestoga Creek, southeastern Pennsylvania, U.S.A. (abs.): Geological Society of America National Meeting, Minneapolis, Minnesota, v. 43, no. 5, p. 263.

McNeill, D. F., Elliott, S., Klaus, J. S., and Perez, J., 2010, The nature of Neogene mixed system clinothems: Cibao Basin, Dominican Republic (abs.): AAPG-SEPM Annual Convention and Exhibition, New Orleans, Louisiana, Abstract #90104.