

Curriculum Vitae – Thomas J. Lapen

Professor and Department Chair

Department of Earth and Atmospheric Sciences, University of Houston
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Education:

- **Central Washington University, Ellensburg WA** **BS Geology** **1995**
Senior thesis: *Geology of the Selah Butte Anticline and Vicinity, Yakima Fold Belt, Central Washington*
Advisor: Robert Bentley, Deceased
- **Western Washington University, Bellingham WA** **MS Geology** **1998**
MS Thesis: *Structure and Metamorphism of the Southern Lillooet River-Northern Breakenridge Area, Southern Coast Mountains, British Columbia, Canada*
Advisor: Edwin H. Brown, Retired
- **University of Wisconsin-Madison, Madison WI** **PhD Geology** **2005**
PhD Dissertation: *Radiogenic Isotopes as Records of Tectonic and Metamorphic Processes: Examples from the Western Alps, Italy, and the Western Gneiss Region, Norway.*
Advisor: Clark M. Johnson, Retired

Appointments:

- 9/19-present Chair, EAS Department, University of Houston, TX
- 9/16-present Professor, EAS Department, University of Houston, TX
- 9/11-8/16 Associate Professor, EAS Department, University of Houston, TX
- 8/05-8/11 Assistant Professor, EAS Department, University of Houston, TX
- 7/98-7/00 Geologist, WA State Div. Geology and Earth Resources, Olympia WA
- 4/95-8/95 Geologist, Kittitas Co. Reclamation District, Ellensburg, WA

Awards:

- Fellow of the Geological Society of America (2018)
- John C. Butler Excellence in Teaching Award; UH (2008)
- Morgridge Distinguished Graduate Fellowship; UW-Madison (2004-2005 academic year)
- Best Graduate Research Paper Award; Dept. Geology and Geophysics, UW-Madison (2004)
- Farrell Merit Undergraduate Research Scholarship; Central Washington University (1994-1995)

Peer-reviewed Papers (up until 4/2023; Bold are students):

1. Szumila, I., Trail, D., Erickson, T., Simon, J.I., Wielicki, M.W., Lapen, T.J., Nakajima, M., Fries, M., Bell, E.A., ***In Press***, Microstructural changes and Pb mobility during the zircon to reidite transformation: implications for planetary impact chronology. *American Mineralogist*.
<https://doi.org/10.2138/am-2022-8604>
2. Zheng, Y., Hu, H., Spera, F.J., Scruggs, M., Thompson, G., Jin, Y., Lapen, T.J., McNutt, S.R., Mandli, K., Peng, Z., Yuen, D.A., 2023, Episodic magma hammers for the 15 January 2022 cataclysmic eruption of the Hunga Tonga-Hunga Ha’apai. *Geophysical Research Letters*.
<https://doi.org/10.1029/2023GL102763>
3. **Smith**, T.M., Saylor, J.E., Lapen, T.J., Leary, R.J., Sundell, K.E., 2023, Large detrital zircon data set investigation and provenance mapping: Local versus regional and continental sediment sources before, during, and after Ancestral Rocky Mountain deformation. *Bulletin of the Geological Society of America*. <https://doi.org/10.1130/B36285.1>
4. **Smith**, T.M., Saylor, J.E., Lapen, T.J., Hatfield, K., Sundell, K.E., 2023, Identifying sources of non-unique detrital age distributions through integrated provenance analysis: An example from the Paleozoic Central Colorado Trough. *Geosphere*. V. 19, No. 2.
<https://doi.org/10.1130/GES02541.1>

5. **Andrade**, C.N., Lapen, T.J., Chafetz, H.S., 2022, Silicon isotopic compositions of dissolved silicic acid in pre- and post-diatom oceans. *Geochimica et Cosmochimica Acta*.
<https://doi.org/10.1016/j.gca.2022.11.021>
6. **Beard**, S.P., Swindle, T.D., Lapen, T.J., Kring, D.A., 2022, Ar-Ar and U-Pb ages of Chelyabinsk and a re-evaluation of its impact chronology. *Meteoritics and Planetary Science*, 57, 2276-2288.
<https://doi.org/10.1111/maps.13927>
7. **Wu**, T-J., Wu, J., Alexandrov, I., Lapen, T.J., Lee, H-Y., Ivin, V., 2022, Continental growth during migrating arc magmatism and terrane accretion at Sikhote-Alin (Russian Far East) and adjacent northeast Asia. *Lithos*, 432-433. <https://doi.org/10.1016/j.lithos.2022.106891>
8. **Li**, Y., Robinson, A.C., Zucali, M., Gadoev, M., Oimuhhammadzoda, I., Lapen, T.J., Carrapa, B., 2022, Mesozoic Tectonic Evolution in the Kurgovat-Vanch Complex, NW Pamir. *Tectonics*, 41.
<https://doi.org/10.1029/2021TC007180>
9. **Suarez**, S.E., Lapen, T.J., Richter, M., Beard, B.L., Irving, A.J., 2022, Isotopic and trace element data of Tissint indicate a homogeneous strewn field, mobilization of Sr, REE, and Pb during shock metamorphism, and limits on the incorporation of martian surficial materials in impact melt glass. *Geochimica et Cosmochimica Acta*, 327, 137-157.
<https://doi.org/10.1016/j.gca.2022.04.020>
10. **Davis**, E.M., Rudolph, K.W., Saylor, J.E., Lapen, T.J., Wellner, J.S., 2022, Effects of contemporaneous orogenesis on sedimentation in the Late Cretaceous Western Interior Basin, northern Utah and southwestern Wyoming. *Basin Research*, V. 34, 366-392.
<https://doi.org/10.1111/bre.12623>
11. **Zimmermann**, U., Dieset, J., Watson, L., Lapen, T., 2021, Sedimentological Constraints and Provenance of Eocene and Miocene Successions from Barbados. *AAPG Memoir* 123, 109-138.
<https://doi.org/10.1306/13692244M1233846>
12. **Richter**, K., Schönbächler, M., Pando, K., Rowland, R., Richter, M., Lapen, T.J., 2020, Ag isotopic and chalcophile element evolution of the terrestrial and martian mantles during accretion: New constraints from Bi and Ag metal-silicate partitioning. *Earth and Planetary Science Letters*. <https://doi.org/10.1016/j.epsl.2020.116590>
13. **Udry**, A., Howarth, G.H., Herd, C.D.K., Day, J.M.D., Lapen, T.J., Filiberto, J., 2020, What martian meteorites reveal about the interior and surface of Mars. *Journal of Geophysical Research: Planets*. <https://doi.org/10.1029/2020JE006523>
14. **Fonseca**, M., Hathon L., Lapen, T.J., 2020, A Real-Time Method to Identify Brittle Zones in Carbonate-Rich Mudrocks using Bulk and Trace Element Geochemistry: A Study in the Eagle Ford, Haynesville, and Niobrara Formations. *Unconventional Resources Technology Conference*, 2396-2415. <https://doi.org/10.15530/urtec-2020-1051>
15. **Chen**, X.Y., Chafetz, H.S., Lapen, T.J., 2020, Silicon isotope variations in hydrothermal systems at Yellowstone National Park, Wyoming, USA. *Geochimica et Cosmochimica Acta*,
<https://doi.org/10.1016/j.gca.2020.06.004>
16. **Smith**, T.M., Sundell, K.E., Johnston, S.N., Andrade, C.N.G., Andrea, R.A., Dickinson, J.N., Liu, Y.A., Murphy, M.A., Lapen, T.J., Saylor, J.E., 2020, Drainage reorganization and Laramide tectonics in north - central New Mexico and downstream effects in the Gulf of Mexico. *Basin Research*, <https://doi.org/10.1111/bre.12373>
17. **Dygert**, N., Draper, D.S., Rapp, J.F., Lapen, T.J., Fagan, A.L., Neal, C.R., 2020, Experimental determinations of trace element partitioning between plagioclase, pigeonite, olivine, and lunar basaltic melts and an fO₂ dependent model for plagioclase-melt Eu partitioning. *Geochimica et Cosmochimica Acta*, <https://doi.org/10.1016/j.gca.2020.03.037>
18. **Andrade**, C.N., Chafetz, H.S., Lapen, T.J., 2020, Paragenesis of silicified mid-Paleozoic and mid-Cenozoic corals based on petrography and silicon isotopic analyses. *Chemical Geology*,
<https://doi.org/10.1016/j.chemgeo.2020.119483>
19. **Clark**, J.V., Sutter, B., McAdam, A.C., Rampe, E.B., Archer, P.D., Ming, D.W., Navarro-Gonzalez, R., Mahaffy, P., Lapen, T.J., 2020, High - Temperature HCl Evolutions From Mixtures of Perchlorates and Chlorides With Water - Bearing Phases: Implications for the SAM

- Instrument in Gale Crater, Mars. *Journal of Geophysical Research: Planets*, <https://doi.org/10.1029/2019JE006173>
19. **Li**, Y-P., Robinson, A.C., Lapen, T.J., Righter, M., Stevens, M.K., 2020, Muztaghata Dome Miocene Eclogite Facies Metamorphism: A Record of Lower Crustal Evolution of the NE Pamir. *Tectonics*, <https://doi.org/10.1029/2019TC005917>
 20. **Imrecke**, D., Robinson, A., Owen, L., Chen, J., Schoenbohm, L., Hedrick, K., Lapen, T.J., Li, W., Yuan, Z., 2019, Mesozoic evolution of the eastern Pamir. *Lithosphere*, <https://doi.org/10.1130/L1017.1>
 21. Combs, L.M., Udry, A., Howarth, G.H., Righter, M., Lapen, T.J., Gross, J., Ross, D.K., Rahib, R.R., Day, J.M.D., 2019, Petrology of the enriched poikilitic shergottite Northwest Africa 10169: Insight into the martian interior. *Geochimica et Cosmochimica Acta*, <https://doi.org/10.1016/j.gca.2019.07.001>
 22. Schmieder, M., Shaulis, B.J., Lapen, T.J., Buchner, E., Kring, D.A., 2019, In situ U–Pb analysis of shocked zircon from the Charlevoix impact structure, Québec, Canada. *Meteoritics and Planetary Science*, <https://doi.org/10.1111/maps.13315>
 23. **Hogancamp**, J.V., Lapen, T.J., Chafetz, H.S., Elsenousy, A., 2019, The effect of solution chemistries and freezing temperatures on the morphology of cryogenic opal-A (COA): implications for past climates on Mars. *Chemical Geology*. <https://doi.org/10.1016/j.chemgeo.2019.04.017>
 24. **Sundell**, K., Saylor, J.E., Lapen, T.J., Horton, B., 2019, Implications of variable late Cenozoic surface uplift across the Peruvian central Andes. *Scientific Reports*, <https://doi.org/10.1038/s41598-019-41257-3>
 25. Righter, K., Pando, K., Ross, D.K., Righter, M., Lapen, T.J., 2019, Effect of Silicon on activity coefficients of Bi, Cd, Sn, and Ag in liquid Fe–Si, and Implications for differentiation and core formation. *Meteoritics and Planetary Science*. <https://doi.org/10.1111/maps.13285>
 26. **Lobpries** T.A., Lapen T.J., 2019, Remote sensing evidence for a possible 10 kilometer in diameter impact structure in north-central Niger. *J. African Earth Sci.* <https://doi.org/10.1016/j.jafrearsci.2018.09.020>
 27. **Odoh**, S., Saylor, J.E., Higuera, C., Copeland, C., Lapen, T.J., 2019, Discriminating mechanisms for coarse clastic progradation in the Colombian foreland basin using detrital zircon double dating. *Andean Tectonics*, <https://doi.org/10.1016/B978-0-12-816009-1.00008-3>
 28. **Li** J., Zheng Y., Thompson L., Lapen T.J., Fang X., 2018, Deep earthquakes in subducting slabs hosted in highly anisotropic rock fabric. *Nature Geoscience*. <https://doi.org/10.1038/s41561-018-0188-3>
 29. **Sundell**, K.E., Saylor, J.E., Lapen, T.J., Styron, R.H., Villarreal, D., Usnayo, P., Cardenas, J., 2018, Peruvian Altiplano stratigraphy highlights along-strike variability in foreland basin evolution of the Cenozoic central Andes, *Tectonics*, <https://doi.org/10.1029/2017TC004775>
 30. **Bartschi**, N.C., Saylor, J.E., Lapen, T.J., Blum, M.D., Pettit, B., and Andrea, R.A., 2018, Tectonic controls on Late Cretaceous sediment provenance and stratigraphic architecture in the Book Cliffs, Utah, *Geological Society of America Bulletin*, <https://doi.org/10.1130/B31927.1>
 31. Reagan, M., Heywood, L., Goff, K., Michibayashi, K., Foster, T.C., Jicha, B., Lapen, T.J., McClelland, W.C., Ohara, Y., Righter, M., Scott, S., Sims, K.W.W., 2018, Geodynamic implications of crustal lithologies from the southeast Mariana fore-arc. *Geosphere*, <https://doi.org/10.1130/GES01536.1>
 32. Righter, K., Pando, K., Marin, N., Ross, D. K., Righter, M., Danielson, L., Lapen, T. J. and Lee, C-T., 2018, Volatile element signatures in the mantles of Earth, Moon, and Mars: Core formation fingerprints from Bi, Cd, In, and Sn. *Meteoritics and Planetary Science*. <https://doi.org/10.1111/maps.13005>
 33. Schmieder, M., Shaulis, B.J., Lapen, T.J., Kring, D.A., 2017, U–Th–Pb systematics in zircon and apatite from the Chixulub impact crater, Yucatan, Mexico. *Geological Magazine*, <https://doi.org/10.1017/S0016756817000255>

34. **Shaulis**, B.J., Righter, M., Lapen, T.J., Jolliff, B.L., Irving, A.J., 2017, 3.1 Ga crystallization age for magnesian and ferroan gabbro lithologies in the Northwest Africa 773 clan of lunar meteorites. *Geochimica et Cosmochimica Acta*, <https://doi.org/10.1016/j.gca.2017.06.031>
35. Sarafian, A.R., Hauri, E.H., McCubbin, F.M., Lapen, T.J., Berger, E., Nielsen, S.G., Marschall, H.R., Gaetani, G.A., Righter, K., Sarafian, E., 2017, Early accretion of water and volatile elements to the inner solar system: Evidence from angrites. *Phil. Trans. R. Soc. A*. <https://doi.org/10.1098/rsta.2016.0209>
36. Udry, A., Howarth, G.H., Lapen, T.J., Righter, M., 2017, Petrogenesis of the NWA 7320 enriched martian gabbroic shergottite: Insight into the martian crust, *Geochimica et Cosmochimica Acta*. <https://doi.org/10.1016/j.gca.2017.01.032>
37. **Kent**, J.J., Brandon, A.D., Joy, K.H., Peslier, A.H., Lapen, T.J., Irving, A.J., Coleff, D.M., 2017, Mineralogy and petrogenesis of lunar magnesian granulitic meteorite Northwest Africa 5744. *Meteoritics and Planetary Sciences*, <https://doi.org/10.1111/maps.12898>
38. Righter K., Nickodem K., Pando K., Danielson L., Boujibar A., Righter M., Lapen T. J., 2017, Distribution of Sb, As, Ge, and In between metal and silicate during accretion and core formation in the Earth. *Geochimica et Cosmochimica Acta*, <https://doi.org/10.1016/j.gca.2016.10.045>
39. Lapen, T.J., Righter, M., Andreasen, R., Irving, A.J., Satkoski, A.M., Beard, B.L., Nishiizumi, K., Jull, A.J.T., Caffee, M.W., 2017, 2 Billion years of magmatism recorded from a single Mars ejection site. *Science Advances*, <https://doi.org/10.1126/sciadv.1600922>
40. **Chen**, X., Lapen T.J., Chafetz H.S., 2017, Accurate and precise silicon isotope analysis of sulfur and iron-rich samples by MC-ICP-MS. *Geostandards and Geoanalytical Research*, <https://doi.org/10.1111/ggr.12158>
41. McLeod C, Brandon AD, Fernandes, VA, Peslier AH, Shafer J, Lapen TJ, Butcher A, Irving A, 2016, Constraints on Formation and Evolution of the Lunar Crust from Feldspathic Granulitic Breccias NWA 3163 and 4881. *Geochimica et Cosmochimica Acta*, <https://doi.org/10.1016/j.gca.2016.04.032>
42. **Chen**, X., Chafetz, H.S., Andreasen, R., Lapen T.J., 2016, Silicon isotope compositions of euhedral authigenic quartz crystals: Implications for abiotic fractionation at surface temperatures. *Chemical Geology*, <https://doi.org/10.1016/j.chemgeo.2016.01.008>
43. Fernandez A, Lapen TJ, Andreasen R, Swart PK, White CD, Rosenheim BE, 2015, Ventilation time scales of the North Atlantic subtropical cell revealed by coral radiocarbon from the Cape Verde Islands, *Paleoceanography*, <https://doi.org/10.1002/2015PA002790>
44. Armytage RMG, Brandon AD, Andreasen R, Lapen TJ, 2015, Evolution of Mojavian mantle lithosphere influenced by Farallon plate subduction: evidence from Hf and Nd isotopes in peridotite xenoliths from Dish Hill, CA. *Geochimica et Cosmochimica Acta*., <https://doi.org/10.1016/j.gca.2015.03.038>
45. Skora S, Mahlen NJ, Johnson CM, Baumgartner L, Lapen TJ, Beard BL, Szilvagyí ET, 2015, Evidence for protracted prograde metamorphism followed by rapid exhumation of the Zermatt-Saas Fee Ophiolite. *Journal of Metamorphic Geology*, <https://doi.org/10.1111/jmg.12148>
46. Armytage, R. M. G., Brandon, A. D., Peslier, A. H., Lapen, T. J., 2014. Osmium isotope evidence for Early to Middle Proterozoic lithosphere stabilization and concomitant production of juvenile crust in Dish hill, CA peridotite xenoliths. *Geochim. Cosmochim. Acta* <https://doi.org/10.1016/j.gca.2014.04.017>
47. Joy, K.H., Nemchin, A., Grange, M., Lapen, T.J., Peslier, A.H., Ross, D.K., Zolensky, M.E., Kring, D.A., 2014, Petrography, geochronology and source terrain characteristics of lunar meteorites Dhofar 925, 961 and Sayh al Uhaymir 449, *Geochimica et Cosmochimica Acta*, <https://doi.org/10.1016/j.gca.2014.08.013>
48. Wittmann A., Korotev R.L., Jolliff B.L., Lapen T.J., Irving A.J., 2014, The petrogenesis of impact basin melt rocks in lunar meteorite Shisr 161. *American Mineralogist*, 99. 1626-1647, <https://doi.org/10.2138/am.2014.4837>
49. McClelland W.C., Lapen T.J., 2013, Linking time to the pressure-temperature path for ultrahigh-pressure rocks. *Elements*, <https://doi.org/10.2113/gselements.9.4.273>

50. **Tomlinson** D.W., Copeland P., Murphy M.A., Lapen T.J., 2013, Oligocene shortening in the Little Burro Mountains of southwest New Mexico. *Rocky Mountain Geology*, <https://doi.org/10.2113/gsrocky.48.2.169>
51. Beard B.L., Ludois J.M., Lapen T.J., Johnson C.M., 2013, Pre-4.0 billion year weathering on Mars constrained by Rb-Sr geochronology on meteorite ALH 84001. *Earth and Planetary Science Letters*. <https://doi.org/10.1016/j.epsl.2012.10.021>
52. **Sanchez** VI, Murphy MA, Robinson AC, Lapen TJ, Heizler MT, 2013, Tectonic evolution of the India-Asia suture zone since Middle Eocene time, Lopukangri area, south-central Tibet. *Journal of Asian Earth Sciences*. <https://doi.org/10.1016/j.jseaes.2012.09.004>
53. Ahmad I, Khan S, Lapen TJ, Burke K, 2013, Isotopic ages for alkaline igneous rocks, including a 26 Ma ignimbrite, from the Peshawar Plain of northern Pakistan and their tectonic implications. *Journal of Asian Earth Sciences*. <https://doi.org/10.1016/j.jseaes.2012.10.025>
54. **Shaulis** B.J., Lapen T.J., Casey J.F., Reid D.R., 2012, Timing and rates of flysch sedimentation in the Stanley Group, Ouachita Mountains, Oklahoma and Arkansas, U.S.A.: Constraints from U-Pb zircon ages of subaqueous ash-flow tuffs. *Journal of Sedimentary Research – Current Rippl*es. <https://doi.org/10.2110/jsr.2012.68>
55. van Acken D., Brandon A.D., Lapen T.J., 2012, Highly siderophile element and osmium isotope evidence for post-core formation magmatic and impact processes on the aubrite parent body. *Meteoritics and Planetary Science*. <https://doi.org/10.1111/j.1945-5100.2012.01425.x>
56. Peslier A.H., Woodland A.B., Bell D.R., Lazarov M., Lapen T.J., 2012, Metasomatic control of water contents in the Kaapvaal cratonic mantle. *Geochimica et Cosmochimica Acta*. <https://doi.org/10.1016/j.gca.2012.08.028>
57. Robinson AC, Ducea M, Lapen TJ, 2012, Detrital Zircon and Isotopic Constraints on the Crustal Architecture and Tectonic Evolution of the Northeastern Pamir. *Tectonics*. <https://doi.org/10.1029/2011TC003013>
58. **Zhu** Y, Bhattacharya JP, Li W, Lapen TJ, Jicha BR, Singer BS, 2012, Milankovitch-Scale Sequence Stratigraphy and Stepped Forced Regressions of the Turonian Ferron Notom Deltaic Complex, South-Central Utah, U.S.A *Journal of Sedimentary Research* <http://dx.doi.org/10.2110/jsr.2012.63>
59. Copeland P., Murphy M.A., Dupre W.R., Lapen T.J., 2011, Oligocene deformation in southern New Mexico and its implications for Farallon plate geodynamics. *Geosphere*, <https://doi.org/10.1130/GES00672.1>
60. Hui, H., Peslier, A.H., Lapen, T.J., Shafer, J.T., Brandon, A.D., Irving, A.J., 2011, Petrogenesis of basaltic shergottite Northwest Africa 5298: Closed system crystallization of an oxidized mafic melt. *Meteoritics and Planetary Science*, <https://doi.org/10.1111/j.1945-5100.2011.01231.x>
61. **Zhang** R, Murphy MA, Lapen TJ, Sanchez V, Heizler M, 2011, Late Eocene crustal thickening followed by Early-Late Oligocene Extension along the India-Asia suture zone: Evidence for cyclicity in the Tibet-Himalayan orogen. *Geosphere* <https://doi.org/10.1130/GES00643.1>
62. **Shaulis**, B., Lapen, T.J., Toms, A., 2010, Signal linearity of an extended range pulse counting detector: Applications to accurate and precise U - Pb dating of zircon by laser ablation quadrupole ICP - MS, *Geochem. Geophys. Geosyst.*, <https://doi.org/10.1029/2010GC003198>
63. Shafer, J.T., Brandon, A.D., Lapen, T.J., Righter, M., Peslier, A.H., Beard, B.L., 2010, Trace element systematics and 147Sm-143Nd and 176Lu-176Hf ages of Larkman Nunatak 06319: Closed-system fractional crystallization of an enriched shergottite magma, *Geochimica et Cosmochimica Acta*, <https://doi.org/10.1016/j.gca.2010.09.009>
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65. Lapen T.J., Righter M., Brandon A.D., Debaille V., Beard B.L., Shafer J.T., and Peslier A.H., 2010, A younger age for ALH 84001 and its geochemical link to shergottite sources in Mars. *Science*, <https://doi.org/10.1126/science.1185395>

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Peer-reviewed Geologic Maps and other reports:

1. Lapen T.J., Cuthbert, S., Dobrzhinetskaya, L., 2008, International Eclogite Field Symposium and Workshop of the Task Force IV, International Lithosphere Program; Episodes, v. 31, 1-3.
2. Dragovich, J.D., Logan, R.L., Schasse, H.W., Walsh, T.J., Lingley, W.S. Jr., Norman, D.K., Gerstel, W.J., Lapen, T.J., Schuster, J.E., and Meyers, K.D., 2002, Geologic map of Washington. Northwest quadrant: Washington Division of Geology and Earth Resources Geologic Map GM-50, 72 p., 3 pl., scale 1:250,000.
3. Loen, J.S., Lingley, W.S., Jr., Anderson, Garth, Lapen, T.J., 2001, Reconnaissance investigation of sand, gravel, and quarried bedrock resources in the Bellingham 1:100,000 quadrangle, Washington: Washington Division of Geology and Earth Resources Information Circular 91, 45 p., 1 plate.
4. Lapen, T.J., 2000, Geologic map of the Bellingham 1:100,000-scale quadrangle, Washington: Washington Division of Geology and Earth Resources Open-File-Report 00-5, 35 p., 2 plates.
5. Dragovich, J.D., Norman, D.K., Lapen, T.J., Anderson, G., 1999, Geologic map of the Sedro-Woolley North and Lyman 7.5-minute quadrangles, western Skagit County, Washington: Washington Division of Geology and Earth Resources Open-File-Report 99-3, 37 p., 4 plates.

Funded Grant Proposals (since 8/2005; total external funding \$3.75M):

- **NASA/USRA - \$75,000.** Transformative lunar science and exploration: Integrating sample analyses, mission studies, and next generation training to meet the strategic goals of science and human exploration. **PI: David Kring.** 2/5/2020 – 2/4/2025.
- **NASA – Solar System Workings \$62,756.** Triple-oxygen and Si isotopic analyses of cryogenic opal-A and silica precipitated from low-temperature brines: Implications for determining paleotemperatures and fluid histories from returned samples from Mars. **PI: Liz Rampe/Joanna Clark; Co-Is: Thomas Lapen and Henry Chafetz.** 3/12/2020 – 12/31/2023.
- **NASA – Emerging Worlds - \$408,969.** U-Th-Pb chronology of HED meteorites: Implications for the magmatic evolution and early thermal history of asteroid 4 Vesta. **PI: Thomas Lapen; Co-Is: Mark Schmitz, James Crowley.** 5/1/2018 – 4/30/2023.
- **NASA – Solar System Workings: 16-SSW16_2-0167 - \$349,520.** The nature and timing of magmatism on Mars: A petrologic and Lu-Hf, Sm-Nd and Rb-Sr chronology and isotope tracer study of shergottites and nakhlites. **PI: Thomas Lapen; Co-I: Brian Beard.** 1/1/2018 – 12/31/2022.
- **American Chemical Society – Petroleum Research Fund: PRF# 55770-ND2 - \$110,000.** Uranium-Thorium-Lead Chronology of Source Rock Deposition and Diagenesis, an In Situ and Whole Rock Study of TOC-Rich Shales. **PI: Thomas Lapen.** 6/1/2015 – 5/31/2018
- **NASA Earth and Space Science Fellowship: \$60,000.** In situ investigations of Al-Mg isotopes in Type B1 CAIs. **Student: Andrew Kerekgyarto, Institutional PI: Thomas Lapen.** 9/1/2015 – 8/31/2017
- **NASA – Solar System Exploration Research Virtual Institute (SSERVI): \$185,177 - UH PI: Thomas Lapen.** 4/1/2014 – 3/30/2019,
- **NASA – Cosmochemistry: 11-COS11-0080 - \$60,000.** Age and Lu-Hf isotope investigations of eucrite and angrite meteorites: Constraints on excess ¹⁷⁶Hf in early solar system materials. **PI: Thomas Lapen.** 8/1/2012 - 12/31/2013,
- **Shell Oil Company: \$54,105.** Provenance Systematics of Middle Cretaceous Sandstones, Western Canada Sedimentary Basin, Alberta, Canada – **PI: Janok Bhattacharya, Co-PI: Thomas Lapen.** 01/31/2012 – 01/30/2015. (**Lapen PI after Bhattacharya left UH**)
- **NASA – Mars Fundamental Research: 10-MFRP10-0101 - \$222,452.** Coupled Lu-Hf and Sm-Nd isotopic studies of Martian meteorites: constraints on crystallization ages and source compositions – **PI: Thomas Lapen, Co-PI: Rasmus Andreasen.** 3/23/2011 – 10/1/2014.

- **NSF – Petrology and Geochemistry: 1048583 - \$338,147.** Testing Models for Continental Growth and Melt-Rock Interaction from 186Os-187Os-Hf-Nd-Sr Isotopes in SW USA Mantle Xenoliths. **PI: Alan Brandon, Co-PI: Thomas Lapen.** 2/15/2011 – 2/14/2012.
- **NSF – Instrumentation and Facilities: 0947220 - \$181,578.** Acquisition of a Thermal Ionization Mass Spectrometer – **PI: Alan Brandon, Co-PI: Thomas Lapen.** 2/15/2011 – 2/14/2014.
- **NASA – Planetary Major Equipment: 09-COS09-0040 - \$181,578.** Acquisition of a Thermal Ionization Mass Spectrometer – **PI: Alan Brandon, Co-PI: Thomas Lapen.** 2/15/2011 – 2/14/2014
- **NASA Cosmochemistry (08-COS08-0064) - \$426,000.** Test of Hf isotope heterogeneity in the early solar system. 11/1/2008 – 10/31/2011 **PI – Thomas Lapen.**
- **State of Texas Advanced Research Program (003652-0140-2007-12) - \$125,000.** U-Pb age and Hf isotope composition of detrital zircons, Ouachita Orogenic Belt, Marathon Uplift, Texas. 8/1/2008 – 7/31/2011. **T.J. Lapen Sole PI.**
- **NSF/IF (0824967) - \$269,658.** Acquisition of a multiple-collector inductively-coupled plasma mass spectrometer, 11/2008 – 11/2009 (1 year extension); **PI – Thomas Lapen, Co-PIs John Casey, Jonathan Snow, Michael Murphy.**
- **NASA Lunar Science Institute - \$158,983 (awarded to Lapen).** Impact Processes in the Origin and Evolution of the Moon: New Sample-driven Perspectives. **PI – David Kring (Lunar and Planetary Science Institute), Co-PI - T.J. Lapen, among many, many others.**
- **NSF/OCE (0619857) - \$142,928 (UH portion).** Collaborative Research: Os, Nd, and Hf isotopes in abyssal peridotites of the Arctic Lena Trough: Continental lithospheric or Asthenospheric mantle origin? **PI – Jonathan Snow, Co-PI – Thomas Lapen (24 months, 5/2007 – 5/2009; extended)**
- **NSF/EAR (0711527) – \$299,829.** The Deformation History of the India-Asia Suture Zone, Lopukangri Rift, South-Central Tibet. **PI – Michael Murphy, Co-PI – Thomas Lapen, Co-PI – Alexander Robinson (36 months, 9/2007 – 9/2010)**
- **American Chemical Society PRF - \$35,000.** U-Pb age and Hf isotope compositions of detrital zircons from strata of the Ouachita Orogenic Belt, Arkansas, Oklahoma, and Texas. **PI – Thomas Lapen (24 months, 8/2006 – 8/2008; expired)**

Independently written press coverage of recent research and other interviews:

- <https://www.popsoci.com/science/how-old-is-earth/> (2023)
- Eifling, S. (2022) Heavens on Earth: What Our Solar System Reveals About Our Home Planet. <https://stories.uh.edu/fm22-heavens-on-earth/index.html>
- Taylor, G. J. (May, 2017) Two Billion Years of Magmatism in One Place on Mars. *PSRD*, <http://www.psrhawaii.edu/May17/mars-magmatism.html>
- <http://www.houstonpublicmedia.org/articles/shows/uh-moment/2017/02/08/187011/uh-moment-studying-the-red-planet/>
- <http://www.popularmechanics.com/space/moon-mars/a25023/mars-volcanoes-two-billion-years/>
- <http://www.space.com/35528-mars-volcanoes-2-billion-years.html>
- <http://www.csmonitor.com/Science/Spacebound/2017/0202/What-do-Martian-meteorites-tell-us-about-volcanism-on-the-Red-Planet>
- <http://www.usatoday.com/story/tech/sciencefair/2017/02/06/s-lotta-lava-martian-volcano-erupted-2-billion-straight-years/97558702/>
- <http://www.seeker.com/volcanoes-mars-rocks-meteorite-geology-planets-history-olympus-mons-2231187733.html>
- <https://www.sciencenews.org/article/red-planets-interior-may-not-churn-much>
- <https://cosmosmagazine.com/geoscience/mars-was-volcanically-active-more-than-two-billion-years-ago>

- <http://www.smithsonianmag.com/smart-news/martian-volcano-may-have-continuously-erupted-billions-years-180962068/>
- <https://www.inverse.com/article/27193-mars-2-billion-volcanic-activity-meteorite>
- Taylor, G. J. (May, 2010) A Younger Age for the Oldest Martian Meteorite. Planetary Science Research Discoveries.
<http://www.psr.d.hawaii.edu/May10/YoungerALH84001.html>
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- Brindley, L., (May 2010) Mars meteorite gets a boost of youth. Chemistry World, vol. 7, 24.
<http://www.rsc.org/chemistryworld/News/2010/April/15041003.asp>
- Grossman, L., (May 2010) Famous Martian meteorite younger than thought. Science News, vol. 177, 10.
http://www.sciencenews.org/view/generic/id/58322/title/Famous_Martian_meteorite_younger_than_thought
- Thompson, A., (April 2010) Oldest Mars Meteorite Younger Than Thought. Space.com.
<http://www.space.com/scienceastronomy/oldest-mars-meteorite-younger-100415.html>
- Staff writers, Martian meteorite younger than thought. CBC News, April 15, 2010.
<http://www.cbc.ca/technology/story/2010/04/15/tech-mars-meteorite.html>

Teaching

Courses Taught

- GEOL 1330 Physical Geology
- GEOL 3325 Rocks and Minerals
- GEOL 3335 Petrogenesis
- GEOL 3370 Mineralogy
- GEOL 3340 Geological Field Methods
- GEOL 3373 Igneous and Metamorphic Petrogenesis
- GEOL 3360 Field Geology (Field Camp)
- GEOL 6397 Metamorphic petrology
- GEOL 6397 Planetary Materials

New courses developed or heavily revised:

- GEOL 6397 Metamorphic petrology (Newly created)
- GEOL 6397 Planetary Materials (Newly created)
- GEOL 3373 Igneous and Metamorphic Petrology (Newly created; formerly 'Petrogenesis')
- GEOL 3325 Rocks and Minerals (Heavily revised)

Post-Doctoral Researchers advised since 2005:

- Dr. Minako Richter (2007-2009; presently lab manager for Lapen's isotope geochemistry lab)
- Dr. Xin-Yang Chen (9/2016 – 8/2017; Now at Chengdu University of Technology)
- Dr. Tyson Smith (9/2019 – 12/2020; Now at the USGS in Denver, CO)

Graduate students (Lapen as main advisor):

- Barry Shaulis (MS 2010; PhD 2012; Research Associate, University of Arkansas, AR)
 - **MS:** *Provenance of detrital zircons from the Ouachita Mountains of Oklahoma and Arkansas, USA*
 - **PhD:** *Terrestrial and cosmochemical applications of U-Pb zircon, baddeleyite, and phosphate chronology*
- Kellen Springer (MS 2010; Pacific Northwest National Laboratory, Richland, WA USA)
 - **MS:** *Sm-Nd geochronology of the Zermatt-Saas ophiolite, St. Marcel, Italy*
- Jesse Dietderich (MS 2012; Shell Oil Company)

- **MS:** *Isotope systematics of the eucrite Jonzac*
- Samuel Simmons (MS 2012; Statoil)
 - **MS:** *Lu-Hf and Sm-Nd systematics of Apollo 17 sample 78236: Ages, evolution, and investigations into the neutron fluence correction on the Lu-Hf system*
- Daniel Buechmann (MS 2012; Statoil)
 - **MS:** *Provenance, detrital zircon U-Pb geochronology, and tectonic significance of middle Cretaceous sandstones from the Alberta Foreland Basin*
- Therica Grosshans (MS 2013; EOG Resources)
 - **MS:** *Lu-Hf and Sm-Nd ages and source compositions for depleted shergottite Tissint*
- Katherine Tilghman (MS 2014; Bureau of Ocean Energy Management)
 - **MS:** *Constraining the age of metamorphism in the Dora Maira, Western Alps: Implications of U-Th-Pb ages and REE concentrations in phosphates*
- Shawn Larkin (MS 2015; TBD)
 - **MS:** *Geochemical characterization and “sourcing” of chalcedony artifacts from the Beezley chalcedony, Roza Member, Columbia River Basalt Group, Washington*
- Curtis Calva (MS; 2019; Jacobs Technology at NASA JSC)
 - **MS:** *Formation of the fine-scale layering in the Stillwater Complex, Montana*
- Stephanie Suarez (MS 2019; now PhD student in EAS)
- Debbie Bradley (PhD co-advised with Jinny Sisson; 2019; Geologist with the USDA)
 - **PhD:** *Timing of prograde metamorphism of lawsonite eclogite from south of the Motagua Suture Zone, Guatemala*
- Tyson Smith (PhD co-advised with Joel Saylor; 2019; USGS in Denver, CO)
 - **PhD:** *Drainage reorganization, sediment sourcing, and intraplate tectonics in Western North America during the ancestral Rocky Mountains and Laramide orogeny*
- Trey Lobpries (PhD; 2020; Science Educator at Katy ISD)
 - **PhD:** *Remote Sensing Investigation of a Possible Impact Structure in North-central Niger and Paleoenvironmental Conditions and Diagenesis in the Upper Edwards Formation*
- Christian Martinez (MS; 2021; Geologist with Golder)
 - **MS:** *Petrology, Chronology, and Geochemical Analyses of Zircon-Bearing Noritic Diogenite NWA 10666*
- Carlos Andrade (PhD; 2021; Geology Associate at Kansas Department of Health and Environment)
 - **PhD:** *Silicon isotope and petrographic investigations of silicified carbonate rocks: Implications for improved paragenetic sequencing and proxies for Paleozoic ocean chemistry.*
- Andrew Robertson (MS; 2022; Wellsite Geologist at Terra Guidance)
 - **MS:** *U-Th-Pb Ages Of High-Grade Metamorphism Recorded In Polymict Eucrite Lewis Cliff (LEW) 85300*
- Joanna Clark (PhD; 2022; Jacobs Technology at NASA JSC)
 - **PhD:** *Martian Surface Mineralogy And Geochemistry As Indicators Of Past Environmental, Climatic, And Aqueous Conditions*
- Stephanie Suarez (PhD; current; **NSF Graduate Student Fellow**)
- Devin McQuaig (MS; current)
- Ruby Patterson (PhD; current)
- Nickole Haney (PhD; current)
- Shawn Fields (MS starting Fall, 2023)
- Abigail Cantoni (PhD starting Fall, 2023)

Undergraduate researchers who worked in Lapen’s lab (* Current student):

- Samuel Simmons
- Therica Grosshans

- Calvin Silver
- Antonio Sierra
- Daniella Carpio
- Charis Hall
- Darshan Ghandi
- Alicia Staszyc
- Elizabeth Thompson
- Ane Slabic (**Honors Thesis**)
- Tyler Tanner
- Devin McQuaig
- Christian Martinez
- *Shawn Fields (**Honors Thesis**)

PhD students on whose committees Lapen served (* Current student):

- Ran Zhang (Geosciences)
- Xin-Yang Chen (Geosciences) – Lapen Co-Advisor
- Pranav Kulkarni (Civil and Environmental Engineering)
- Divagar Lakshmanan (Civil and Environmental Engineering)
- Shams ul-Hadi (Geosciences)
- Sergio Sarmiento (Geosciences)
- Veronica Sanchez (Geosciences)
- Daniel Imrecke (Geosciences)
- Kurt Sundell (Geosciences)
- Tyson Smith (Geosciences)

MS students on whose committees Lapen served:

- Sepani Chandima Wickramasinghe (Chemistry)
- Carmen Barzoi (Geosciences)
- Adrian Gittens (Geosciences)
- Raul Benavidez (Geosciences)
- Jeremy Kent (Geosciences)
- Steven Braun (Geosciences)
- Kimberely Mead (Geosciences)
- Jeremy Krimmel (Geosciences)
- Jennifer Campo (Geosciences)
- Nick Bartschi (Geosciences)

Service

Committees (past and present):

In the Department

- Associate Chair, EAS Department (09/2016 – 09/2018)
- Geology Graduate Advisor (01/2012 – 08/2016)
- Geology Ph.D. Candidacy Examination Committee
- Geophysics Ph.D. Candidacy Examination Committee
- Scholarship and Awards Committee
- Structural Geology, Stable Isotope, and Isotope Geochemistry Search Committees
- Ph.D. Placement Examination Committee
- Material Committee

- Personnel Committee
- Merit and yearly review committee

In the College/University

- Moores Professorship selection committee
- Faculty Senate – Graduate Studies Committee
- NSM Graduate Studies Committee
- Member of the NSM Research Strategic Planning Committee Meeting
- Member of the College of Natural Sciences and Mathematics Faculty Leave Committee
- Member of the College of Natural Sciences and Mathematics Awards Committee
- Steering committee member of the Rice University-University of Houston Alliances for Graduate Education and the Professoriate (AGEP)

Outside of the University

- NASA Lunar sample allocation committee (ExMAG; 2018 – present)
- NASA panel member (2010, 2011, 2012, 2017, 2018, 2020)
- 44th Lunar and Planetary Science Conference Committee
- 45th Lunar and Planetary Science Conference Committee
- 46th Lunar and Planetary Science Conference Committee
- 47th Lunar and Planetary Science Conference Committee

Journal article reviewer/associate editor

- *AE for Frontiers in Astronomy and Space Science*
- *Earth and Planetary Science Letters*
- *Journal of Maps*
- *Journal of Petrology*
- *Chemical Geology*
- *Geochimica et Cosmochimica Acta*
- *Contributions Mineralogy and Petrology*
- *Lithos*
- *Journal of Metamorphic Petrology*
- *G-Cubed*
- *Elements*
- *Meteoritics and Planetary Science*
- *Astrophysical Journal*
- *Science Advances*
- *Nature*

Research proposal reviewer and external reviewer

- Doctoral Dissertation reviewer – ANU
- Masters Thesis Reviewer – U of Cape Town
- NSF Instrumentation and Facilities
- NSF Tectonics
- NSF Petrology and Geochemistry
- NASA Cosmochemistry
- NASA Mars Fundamental Research
- Swiss NSF
- Austrian NSF