

# CURRICULUM VITAE – RICHARD ALAN KETCHAM

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**BORN:** July 2, 1965; Norwalk, Connecticut

## **EDUCATION:**

Ph.D., Geological Sciences, May 1995  
B.A., Geology and Computer Science, May 1987

University of Texas, Austin, TX  
Williams College, Williamstown, MA

## **ACTIVE RESEARCH INTERESTS:**

- Use of high-resolution X-ray computed tomography (CT) for geological applications.
- Application of computational modeling and analysis techniques to geological problems, both theoretical and field-oriented
- Theory and practice of apatite fission-track and other methods of low-temperature thermochronology, including thermal history inversion
- Quantitative textural analysis of porphyroblast crystallization in metamorphic rocks, and modeling of diffusion-controlled crystallization textures.
- Characterization of thermal structure and heat source distribution in the continental crust through both field-based and modeling approaches

## **HONORS AND AWARDS:**

2020	Dodson Award, International Standing Committee for Thermochronology
2017	Mineralogical Society of America Fellow
2015	Walter Award, Jackson School of Geosciences
2014	Faculty Science Performance Award for an Associate Professor, Department of Geological Sciences
2013	Exceptional Reviewer, Review of Scientific Instruments
2012	Exceptional Reviewer, GSA Bulletin
2010-2011	G. Moses and Catherine G. Knebel Distinguished Teaching Award, Department of Geological Sciences
2010	Geological Society of America Fellow
2007-2009	Jackson School of Geosciences Research Excellence Fellow
2006-2007	Jackson School of Geosciences Scientist Fellow
2005-2006	Jackson School of Geosciences Research Fellow
1995	Houston Geological Society Outstanding Student Award, University of Texas Department of Geological Sciences
Spring 1994	Best Ph.D. Technical Sessions Presentation, University of Texas Department of Geological Sciences
1994	Graduate Student Service Award, University of Texas Department of Geological Sciences

### **AFFILIATIONS:**

Sigma Xi, Geological Society of America, American Geophysical Union, Mineralogical Society of America, Geochemical Society

### **PROFESSIONAL POSITIONS:**

2014-present Professor, Department of Geological Sciences, University of Texas at Austin  
2015-2016 Chair (Interim), Department of Geological Sciences, University of Texas at Austin  
2013-2017 Associate Dean for Academic Affairs, Jackson School of Geosciences, University of Texas at Austin  
2008-2014 Associate Professor, Department of Geological Sciences, University of Texas at Austin  
2005-2008 Senior Research Scientist, Department of Geological Sciences, University of Texas at Austin  
2000-2005 Research Scientist, Department of Geological Sciences, University of Texas at Austin  
1996-2000 Research Associate, Department of Geological Sciences, University of Texas at Austin  
1995-1996 Senior Geologist, Donelick Analytical, Inc., Katy, Texas  
1995-1996 Complimentary Postdoctoral Associate, Department of Geology and Geophysics, Rice University, Houston, Texas  
1989-1995 Research Assistant and Teaching Assistant, Department of Geological Sciences, University of Texas at Austin  
1991-1992 Research Intern and Consultant, Exxon Production Research Company, Houston, Texas  
  
2003-2006 Associate Editor, *American Mineralogist*  
  
2010-2014 Guest Professor, Kumamoto University, Japan

### **EXTERNAL RESEARCH GRANTS FUNDED:**

2023-2027 NASA, Grant Number 22-PSEF22\_2-0018, \$919,486. “UTCT: High Resolution X-ray CT Facility Enabling Planetary Science Research.” Co-PI, Romy Hanna PI.  
  
2022-2025 NSF Earth Sciences Division – Instrumentation and Facilities Program, EAR-2223808, \$1,208,495. “CFS (Track III): High-Resolution X-ray Computed Tomography Laboratory.” PI. Timothy Rowe, co-PI.  
  
2021-2024 NASA, 20-LARS20\_2-0012, \$481,000. “Multiscale pore characterization and porosity measurement of carbonaceous chondrites in preparation for returned samples from Bennu and Ryugu.” Co-I; PI Romy Hanna, University of Texas at Austin.

- 2020-2023 NSF Earth Sciences Division, EAR-1946639, \$79,787 to UT. “Collaborative research: Improved geochronology-based sediment provenance analysis through physico-mechanical characterization of zircon transport.” UT PI; Project PI Mauricio Ibanez-Mejia, University Arizona.
- 2019-2021 NSF Earth Sciences Division – Major Research Instrumentation, EAR-1919700, \$1,173,748. “MRI: Acquisition of a state-of-the-art high-resolution X-ray computed tomography scanner.” PI. Jessica Maisano and Timothy Rowe, co-PIs.
- 2018-2022 NSF Earth Sciences Division – Instrumentation and Facilities Program, EAR-1762458, \$1,361,197. “Facility Support: High-resolution X-ray Computed Tomography Laboratory.” PI. Timothy Rowe, co-PI.
- 2016-2019 Österreichische Forschungsförderungsgesellschaft mbH (FFG), €378,561, UT subcontract €45,000. “Devastating micro cracks: researching spontaneous rock failure with rock mechanical testing,  $\mu$ CT, OBIA and geostatistics.” Subcontract PI.
- 2016-2018 NSF Earth Sciences Division – Instrumentation and Facilities Program, EAR-1561622, \$626,168. “Facility Support: High-resolution Computed Tomography Laboratory.” PI. Timothy Rowe, co-PI.
- 2016-2017 NASA, Grant Number NNX16AL24G, \$527,779, UT share \$14,000. “Creating and serving novel data products of astromaterials: Combining image-based 3D reconstructions and X-ray CT data of astromaterials to enable targeted scientific research and enhance public access to astromaterials collections”. UT PI.
- 2015-2017 NSF Earth Sciences Division – Integrative and Collaborative Education and Research Program, ICER-1541088, \$629,065. “EarthCube IA: Digital Rocks Portal: a Sustainable Platform for Sharing, Translation, and Analysis of Volumetric Data of Porous Media.” Co-PI; Masa Prodanovic, UT Petroleum and Geosystems Engineering PI.
- 2013-2016 NASA Earth and Space Science Fellowship, Grant Number NNX13AO64H, \$90,000. “Secondary Processing of CM Regolith: a Multi-Scale Investigation With X-ray Computed Tomography and Infrared Spectrometry.” PI, with graduate student Romy Hanna.
- 2013-2016 NSF Earth Sciences Division – Instrumentation and Facilities Program, EAR-1258878, \$741,997. “Facility Support: High-resolution X-ray Computed Tomography Laboratory.” PI. William Carlson and Timothy Rowe, co-PIs.
- 2012-2014 NSF Earth Sciences Division – Instrumentation and Facilities Program, EAR-1160721, \$310,000. “Facility Support: Refurbishing the High-Resolution X-

ray Computed Tomography Laboratory Principal Instrument.” PI. William Carlson and Timothy Rowe, co-PIs.

- 2011-2013 NSF Earth Sciences Division – Petrology, EAR-1049983, \$92,597. Collaborative Research: Little Devils Postpile revisited: Intercalibration of thermochronometer kinetics in a contact aureole. PI. Collaborators Peter Zeitler (Lehigh), Peter Reiners (University of Arizona), David Shuster (Berkeley Geochronology Center).
- 2010-2013 NSF Earth Sciences Division – Instrumentation and Facilities Program, EAR-0948842, \$748,698. “Facility Support: High-resolution Computed Tomography Laboratory.” PI. William Carlson and Timothy Rowe, co-PIs.
- 2010-2013 NSF Earth Sciences Division – Petrology and Tectonics, EAR-0948636, \$288,097. “Improved characterization of apatite fission-track annealing kinetics, and application to core complex exhumation, Southern Basin and Range.” PI.
- 2008-2010 Ecopetrol, \$1,500,000. “Basin evolution and structural history of a Regional transect through the Middle Magdalena Valley, Eastern Cordillera, and western Llanos basin of Colombia” Co-PI; Brian Horton PI.
- 2007-2010 NSF Earth Sciences Division – Instrumentation and Facilities Program, EAR-0646848, \$689,000. “Facility Support: High-resolution Computed Tomography Laboratory.” Co-PI; William Carlson PI.
- 2007-2009 NSF Division of Computer and Network Systems – Computing Resources Infrastructure Program, CNS-0709135, \$134,158. “CRI: IAD Acquisition of a High Resolution Micro X-ray Computed Tomographic Scanner.” Co-PI; PI Timothy Rowe, Co-PI William Carlson.
- 2005-2009 NSF Earth Sciences Division – Hydrologic Sciences, EAR-0439806, \$347,467. “Evaluating Fracture Roughness and its Effect on Fluid Flow.” Co-PI; Jack Sharp PI.
- 2005-2008 NSF BCS-Physical Anthropology, BCS-0521835, \$214,785. “Trabecular bone morphology and locomotion in extant primates and fossil hominins.” Co-PI; PI Brian Richmond, George Washington University.
- 2005-2007 Department of Defense, STTR program, NAVSURFWARCEN/MDA, Prime Contract W9113M-05-C0206, Total award \$749,995, UT subcontract \$225,000. “Techniques for Radiation Hardening of EKV Through Incorporation of Shielding in Component Structures Fabricated from Be/Be Alloy Substitute Materials. Phase II.” Subcontract to Scimitar Technologies. Subcontract PI.

- 2004-2007 NSF Earth Sciences Division – Instrumentation and Facilities Program, EAR-0345710, \$897,147. “Facility Support: High-resolution Computed Tomography Laboratory.” Co-PI; William Carlson PI.
- 2004-2005 Department of Defense, STTR program, NAVSURFWARCEN/MDA, Prime Contract N00164-04-C-6056, Total award \$98,000, UT subcontract \$29,400. “Techniques for Radiation Hardening of EKV through incorporation of Shielding in Component Structures Fabricated from Be/Be Alloy Substitute Materials. Phase I.” Subcontract to Scimitar Technologies. Subcontract PI.
- 2004-2005 TRW Education Support Review Committee, \$20,000. Investigation of the applicability of high-resolution X-ray CT to quality assurance of automotive safety devices. PI.
- 2001-2004 NSF Earth Sciences Division – ITR Small Grants Program, EAR-0113480, \$350,000. “Computational methods for quantitative analysis of X-ray computed tomographic (CT) data for the geosciences.” PI; William Carlson co-PI.
- 2001-2004 NSF Earth Sciences Division – Instrumentation and Facilities Program, EAR-0004082, \$386,294. “Facility Support: High-resolution Computed Tomography Laboratory.” Co-PI; William Carlson PI.
- 1999-2002 NSF Earth Sciences Division, Petrology/Geochemistry Program, EAR-9902682, \$302,733. “Crystallization kinetics: Quantitative analysis and numerical simulation of metamorphic textures.” Co-PI; William Carlson PI.
- 1999-2001 NSF Earth Sciences Division – Instrumentation and Facilities Program, EAR-9816020, \$200,000. “Facility Support: High-resolution Computed Tomography Laboratory.” Co-PI; William Carlson PI.
- 1999-2000 National Research Council, Transportation Research Board – IDEA Program, Contract Number NCHRP-64, \$75,517. “Quantitative Characterization of Asphalt Concretes Using High-Resolution X-ray Computed Tomography (CT).” Co-PI; William Carlson PI.

### **CITATION RECORD:**

ISI Library of Science: h-index 51; 11498 citations total, 1135 in 2021

<https://www.webofscience.com/wos/author/rid/B-5431-2011>

Google: h-index 65; 18575 citations total, 1557 in 2022

<https://scholar.google.com/citations?user=dXMQVFIAAAAJ&hl=en>

### **PUBLICATIONS:**

*Asterisks denote publications with supervised students*

- Bassal, F., Roques, J., Corre, M., Brunet, F., **Ketcham, R.**, Schwartz, S., Tassan-Got, L., Gautheron, C., 2022. Role of defects and radiation damage on He diffusion in magnetite: implication for (U-Th)/He thermochronology. *Minerals*, 12, 590. DOI: 10.3390/min12050590.
- Ferraz da Costa, M., Kyle, J.R., Lobato, L.M., **Ketcham, R.A.**, Figueiredo e Silva, R.C., Fernandes, R.C., 2022. Orogenic gold ores in three-dimensions: A case study of distinct mineralization styles at the world-class Cuiabá deposit, Brazil, using high-resolution X-ray computed tomography on gold particles. *Ore Geology Reviews*, 140, 104584. DOI: 10.1016/j.oregeorev.2021.104584.
- Flowers, R.M., **Ketcham, R.A.**, Macdonald, F.A., Siddoway, C.S., Havranek, R.E., 2022. Letter to the Editor: Existing thermochronologic data do not constrain Snowball glacial erosion below the Great Unconformities. *Proceedings of the National Academy of Science*, 119(38), e2208451119. DOI: 10.1073/pnas.2208451119.
- Flowers, R.M., Zeitler, P.K., Danišík, M., Reiners, P.W., Gautheron, C., **Ketcham, R.A.**, Metcalf, J.R., Stockli, D.F., Enkelmann, E., and Brown, R.W., 2022. (U-Th)/He chronology: Part 1. Data, uncertainty, and reporting. *GSA Bulletin*. DOI: 10.1130/B36266.1.
- Flowers, R.M., **Ketcham, R.A.**, Enkelmann, E., Gautheron, C., Reiners, P.W., Metcalf, J.R., Danišík, M., Stockli, D.F., and Brown, R.W., in press. (U-Th)/He chronology: Part 2. Considerations for evaluating, integrating, and interpreting conventional individual aliquot data. *GSA Bulletin*. DOI: 10.1130/B36268.1.
- Gao, S., Cowgill, E., Wu, L., Lin, X., Cheng, X-g., Yang, R., Soares, C., **Ketcham, R.A.**, An, K., Gong, J., Song, X., Chen, H., Yang, S., 2022. From left slip to transpression: Cenozoic tectonic evolution of the North Altyn fault, northwestern margin of the Tibetan Plateau. *Tectonics*, 41(3), e2021TC006962. DOI: 10.1029/2021TC006962.
- Goldfarb, E., Ikeda, K., **Ketcham, R.A.**, Prodanovich, M., Tisato, N., 2022. Predictive digital rock physics without segmentation. *Computers and Geosciences*, 159, 105008. DOI: 10.1016/j.cageo.2021.105008.
- Hanna, R.D., **Ketcham, R.A.**, Edey, D.R., O'Connell, J., 2022. 3D porosity structure of the earliest solar system material. *Nature Scientific Reports* 12, 8369. DOI: 10.1038/s41598-022-11976-1.
- Mackaman-Lofland, C., Horton, B.K., **Ketcham, R.A.**, McQuarrie, N., Fosdick, J.C., Fuentes, F., Constenius, K.N., Capaldi, T.N., Stockli, D.F., Alvarado, P., 2022. Causes of variable shortening and tectonic subsidence during changes in subduction: insights from flexural thermokinematic modeling of the Neogene southern central Andes (28–30°S). *Tectonics*, 41. DOI: 10.1029/2022TC007334.
- Rowe, T.B, Stafford, T.W.Jr., Fisher, D.C., Enghild, J.J., Quigg, J.M., **Ketcham, R.A.**, Sagebiel, J.C., Hanna, R., Colbert, M., 2022. Human Occupation of the North American Colorado

Plateau ~37,000 years ago. *Frontiers in Ecology and Evolution* 10, 903795. DOI: 10.3389/fevo.2022.903795.

Whipp, D.M., Kellett, D.A., Coutand, I., **Ketcham, R.A.**, 2022. Short communication: Modelling competing effects of cooling rate, grain size and radiation damage in low temperature thermochronometers. *Geochronology* 4, 143-152. DOI: 10.5194/gchron-4-143-2022.

**Ketcham, R.A.**, \*Tamer, M.T., 2021. Confined fission track revelation in apatite: how it works and why it matters. *Geochronology* 3(2), 433-464. DOI: 10.5194/gchron-3-433-2021.

Cristallini, E., Sánchez, F., Balciunas, D., Mora, A., **Ketcham, R.**, Nigro, J., Hernández, J.I., Hernández, R., 2021. Seamless low-temperature thermochronological modeling in Andino 3D, the all-in-one structural suite. *Journal of South American Earth Sciences*, 105, 102851. DOI: 10.1016/j.jsames.2020.102851.

Lutz, B., **Ketcham, R.A.**, Axen, G., Beyenne, M.A., Wells, M., van Wijk, J., Stockli, D.F., Ross, J., 2021. Thermo-kinematic modeling of detachment faulting in the Funeral Mountains, California: mid-crustal thinning and cooling during large magnitude extension. *Tectonophysics*. DOI: 10.1016/j.tecto.2021.228755.

Gallagher, K., and **Ketcham, R.A.**, 2020. Comment on the reply to the Comment on “Thermal history modelling: HeFTy vs. QTQt” by Vermeesch and Tian, *Earth-Science Reviews* (2014), 139, 279–290. *Earth Science Reviews*, 203, UNSP-102878. DOI: 10.1016/j.earscirev.2019.102878.

Gautheron, C.E., Djimbi, D.M., Roques, J., Balout, H., **Ketcham, R.A.**, Simoni, E., Pik, R., Seydoux-Guillaume, A.-M., Tassan-Got, L., 2020. A multi-method, multi-scale theoretical study of He and Ne diffusion in zircon. *Geochimica et Cosmochimica Acta*, 268, 348-367. DOI: 10.1016/j.gca.2019.10.007.

\*Goldsmith, A., **Ketcham, R.A.**, Stockli, D.F., 2020. Simulating effects of heterogeneous <sup>4</sup>He concentration profiles and radiation damage annealing on whole-grain zircon diffusivity analyses. *Geochimica et Cosmochimica Acta*, 284, 239-253. DOI: 10.1016/j.gca.2020.05.033.

Mackaman-Lofland, C., Horton, B., Fuentes, F., Constenius, K., **Ketcham, R.A.**, Capaldi, T., Stockli, D., Ammirati, J., Alvarado, P., Orozco, P., 2020. Andean mountain building and foreland basin evolution during thin- and thick-skinned Neogene deformation (32–33°S). *Tectonics*, 39, e2019TC005838. DOI: 10.1029/2019TC005838.

Mora, A., Tesón, E., Martínez, J., Parra, M., Lasso, A., Horton, B.K., **Ketcham, R.A.**, Velásquez, A., Arias-Martínez, J.P., 2020. The eastern foothills of Colombia, In: Gómez, J. & Mateus-Zabala, D. (editors), *The Geology of Colombia, Volume 3 Paleogene – Neogene*. Servicio Geológico Colombiano, Publicaciones Geológicas Especiales 37, p. 123–142. DOI: 10.32685/pub.esp.37.2019.05.

- Mora, A., Villagómez, D., Parra, M., Caballero, V.M., Spikings, R., Horton, B.K., Mora-Bohórquez, J.A., **Ketcham, R.A.** & Arias-Martínez, J.P. 2020. Late Cretaceous to Cenozoic uplift of the northern Andes: Paleogeographic implications. In: Gómez, J. & Mateus-Zabala, D. (editors), The Geology of Colombia, Volume 3 Paleogene – Neogene. Servicio Geológico Colombiano, Publicaciones Geológicas Especiales 37, p. 89–121. Bogotá. DOI: pub.esp.37.2019.04
- Schwartz, S., Gautheron, C., **Ketcham, R.A.**, Brunet, F., Pinna-Jamme, R., Haurine, F., Agranier, A., Guéguen, B., Riel, N., 2020. Unraveling exhumation history of high-pressure ophiolite using magnetite (U-Th-Sm)/He thermochronometer. *Earth and Planetary Science Letters*, 543, 116359. DOI: 10.1016/j.epsl.2020.116359.
- \*Tamer, M.T., **Ketcham, R.A.**, 2020. Is low-temperature fission-track annealing in apatite a thermally controlled process? *Geochemistry, Geophysics, Geosystems*, 21, e2019GC008877. DOI: 10.1029/2019GC008877.
- \*Tamer, M.T., **Ketcham, R.A.**, 2020. The along-track etching structure of fission tracks in apatite: observations and implications. *Chemical Geology*, 553, 119809. DOI: 10.1016/j.chemgeo.2020.119809.
- Wang, L., Cardenas, M.B., Zhou, J.-Q., **Ketcham, R.A.**, 2020. The complexity of nonlinear flow and non-Fickian transport in fractures driven by three-dimensional recirculation zones. *Journal of Geophysical Research*, 125, e2020JB020028. DOI: 10.1029/2020JB020028.
- Ketcham, R.A.**, and Mote, A.S., 2019. Accurate measurement of small features in X-ray CT data volumes, demonstrated using gold grains. *Journal of Geophysical Research*, 124, 3508-3529. DOI: 10.1029/2018JB017083.
- Ketcham, R.A.**, 2019. Fission track annealing: from geologic observations to thermal modeling. In: Fission track thermochronology and its application to geology (P. Fitzgerald and M. Malusa, eds.), Springer Textbooks in Earth Sciences, Geography and Environment, Springer, p. 49-75. DOI: 10.1007/978-3-319-89421-8\_3.
- Ketcham, R.A.**, 2019. Resolution-invariant measurements of small objects in polychromatic CT data. In: *Developments in X-Ray Tomography XII* (B. Müller, and G. Wang, eds.), Proceedings of SPIE, 11113, 111130B1-8. DOI: 10.1117/12.2532082.
- Cooperdock, E.H.G., **Ketcham, R.A.**, Stockli, D.F., 2019. Resolving the effects of 2D versus 3D grain measurements on (U-Th)/He age data and reproducibility. *Geochronology*, 1, 17-41. DOI: 10.5194/gchron-1-17-2019.
- \*Eckley, S.E., **Ketcham, R.A.**, 2019. 4D imaging of mineral dissolution in porous carbonado diamond: Implications for acid digestion and XCT measurement of porosity and material properties. *Frontiers Earth Science*, 7(288), 1-12. DOI: 10.3389/feart.2019.00288.



- Gottsbacher, L., Klammer, A., Schubert, W., Marschallinger, R., Hofman, P., Zobl, F., **Ketcham, R.**, Edey, D., 2019. Combination of various laboratory tests to investigate rock burst. In: *Rock Mechanics for Natural Resources and Infrastructure Development - Full Papers, Proceedings of the 14th International Congress on Rock Mechanics and Rock Engineering (ISRM 2019)*, (Sergio A.B. da Fontoura, Ricardo Jose Rocca, Jose Pavon Mendoza, eds.), September 13-18, 2019, Foz do Iguassu, Brazil, 1700-1706.
- Kappelman, J., **Ketcham, R.A.**, Pearce, S., Todd, L., Akins, W., Colbert, M.W., Davis, C., Fesheta, M., Maisano, J.A., Witzel, A., 2019. Reply to: Charlier et al. 2018. Mudslide and/or animal attack are more plausible causes and circumstances of death for AL 288 ('Lucy'): A forensic anthropology analysis. *Medico-Legal Journal* 86(3) 139-142 2018 DOI: 10.1177/0025817217749504. *Medico-Legal Journal*. DOI: 10.1177/0025817219849367.
- Li, Z., Yan, F., **Ketcham, R.A.**, Colbert, M.W., Clarke, J.A., 2019. Mass-transfer based modeling to investigate iodine staining effects for enhanced contrast X-ray computed tomography. *Palaeoworld*, 28, 562-571. DOI: 10.1016/j.palwor.2018.10.004.
- Mora, A., Gomez, R.A., Diaz, C., Caballero, V., Parra, M., Villamizar, C., Lasso, A., **Ketcham, R.A.**, Gonzalez-Penagos, F., Rico, J., Arias-Martinez, J.P., 2019. Water flow, oil biodegradation and hydrodynamic traps in the Llanos Basin. Colombia. *AAPG Bulletin*, 103(5), 1225-1264. DOI: 10.1306/1003181611317237.
- \*Tamer, M.T., Chung, L., **Ketcham, R.A.**, Gleadow, A.J.W., 2019. Analyst and etching protocol effects on the reproducibility of apatite confined fission-track length measurement, and ambient-temperature annealing at decadal time scales. *American Mineralogist*, 104, 1421-1435. DOI: 10.2138/am-2019-7046.
- Ketcham, R.A.**, Van der Beek, P., Barbarand, J., Bernet, M., and Gautheron, C., 2018. Reproducibility of thermal history reconstruction from apatite fission-track and (U-Th)/He data. *G<sup>3</sup> Geochemistry, Geophysics, Geosystems* 19. DOI: 10.1029/2018GC007555.
- Ketcham, R.A.**, Mora, A., and Parra, M., 2018. Deciphering sedimentation history with multi-sample down-well thermochronometric inverse modeling. *Basin Research*, 30(S1), 48-64. DOI: 10.1111/bre.12207.
- Gallagher, K.L., and **Ketcham, R.A.**, 2018. Comment on "Thermal history modelling: HeFTy vs. QTQt" by Vermeesch and Tian, *Earth-Science Reviews* (2014), 139, 279-290. *Earth Science Reviews*, 176, 387-394. DOI: 10.1016/j.earscirev.2017.11.001.
- \*Hanna, R.D., and **Ketcham, R.A.**, 2018. Evidence for accretion of fine-grained rims in a turbulent nebula for CM Murchison. *Earth and Planetary Science Letters*, 481, 201-211. DOI: 10.1016/j.epsl.2017.10.029.
- Rodriguez, M.P., Charrier, R., Brichau, S., Carretier, S., Farías, M., de Parseval, M., **Ketcham, R.A.**, 2018. Latitudinal and longitudinal patterns of uplift-induced exhumation in the Andes of north-central Chile (28.5-32°S). *Tectonics*, 37. DOI: 10.1029/2018TC004997.

- Chapman, J., Carrapa, B., Ballato, P., DeCelles, P., Worthington, J., Oimahmadov, I., Gadoev, M., **Ketcham, R.A.**, 2017. Thermokinematic modeling of shortening in the Tajik Fold and Thrust Belt: Implications for intracontinental subduction beneath the Pamir Mountains. *Geological Society of America Bulletin*, 129(11-12), 1450-1471. DOI: 10.1130/B31730.1.
- Chirchir, H., Zeininger, A., Nakatsukasa, M., **Ketcham, R.A.**, Richmond, B.G., 2017. Does trabecular bone structure within the metacarpal heads of primates vary with hand posture? *Comptes rendus Palevol*, 16(5-6), 533-544. DOI: 10.1016/j.crpv.2016.10.002.
- \*Hanna, R.D., and **Ketcham, R.A.**, 2017. X-ray computed tomography of planetary materials: A primer and review of recent studies. *Chemie der Erde – Geochemistry*, 77, 547-572. DOI: 10.1016/j.chemer.2017.01.006.
- Anderson, V.J., Horton, B.K., Saylor, J.E., Mora, A., Tesón, E., Brecker, D.O., **Ketcham, R.A.**, 2016. Andean topographic growth and basement uplift in southern Colombia: Implications for the evolution of the Magdalena, Orinoco, and Amazon river systems. *Geosphere*, 12(4) 1235-1256. DOI: 10.1130/GES01294.1.
- Carillo, E., Mora, A., **Ketcham, R.**, Amorocho, R., Parra, M., Robles, W., Avellaneda, W., Carvajal, J., Corcione, M., Bello, W., Figueroa, J., Gomez, J., Gonzalez, J., Quandt, D., Reyes, M., Rangel, A., Serrano, I., Pelayo, M., and Poras, J., 2016. Movement vectors and deformation mechanisms in kinematic restorations. A case study from the Colombian Eastern Cordillera. *Interpretation*, 4(1), T31-T48. DOI: 10.1190/INT-2015-0049.1.
- Flowers, R.M., Farley, K.A., and **Ketcham, R.A.**, 2016. Response to comment on “A philosophy and reporting protocol for thermochronologic modeling illustrated with data from the Grand Canyon.” *Earth and Planetary Science Letters*, 441, 213-213. DOI: 10.1016/j.epsl.2016.02.024.
- Kappelman, J., **Ketcham, R.A.**, Pearce, S., Todd, L., Akins, W., Colbert, M.W., Feseha, M., Maisano, J.A., Witzel, A., 2016. Perimortem fractures in Lucy suggest mortality from fall out of tall tree. *Nature*, 537, 503-507. DOI: 10.1038/nature19332.
- Li, Z., Clarke, J.A., **Ketcham, R.A.**, Yan, F, and Maisano, J.A., 2016. Comparison and evaluation of the effectiveness of two approaches of diffusible iodine-based contrast-enhanced X-ray computed tomography (diceCT) for avian cranial material. *Journal of Biomechanics*, 326(6), 352-362. DOI: 10.1002/jez.b.22692.
- Rowe, T.B., Luo, Z.X., **Ketcham, R.A.**, Maisano, J.A., Colbert, M.W., 2016. X-ray computed tomography datasets for forensic analysis of vertebrate fossils. *Scientific Data*, 3, 160040. DOI: 10.1038/sdata.2016.40.
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Denison, C., **Ketcham, R.A.** and Carlson, W.D., 1996. Using high-resolution computed X-ray tomography for three-dimensional quantitative textural analysis. Geol. Soc. Am., Abstracts with Programs, 28, A46.

**Ketcham, R.A.**, Donelick, R.A. and Carlson, W.D., 1996. An empirical model for projecting fission tracks to a common orientation. International Workshop on Fission Track Dating, Ghent, Abstracts, 65.

**Ketcham, R.A.**, 1995. Thermal models of core complex evolution: implications for ancient cooling paths and present-day heat flow patterns. Eos, 76, S284.

**Ketcham, R.A.**, 1994. Distribution of heat-producing elements in two core complexes, southern Basin and Range: Quantitative constraints on regional thermal models. Geol. Soc. Am., Abstracts with Programs, 26, A473.

Carlson, W.D., Denison, C. and **Ketcham, R.**, 1994. Controls on the nucleation and growth of porphyroblasts. Proceedings of Conference on Controls of Metamorphism, Liverpool, Programme and Abstracts, 8.

**Ketcham, R.** and Karabinos, P., 1989. Inverted and compressed isograds in thrust belts. Geol. Soc. Am., Abstracts with Programs, 21, A140.

Karabinos, P. and **Ketcham, R.**, 1987. Thermal models of active thrust belts. Metamorphic Studies Group Joint Meeting with IGCP Project 235, Evolution of Metamorphic Belts, Abstracts, 12.

### **UNREFEREED ARTICLES:**

Hurford, A. and **Ketcham, R.A.**, 2008. Inter-laboratory comparison of fission-track length measurement in apatite. OnTrack 31, 16(1).

Zattin, M., Balestrieri, M.L., Hasebe, N., **Ketcham, R.A.**, Seward, D., Sobel, E.M., and Spiegel, C., 2008. Notes from the first workshop of the IGCP 543 - Low temperature thermochronology: applications and interlaboratory calibration, Episodes, 31 (3).

**Ketcham, R.A.**, 2000. Some Thoughts on Inverse Modeling and Length and Kinetic Calibration. OnTrack, 10(1).

[http://www.ontrackforum.org/downloads/ontrack\\_archive/OnTrack20.pdf](http://www.ontrackforum.org/downloads/ontrack_archive/OnTrack20.pdf)

Rowe, T., Kappelman, J., Carlson, W.D., **Ketcham, R.A.** and Denison, C., 1997. High-resolution computed tomography: A breakthrough technology for earth scientists. Geotimes, 42, 23-27.

**Ketcham, R.**, 1993. OmniTrack. On Track, 3, 23-26.

### **INVITED LECTURES:**

07/2020 “Resolution-invariant measurement of small objects in polychromatic CT data.” Invited talk at University of Ghent.

08/2019 “Resolution-invariant measurement of small objects in polychromatic CT data.” Invited talk at annual meeting of SPIE (Society of Photo-Optical Instrumentation Engineers), San Diego, California.

09/2018 “Thermochronology: going from atoms to orogenies.” Invited talk at the 16th International Conference on Thermochronology, Quedlinburg, Germany.

04/2018 “Inside Out: Using 3D Imaging for New Insights.” Invited lecture at the University of Melbourne, Australia.

03/2018 “Petrography in 3D: Why Isn’t Everybody Doing It?” Invited lecture at the University of Queensland, Brisbane, Australia.

11/2017 “Radiation and retentivity: unraveling the thermochronometric tangle.” Invited lecture at University of Toulouse, France.

06/2016 “Petrography in 3D: Using CT to amplify geologic intuition”. Invited lecture at Université Paris Sud, France.

02/2015 “Petrography in 3D: Using CT to amplify geologic intuition”. Invited lecture at Jet Propulsion Laboratories, Pasadena, CA.

09/2014 “Petrography in 3D: Using CT to amplify geologic intuition”. Plenary lecture at International Mineralogy Association meeting, Johannesburg, South Africa.

09/2014 “Thermal History Modeling using Multiple Thermochronometric Systems: A Progress Report”. Keynote address at 14<sup>th</sup> Workshop on Thermochronology, Chamonix, France.



- 04/2013 “Doing Earth Science with Computers, with a Dash of Williams Philosophy 101”. Sigma Xi invited lecture at Williams College, Williamstown, MA.
- 03/2013 “Petrography in 3D: Using CT to aid and abet geologic intuition” and “New in thermochronology: better tools for basin analysis, and some percolating thoughts on radiation damage”, University of Colorado, Boulder.
- 02/2013 “Petrography in 3D: Using CT to aid and abet geologic intuition” and “New in thermochronology: better tools for basin analysis, and some percolating thoughts on radiation damage”, University of Minnesota, Minneapolis.
- 12/2012 “X-ray CT imaging and quantification of pore space and its contents: principles and practices, capabilities and limitations, past present and future.” DoE Basic Energy Sciences (BES) Geosciences Workshop “Reaction and Transport within Internal Domains of Porous Media”, San Francisco.
- 08/2012 “The importance of radiation damage and percolation for low-T thermochronology.” China University of Geoscience, Beijing.
- 03/2012 “Petrography in 3D: Why isn’t everybody doing it?” CT Scan Workshop, Quebec University.
- 09/2011 “Petrography in 3D: Leveraging the Opportunities of High-Resolution X-ray CT”. Southampton University.
- 07/2011 “The finite resolution of CT data and its effects on quantification and modeling.” Image Analysis for Porous Media workshop, University of Texas at Austin.
- 04/2010 “Fundamentals of Computed Tomography” and “Geology in 3D using Computed Tomography: Transforming Petrology, Paleontology, Hydrogeology, Meteoritics, and More.” Kumamoto University, Japan.
- 09/2007 “Three-dimensional imaging, visualization and characterization of pore structure in natural and man-made materials using X-ray CT.” 2<sup>nd</sup> International Workshop on Moisture Induced Damage of Asphalt Mixes, Texas A&M University.
- 08/2007 “Measurement and modeling of fission-track annealing in apatite: where we are, and where to go from here.” 9th Chinese National conference on Nuclear Track in Solids and International Workshop on Fission Track Thermochronology, Datong, China.
- 05/2003 “Measurement and interpretation of fabrics in 3D, from trabecular bone to crystals.” George Washington University.
- 08/2000 “Inter-calibrating apatite fission-track and (U,Th)/He geothermometers: a progress report,” with co-authors Donelick, R.A., Reiners, P.W., and House, M.A. Symposium 18-1 (Fission Tracks, Thermoluminescence, Electron Spin Resonance and

- Cathodoluminescence), 31<sup>st</sup> International Geological Congress, Rio de Janeiro, Brazil, August 2000.
- 03/2000 “The distribution of radiogenic heat production in continental crust, and the thermal structure of the southern Basin and Range.” Rice University.
- 04/1998 “New insights concerning the calibration of apatite fission-track annealing.” Rice University.

### **SHORT COURSE ORGANIZATION AND PARTICIPATION:**

- 08/2020 UTCT short course, “Basics of 3D Quantitative Analysis of Geological Materials Using CT”. Instructor, with other members of UTCT staff. (Given remotely)
- 06/2019 UTCT short course, “Basics of 3D Quantitative Analysis of Geological Materials Using CT”. Instructor, with other members of UTCT staff.
- 09/2018 Half-day short course, “Thermal History Inverse Modeling with HeFTy”, 16<sup>th</sup> International Conference on Thermochronology, Quedlinburg, Germany.
- 07/2018 UTCT short course, “Basics of 3D Quantitative Analysis of Geological Materials Using CT”. Instructor, with other members of UTCT staff.
- 11/2017 Week-long short course, “Quantitative Thermochronology using FETKin and HeFTy”, Toulouse, France.
- 10/2017 Week-long short course, “Quantitative Thermochronology using FETKin and HeFTy”, Sao Paulo, Brazil (given remotely).
- 09/2016 Half-day short course, “Thermal History Inverse Modeling with HeFTy”, 15<sup>th</sup> International Conference on Thermochronology, Maresias, Brazil.
- 07/2016 UTCT short course, “Basics of 3D Quantitative Analysis of Geological Materials Using CT”. Instructor, with other members of UTCT staff.
- 09/2014 Half-day short course, “Thermal History Inverse Modeling with HeFTy”, 14<sup>th</sup> International Conference on Thermochronology, Chamonix, France.
- 06/2014 UTCT short course, “Basics of 3D Quantitative Analysis of Geological Materials Using CT”. Instructor, with other members of UTCT staff.
- 04/2013 GSA South-Central Section short course, “Introduction to CT for Geological Applications”. Organizer and principal instructor, with other members of UTCT staff.
- 08/2012 UTCT short course, “Basics of 3D Quantitative Analysis of Geological Materials Using CT”. Organizer and principal instructor, with other members of UTCT staff.

- 08/2012 61<sup>st</sup> Annual Conference on Applications of X-ray Analysis, Denver. Taught first third of short course: “3D Imaging.”
- 08/2011 UTCT short course, “Basics of CT Data Acquisition, Visualization and Analysis”. Instructed with other member of UTCT staff.
- 05/2011 UTCT short course, “Basics of 3D Quantitative Analysis of Geological Materials Using CT”. Organizer and principal instructor, with other members of UTCT staff.
- 08/2009 ESF/IGCP Summer School on Modelling Thermochronology Data, Aussois, France. Taught half-day of 3-day summer school.
- 09/2008 Half-day short course, “Thermal History Inverse Modeling with HeFTy”, 11<sup>th</sup> International Conference on Thermochronology, Chamonix, France.
- 10/2007 UTCT short course, “Basics of CT Data Acquisition, Visualization and Analysis”. Instructed with other member of UTCT staff.
- 10/2005 “Low temperature thermochronology and thermal history inversion: Two steps forward, 100 Ma back.” Mineralogical Society of America Short Course on Thermochronology, Snowbird, Utah.

**SYMPOSIA/WORKSHOPS/THEME SESSIONS CONVENED:**

- 2021 Chief Organizer and Co-head of Organizing Committee for 17<sup>th</sup> International Conference on Thermochronology, Santa Fe, New Mexico. September 12-17, 2021.
- 2018 16<sup>th</sup> International Conference on Thermochronology, Quedlinburg, Germany. Scientific Committee. Organizer for Session 2, “Diffusion / annealing kinetics and thermal modelling”.
- 2016 15<sup>th</sup> International Conference on Thermochronology, Maresias, Brazil. Scientific Committee.
- 2014 14<sup>th</sup> International Conference on Thermochronology, Chamonix, France. Scientific Committee.
- 2012 13<sup>th</sup> International Conference on Thermochronology, Guilin, China. Session chair for “Thermochronology of Sedimentary Basins”.
- 2011 International Association of Mathematical Geology Annual Meeting, Salzburg, Austria. Session: “Computed tomography in the geosciences.” Co-organizer with Veerle Cnudde, University of Ghent, Belgium.

- 2008 Goldschmidt Conference, Vancouver, Canada. Session: “Sedimentary Basin Development and Evolution” in Theme 11, “Thermochronology.” Co-organizer with Barbara Carrapa, University of Wyoming.
- 2008 International Geological Congress, Oslo, Norway. Symposium: “Non-destructive methods of investigation in petrology and sedimentology.” Co-convener with Patric Jacobs, Ghent University, Belgium; and William Carlson.
- 2008 11<sup>th</sup> International Conference on Thermochronology, Anchorage, Alaska. Scientific Steering Committee member and session co-organizer: “Modeling and interpretation methods”. Co-organizer with Todd Ehlers, University of Michigan; Pete Reiners, University of Arizona; and Daniel Stockli, University of Kansas.
- 2007 Microscopy and Microanalysis, Fort Lauderdale, Florida. Symposium: “X-ray microscopy.” Co-organizer with Carolyn Larabell, University of California at San Francisco and Lawrence Berkeley National Laboratory.
- 2007 International Congress of Vertebrate Morphology, Paris, France. Workshop: “3D Analyses for 3D Data.” Co-organizer with Adam Summers, University of California at Irvine.
- 2001 Society of Vertebrate Paleontology Annual Meeting, Bozeman, Montana. Symposium: “CT Scanning in Vertebrate Paleontology.” Co-convener with other members of UT CT Facility.
- 2001 International Congress of Vertebrate Morphology, Jena, Germany. Workshop: “High-Resolution X-ray Computed Tomography in Vertebrate Morphology.” Co-convener with other members of UT CT Facility.
- 1997 Geological Society of America Annual Meeting, Salt Lake City, Utah. Theme session T60: “Extreme continental extension: examples from around the world and new insights from quantitative modeling.” Co-convener with Gabor Tari.

### **SYNERGISTIC ACTIVITIES:**

- ◆ Created original specialized software for analysis of CT data for discrete phase properties (Blob3D; Ketcham, 2005) and fabrics (Quant3D; Ketcham and Ryan, 2004); software distributed as freeware to academic users.
- ◆ Oversee UT CT Facility web site (<http://www.ctlab.geo.utexas.edu>), which includes educational and outreach material.
- ◆ Created original software for extracting time-temperature information from fission-track data (AFTSolve; Ketcham et al. 2000). Updated to include (U-Th)/He data (HeFTy; Ketcham, 2005). Both programs distributed freely to academic users.

### **EXTERNAL REVIEWS:**

- 2020 NSF Panelist for EAR Instrumentation and Facilities (x2, May and December).
- 2020 External Review Team for Initial Program Accreditation, Earth and Planetary Sciences (B.S. Program), Khalifa University, United Arab Emirates.
- 2017 External Review Committee, Geology Department (B.A. Program), Washington and Lee College, Virginia.

### **STUDENT SUPERVISION:**

Undergraduate Honors Thesis Co-Supervisor, Samantha Abbott, “Vesicle textures and their implications for processes occurring within a volcanic conduit: HRXCT analysis of white dacite pumice from Popocatepetl Volcano, Mexico”, co-supervisor James Gardner, University of Texas at Austin, Department of Geological Sciences, completed May 2011.

PhD Co-Supervisor, Eric Kelly, “Unrecognized complexities of metamorphism: crystallization kinetics, reaction affinity, and geochronology,” co-supervised with William Carlson, University of Texas at Austin, Department of Geological Sciences, completed December 2011.

MS Supervisor, Sean Sanguinito, “Investigating the effect of high-angle normal faulting on unroofing histories of the Santa Catalina-Rincon and Harcuvar metamorphic core complexes, using apatite fission-track and apatite and zircon (U-Th)/He thermochronometry”, University of Texas at Austin, completed December 2013.

Undergraduate Honors Thesis Supervisor, Rachel Ruthven, “Testing mechanisms and scales of equilibrium using textural and compositional analysis of porphyroblasts in rocks with heterogeneous garnet distributions”, University of Texas at Austin, Department of Geological Sciences, completed May 2016.

PhD Supervisor, Romy Hanna. “CM Murchison: nebular formation of fine-grained chondrule rims followed by impact processing on the CM parent body. PhD dissertation, Geological Sciences”, University of Texas at Austin, Department of Geological Sciences, completed December 2016.

M.S. Supervisor, Jordan Hildebrandt. “3-D fracture tracing for X-ray computed tomography data”, University of Texas at Austin, Department of Geological Sciences, completed December 2016.

M.S. Co-supervisor, Kylie Wright. “Correlating Cu-Fe Sulfides and Au Mineralization in the Ertzberg-Grasberg District of Papua, Indonesia using Volumetric Analysis and Trace Element Geochemistry”, University of Texas at Austin, Department of Geological Sciences, completed August 2017.

M.S. Supervisor, Scott Eckley. “3D Textural and Geochemical Analyses on Carbonado Diamond: Insights from Pores and the Minerals within Them”, University of Texas at Austin, Department of Geological Sciences, completed May 2018.

PhD Co-supervisor, Adam Goldsmith. “The Effects of Radiation Damage and Annealing on the Diffusion of Helium from Zircon”, University of Texas at Austin, Department of Geological Sciences, completed December 2018.

PhD Supervisor, Murat Tamer. “On step-etching and ambient temperature annealing of apatite fission tracks”, University of Texas at Austin, Department of Geological Sciences, completed December 2019.

PhD supervisor, Scott Eckley. “Magmatic Thermal Histories And Emplacement Mechanisms Of Martian Shergottite Meteorites”, University of Texas at Austin, Department of Geological Sciences, completed December 2022.

PhD supervisor, Isabel Muller.

### **STUDENT COMMITTEE INVOLVEMENT:**

Current committees: PhD: Omar Alnasery, Wade Aubin, Max Ehrenfels, Nicholas Meszaros;  
M.S.: Daniel Campos

PhD Committee Member, Naoma McCall, “Geophysical Insights of the Crater Subsurface at the Chicxulub and Ries Impact Craters”, supervisor Sean Gulick, University of Texas Department of Geological Sciences, defense passed December 2022.

M.S. Committee Member, Juan Gutierrez, “Cenozoic sedimentary response to changing subduction dynamics in the northern Andes of Colombia”, supervisor Brian Horton, University of Texas Department of Geological Sciences, completed December 2022.

M.S. Committee Member, Rachel Blandon, “Effect of rigid crystals on the experimental sintering of rhyolitic ash under shallow conduit conditions”, supervisor James Gardner, University of Texas Department of Geological Sciences, completed December 2022.

PhD Committee Member, Sean O’Donnell, “Origin, dynamics, and extent of explosive volcanic eruption hazards”, supervisor James Gardner, University of Texas Department of Geological Sciences, defense passed August 2022.

PhD Committee Member, Megan Flansburg, “Temporal differentiation of polyphase ductile fabrics in metamorphic core complexes by structurally integrated U-Pb and (U-Th)/He dating (Southern Cyclades, Greece and Southern Basin and Range, U.S.A.)”, supervisor Daniel Stockli, University of Texas Department of Geological Sciences, defense passed August 2022.

PhD Committee Member, Andrea Hannasch, “Generation, measurement and application of x-rays from laser-plasma electron accelerators”, supervisor Michael Downer, University of Texas at Austin, Department of Physics, defense passed December 2021.

PhD Committee Member, Eric Goldfarb, “Predictive Digital Rock Physics”, supervisor Nicola Tisato, University of Texas Department of Geological Sciences, defense passed April 2021.

PhD Committee Member, Chelsea Mackaman-Lofland, “Andean deformation and basin evolution during changes in subduction zone geometry (29–33°S)”, supervisor Brian Horton, University of Texas at Austin, Department of Geological Sciences, completed May 2020.

PhD Committee Member, Margaret L. Odlum, “Thermo-tectonic record of hyperextension, structural inversion, and foreland basin evolution of the eastern and central Pyrenees”, supervisor Daniel Stockli, University of Texas at Austin, Department of Geological Sciences, completed August 2019.

M.S. Committee Member, Clara Jean Brennan, “Zircon  $^4\text{He}/^3\text{He}$  Thermochronometry: Methods and Applications”, supervisor Daniel Stockli, University of Texas at Austin, Department of Geological Sciences, completed August 2019.

PhD Committee Member, Sarah W.M. George, “Basin evolution, deformation, and magmatism during variable tectonic regimes in the region linking the Central and Northern Andes”, supervisor Brian Horton, University of Texas at Austin, Department of Geological Sciences, completed May 2019.

PhD External Examiner, Lunga Bam, “Developing protocols for XCT scanning of dense mineral ore samples with applications to geology and minerals processing”, supervisor Prof. Jodie Miller, Stellenbosch University (South Africa), Department of Earth Sciences, report provided January 2019.

PhD Committee Member, Douglas Barber, “Orogenic Evolution of the Zagros Mountains”, supervisor Daniel Stockli, University of Texas at Austin, Department of Geological Sciences, completed December 2018.

PhD Committee Member, Miguel Cisneros, “Constraining the exhumation history of high-pressure subduction zone rocks: insights from the Cycladic islands, Greece and the application of novel thermobarometry techniques”, supervisor Jaime Barnes, University of Texas at Austin, Department of Geological Sciences, completed December 2018.

PhD Committee Member, Dylan Meyer, “Dynamics of gas flow and hydrate formation within the hydrate stability zone”, supervisor Peter Flemings, University of Texas at Austin, Department of Geological Sciences, completed August 2018.

PhD Committee Member, Rachel Simon, “A new close mammal relative and the origin and evolution of the mammalian central nervous system”, supervisor Timothy Rowe, University of Texas at Austin, Department of Geological Sciences, completed May 2018.

PhD External Examiner, William Shipman, “The extraction of quantitative mineralogical parameters from X-ray micro-tomography data using image processing techniques in three

dimensions”, supervisor Prof. André Leon Nel, University of Johannesburg (South Africa), Electrical and Electronic Engineering Science, completed November 2017.

PhD Committee Member, German Merletti, “Stratigraphy and Petrophysics of Transgressive Tight Gas Sandstones at the Almond Formation, Southwest Wyoming, U.S.A.”, supervisor Ronald Steel, University of Texas at Austin, Department of Geological Sciences, completed June 2017.

PhD Committee Member, Emily Cooperdock, “Novel (U-Th)/He thermochronometric constraints on serpentinized ultramafic rocks”, supervisor Daniel Stockli, University of Texas at Austin, Department of Geological Sciences, completed May 2017.

PhD Committee Member, Michael Prior, “Geothermochronometric And Stratigraphic Constraints On The Structural And Thermal Evolution Of Low-Angle Normal Fault Systems: Case Studies”, supervisor Daniel Stockli, University of Texas at Austin, Department of Geological Sciences, completed Nov 2016.

Masters Committee Member, Daniel Arnost, “Impact of Meteoric Fluid Flow on the Thermal Evolution of Alpine Exhumation- Insights from the Gotthard Base Tunnel, Switzerland”, supervisor Daniel Stockli, University of Texas at Austin, Department of Geological Sciences, completed April 2016.

PhD Committee Member, Veronica Anderson, “Uplift and Exhumation of the Eastern Cordillera of Colombia and its Interactions with Climate”, supervisor Brian Horton, University of Texas at Austin, Department of Geological Sciences, completed April 2015.

PhD Committee Member, Lichun Wang, “Flow and transport through and deformation of rough fractures: Analytical and numerical modeling studies”, supervisor M. Bayani Cardenas, University of Texas at Austin, Department of Geological Sciences, completed April 2015.

PhD Committee Member, Zhiheng Li, “Evolution of the Hyoid Apparatus in Archosauria: Implications for the Origin of Avian Function”, Julia Clarke supervisor, University of Texas at Austin, Department of Geological Sciences, completed January 2015.

PhD Committee Member, Nicolas Huerta, “Time dependent leakage of CO<sub>2</sub> saturated water along a cement fracture”, supervisor Marc Hesse, University of Texas at Austin, Department of Geological Sciences, completed December 2013.

PhD Committee Member, William Guenther, “Zircon (U-Th)/He dates from radiation damaged crystals: A new damage-He diffusivity model for the zircon (U-Th)/He thermochronometer”, supervisor Peter Reiners, University of Arizona, Department of Geosciences, completed August 2013.

PhD Committee Member, Ethan Lake, “Geochemical and thermal insights into caldera-forming ‘super-eruptions’”, supervisor Mark Cloos, University of Texas at Austin, Department of Geological Sciences, completed May 2013.



PhD Committee Member, Kuldeep Chaudhary, “Pore-scale controls of fluid flow laws and the capillary trapping of CO<sub>2</sub>”, supervisor M. Bayani Cardenas, University of Texas at Austin, Department of Geological Sciences, completed May 2013.

Masters Committee Member, Joshua Burrus, “Structural and stratigraphic evolution of the Weepah Hills Area, NV - Transition from Basin-and-Range extension to Miocene core complex formation”, supervisor Daniel Stockli, University of Texas at Austin, Department of Geological Sciences, completed May 2013.

Masters Committee Member, Caleb Rhatigan, “Thermochronometric investigation of the thermal history of Paleozoic strata of the Western Desert, Egypt”, supervisor Daniel Stockli, University of Texas at Austin, Department of Geological Sciences, completed May 2013.

Masters Committee Member, Mariya Levina, “Cenozoic sedimentation and exhumation of the foreland basin system in the Precordillera fold-thrust belt (31-32°S), south central Andes, Argentina”, supervisor Brian Horton, University of Texas at Austin, Department of Geological Sciences, completed May 2013.

PhD Committee Member, Jan Dewanckele, “Spatial reorganization at a (sub)micron scale due to natural and artificial alteration inside natural stone”, supervisor Veerle Cnudde, Ghent University, Department of Geology and Soil Science, completed spring 2013.

PhD Committee Member, John Hooker, “Fracture scaling and diagenesis”, supervisor Stephen Laubach, University of Texas at Austin, Bureau of Economic Geology, completed December 2012.

Masters Committee Member, Sarah Stacy, “Evidence from high-temporal-resolution strain rates for strain softening due to episodic fluid influx at Passo del Sole, central Swiss alps”, supervisor William Carlson, University of Texas at Austin, Department of Geological Sciences, completed December 2012.

PhD Committee Member, John Singleton, “Kinematic and geometric evolution of the Buckskin-Rawhide metamorphic core complex, west-central Arizona”, supervisor Sharon Mosher, University of Texas at Austin, Department of Geological Sciences, completed December 2011.

Masters Committee Member, Autumn Kaylor, “A fluid inclusion and cathodoluminescence approach to reconstruct fracture growth in the Triassic-Jurassic La Boca Formation, Northeastern Mexico”, supervisor Stephen Laubach, University of Texas at Austin, Bureau of Economic Geology, completed December 2011.

Masters Committee Member, Carlos Javier Sánchez, “Cenozoic structural evolution of the eastern margin of the Middle Magdalena Valley basin, Colombia: integration of structural restorations, low-temperature thermochronology, and sandstone petrography”, supervisor

Brian Horton, University of Texas at Austin, Department of Geological Sciences, completed December 2011.

Masters Committee Member, William Woodruff, “Late Cenozoic growth and exhumation of the northern Lunggar extensional basin, west-central Tibetan plateau”, supervisor Brian Horton, University of Texas at Austin, Department of Geological Sciences, completed December 2011.

Masters Committee Member, Mishal Mansour Al-Johar, “Constraining fracture permeability by characterizing fracture surface roughness”, supervisor Jack Sharp, University of Texas at Austin, Department of Geological Sciences, completed December 2010.

Masters Committee Member, Alejandro Bande, “Foreland basin evolution and exhumation along the deformation front of the Eastern Cordillera, northern Andes, Colombia”, supervisor Brian Horton, University of Texas at Austin, Department of Geological Sciences, completed December 2011.

Masters Committee Member, Emily McDowell, “An evaluation of quartz-inclusion barometry by laser-Raman microscopy: a case study from the Llano Uplift of central Texas”, supervisor William Carlson, University of Texas at Austin, Department of Geological Sciences, completed August 2010.

PhD Committee Member, Adam Ekenseair, “A fundamental investigation of penetrant transport in glassy polymers and associated polymer dissolution studies”, supervisor Nikolaos Peppas, University of Texas at Austin, Department of Biomedical Engineering, completed summer 2010.

PhD Committee Member, Donald Slotke, “Characterizing the effect of surface roughness on fluid flow through fractures”, supervisor John Sharp, Jr., University of Texas at Austin, Department of Geological Sciences, completed Spring 2010.

PhD Committee Member, Jelle Vlassenbroeck, “Advances in laboratory-based X-ray tomography”, supervisor Luc Van Hoorbecke, Ghent University, Department of Subatomic and Radiation Physics, completed 2009.

Masters Committee Member, Katrina Cox, “An investigation into the use of calcite fossils as alpha thermochronometers”, supervisor Peter Copeland, University of Houston, Geosciences Department, completed August 2007.

Undergraduate Honors Thesis Committee Member, Abena Temeng, “Quantifying rates of intergranular diffusion of aluminum in metamorphic rocks”, supervisor William Carlson, University of Texas at Austin, Department of Geological Sciences, completed May 2007.

PhD Committee Member, Christian Green, “Hydraulic characterization of structured packing via x-ray computed tomography”, supervisor Bruce Eldridge, University of Texas at Austin, Department of Chemical Engineering, completed May 2006.

Masters Committee Member, Alison S. Mote, “A kinematic investigation in the Cripple Creek District, central Colorado: Implications regarding structural controls influencing the location and distribution of gold ore zones”, supervisor J. Richard Kyle, University of Texas at Austin, Department of Geological Sciences, April 2004.

PhD Committee Member, Carolyn Schmit, “Evaluation of x-ray imaging to investigate hydraulic performance of vapor-liquid contractors”, supervisor Bruce Eldridge, University of Texas at Austin, Department of Chemical Engineering, completed September 2001.

PhD External Examiner, Franck Belloni, “Image processing in fission-track thermochronology”, supervisor Anthony Hurford, University Collage of London (United Kingdom), Department of Geological Science, April 2002.

Masters Committee Member, Daniel F. Harrington, “Deformation of blocks and matrix in Franciscan mélange, San Simeon, California: Implications for mélange genesis”, supervisor Mark Cloos, University of Texas at Austin, Department of Geological Sciences, completed December 2001.

Undergraduate Honors Thesis Committee Member, Adrienne Barnett, “Quantitative textural analysis used to determine garnet porphyroblast nucleation and growth mechanisms on a blueschist from the Franciscan Complex, Jenner, California”, supervisor William Carlson, University of Texas at Austin, Department of Geological Sciences, completed May 1999.

Undergraduate Honors Thesis Committee Member, Charna Meth, “Quantitative textural analysis in determining crystallization control mechanisms of a diopside marble from Cascade Slide, Adirondack Mountains, New York”, supervisor William Carlson, University of Texas at Austin, Department of Geological Sciences, completed May 1999.

Undergraduate Honors Thesis Committee Member, Romy Schneider, “3-D textural analysis of a garnet-amphibole rock from the Franciscan Complex of California: Nucleation and growth mechanism of porphyroblastic crystals using high-resolution X-ray computed tomography”, supervisor William Carlson, University of Texas at Austin, Department of Geological Sciences, completed May 1999.

### Course Instructor Survey Results

Semester	Course	Number of Responses	Overall Instructor Rating	Overall Course Rating
Spring 2022	GEO 303 Introduction to Geology	12	4.4	4.0
Spring 2021	GEO 391 3D Analysis of Volumetric Data	5	5.0	4.8
Fall 2020	GEO 376C/388L Isotope Geology	4	4.4	4.2
Spring 2020	GEO 391 Advanced Thermochronology	5	4.8	4.8
Spring 2020	GEO 303 Introduction to Geology (2x)	62	4.5	4.1, 4.2

Fall 2019	GEO 376C/388L Isotope Geology	4	4.5	4.8
Spring 2019	GEO 391 3D Analysis of Volumetric Data	5	4.8	4.2
Fall 2018	GEO 303 Introduction to Geology	77	4.3	4.0
Fall 2018	GEO 303 Introduction to Geology	99	4.1	3.8
Fall 2018	GEO 376C/388L Isotope Geology	17	3.5	3.5
Fall 2016	GEO 376C/388L Isotope Geology	14	4.1	3.9
Spring 2016	GEO 391 Advanced and Numerical Thermochronology	4	5.0	5.0
Fall 2015	GEO 376C/388L Isotope Geology	3	4.1	4.4
Fall 2014	GEO 376C/388L Isotope Geology	8	4.5	4.1
Summer 2014	GEO 660A Field Geology	40	4.3	4.2
Spring 2014	GEO 391 Advanced and Numerical Thermochronology	4	4.7	4.3
Fall 2013	GEO 376C/388L Isotope Geology	14	4.1	3.9
Fall 2013	GEO 303 Introduction to Geology	104	3.7	3.3
Fall 2012	GEO 388L Isotope Geology	5	4.8	4.6
Fall 2012	GEO 303 Introduction to Geology	89	4.1	3.8
Summer 2012	GEO 660B Field Geology	1	2.0	5.0
Spring 2012	GEO 388R Radiogenic Isotopes and Tectonic Processes	8	4.3	3.8
Fall 2011	GEO 388L Isotope Geology	9	4.0	4.1
Fall 2011	GEO 303 Introduction to Geology	90	4.3	3.7
Summer 2011	GEO 660B Field Geology	7	4.3	4.0
Fall 2010	GEO 388L Isotope Geology	12	4.2	3.6
Fall 2010	GEO 303 Introduction to Geology	115	4.2	3.9

Ratings are on scale of 1-5.

### High-Resolution X-ray CT Lab (UTCT) Productivity

*Publication and citation record for papers with UTCT data (updated Dec 2021)*

Discipline	ISI			Google	
	Publications	Citations	h-index	Citations	h-index
Earth Sciences - General	178	6887	45	10864	55
Earth Sciences - Paleontology	431	10904	51	16378	63
Biology	340	7619	45	12003	56
Anthropology	64	2029	25	3091	30
Engineering	54	1375	20	2979	26
<i>Combined</i>	<i>1067</i>	<i>28814</i>	<i>78</i>	<i>45315</i>	<i>101</i>

*Dissertations and Theses with UTCT data*

279 dissertations and theses overall, 88 from the University of Texas at Austin.

*Income*

Over \$5.7M in user fees invoiced since 1997; over \$3.4M since September 2010.

Over \$14.6M in UTCT-related grant funding awarded to UT PIs since 1997.