

Ketcham publications through August, 2015

Asterisks denote publications with supervised students

- Ketcham, R.A.**, 2015. Technical Note: Calculation of stoichiometry from EMP data for apatite and other phases with mixing on monovalent anion sites. *American Mineralogist*, 100, 1620-1623.
- Ketcham, R.A.**, Carter, A., and Hurford, A.J., 2015. Inter-laboratory comparison of fission track confined length and etch figure measurements in apatite. *American Mineralogist*, 100, 1452-1468.
- Almendral, A., Robles, W., Parra, M., Mora, A., and **Ketcham, R.A.**, 2015. FETKIN: Coupling kinematic restorations and temperature to predict exhumation histories. *AAPG Bulletin* 99(8), 1557-1573.
- Castelluccio, A., Andreuccia, B., Zattin, M., **Ketcham, R.A.**, Jankowski, L., Mazzoli, S. and Szaniawski, R., 2015. Coupling sequential restoration of balanced cross-sections and low-temperature thermochronometry: the case study of the Western Carpathians. *Lithosphere*, 7(4), 367-378, doi:10.1130/L436.1.
- Chaudhary, K., Gultinan, E.J., Cardenas, M.B., Maisano, J.A., **Ketcham, R.A.**, Bennett, P.C., 2015. Wettability measurements under high P-T conditions using X-ray imaging with application to the brine-supercritical CO₂ system. *Geochemistry, Geophysics, Geosystems*, 16, doi:10.1002/2015GC005936.
- Howarth, G.H., Sobolev, N.V., Pernet-Fisher, J.F., **Ketcham, R.A.**, Maisano, J., Pokhilenko, L.N., Taylor, D., and Taylor, L.A., 2015. 3-D X-ray tomography of diamondiferous mantle eclogite xenoliths from Siberia: A review. *Journal of Asian Earth Sciences*, 101, 39-67.
- Kyle, J.R. and **Ketcham, R.A.**, 2015. Application of high resolution X-ray computed tomography to mineral deposit origin, evaluation, and processing. *Ore Geology Reviews*, 65, 821-839.
- Mora, A., Casallas, W., **Ketcham, R.A.**, Gomez, D., Parra, M., Namson, J., Quintero, I., Stockli, D., Almendral, A., Robles, W., and Ghorbal, B., 2015. Kinematic restoration of contractional basement structures using thermokinematic models: A key tool for petroleum system modeling. *AAPG Bulletin*, 99(8), 1575-1598.
- Vonlanthen, P., Rausch J., **Ketcham R.A.**, Putlitz, B., Baumgartner, L.P., and Grobety, B., 2015. High-resolution 3D analyses of the shape and internal constituents of small volcanic ash particles: the contribution of SEM micro-computed tomography (SEM micro-CT). *Journal of Volcanology and Geothermal Research*, 293, 1-12.
- Wang, L., Cardenas, M.B., Deng, W., **Ketcham R.A.**, Sharp, J.A., Bennett, P.C., 2015. Modification of the Local Cubic Law of fracture flow for weak inertia, tortuosity and roughness. *Water Resources Research*, 51(4), 2064-2080.

- Ketcham, R.A.** and *Hanna, R.D., 2014. Beam hardening correction for X-ray computed tomography of heterogeneous natural materials. *Computers and Geosciences*, 67, 49-61.
- Ketcham, R.A.** and *Hildebrandt, J., 2014. Characterizing, measuring, and utilizing the resolution of CT imagery for improved quantification of fine-scale features. *Nuclear Instruments and Methods in Physics Research B*, 324, 80-87.
- Howarth, G.H., Sobolev, N.V., Pernet-Fisher, J.F., Barry, P.H., Penumadu, D., Puplampu, S., **Ketcham, R.A.**, Maisano, J.A., Taylor, D., Taylor, L.A., 2014. The secondary origin of diamonds: Multi-modal radiation imaging of diamondiferous mantle xenoliths. *International Geology Review*, 56(9), 1172-1180.
- Mora, A., **Ketcham, R.A.**, Higuera-Díaz, I.C., Bookhagen, B., Jimenez, L., Rubiano, J., 2014. Formation of passive-roof duplexes in the Colombian Subandes and Perú. *Lithosphere*, 6(6), 456-472.
- Sharp, J.M. Jr., Al-Johar, M.M., Slottke, D.T., and **Ketcham, R.A.**, 2014. Prediction of fracture roughness and other hydraulic properties: is upscaling possible? In: "Fractured Rock Hydrogeology" (J. Sharp, ed.), International Association of Hydrogeology – Selected Papers in Hydrogeology, CRC Press, pp. 167-179.
- Zolensky, M., Mikouchi, T., Fries, M., Bodnar, R., Jenniskens, P., Yin, Q.-Z., Hagiya, K., Oshumi, K., Komatsu, M., Colbert, M., Hanna, R., Maisano, J., **Ketcham, R.**, Nakamura, T., Matsuoka, M., Sasaki, S., Tsuchiyama, A., Gounelle, M., Le, L., Martinez, J., Ross, K., and Rahmanm Z., 2014. Mineralogy and petrography of C asteroid regolith: the Sutter's Mill meteorite. *Meteoritics and Planetary Science*, 49(11), 1997-2016.
- Ketcham, R.A.**, 2013. Basin thermal history analysis using (U-Th)/He thermochronometry, in: SEPM Special Publication No. 103, "Analyzing the Thermal History of Sedimentary Basins" (Harris, N. and Peters, K.E., eds.), 105-123.
- Ketcham, R.A.**, Guenther, W.R., and Reiners, P.W., 2013. Geometric analysis of radiation damage connectivity in zircon, and its implications for helium diffusion. *American Mineralogist*, 98, 350-360.
- Ketcham, R.A.** and Koeberl, C., 2013. New textural evidence on the origin of carbonado diamond: an example of 3D petrography using X-ray CT. *Geosphere*, 9 (5), 1336-1347, doi:10.1130/GES00908.1.
- Chaudhary, K., Cardenas, M.B., Wolfe, W.W., Maisano, J.A., **Ketcham, R.A.**, and Bennett, P.C., 2013. Pore-scale trapping of supercritical CO₂ and the role of grain wettability and shape. *Geophysical Research Letters*, 40, 1-5.
- Gardner, J.E., **Ketcham, R.A.**, and Moore, G., 2013. The dynamics of bubble nucleation in hydrous mafic magmas. *Journal of Volcanology and Geothermal Research*, 267, 68-74.

- Gautheron, C., Barbarand, J., **Ketcham, R.A.**, Tassan-Got, L., Van der Beek, P., Pagel, M., Pinna-Jamme, R., Couffignal, F., and Fialin, M., 2013. Chemical influence on α -recoil damage annealing in apatite: implications for (U-Th)/He dating. *Chemical Geology*, 351, 257-267.
- Guenther, W.R., Reiners, P.W., **Ketcham, R.A.**, Nasdala, L., and Giester, G., 2013. He diffusion in natural zircon: radiation damage, anisotropy, and the interpretation of zircon (U-Th)/He thermochronology. *American Journal of Science*, 313, 145-198.
- *Kelly, E.D., Carlson, W.D., and **Ketcham, R.A.**, 2013. Crystallization kinetics during regional metamorphism of porphyroblastic rocks. *Journal of Metamorphic Geology*, 31, 963-979, doi:10.1111/jmg.12052.
- *Kelly, E.D., Carlson, W.D., and **Ketcham, R.A.**, 2013. Magnitudes of departure from equilibrium during regional metamorphism of porphyroblastic rocks. *Journal of Metamorphic Geology*, 31, 981-1002, doi:10.1111/jmg.12053.
- Losi, E., Peppas, N.A., **Ketcham, R.A.**, Colombo, G., Bettini, R., Sonvico, F., Colombo, P., 2013. Investigation of the swelling behavior of Dome Matrix drug delivery modules by high-resolution X-ray computed tomography. *Journal of Drug Delivery Science and Technology*, 23(2), 165-170.
- Mora, A., Blanco, V., Naranjo, J., Sanchez, N., **Ketcham, R.A.**, Rubiano, J., Stockli, D.F., Quintero, I., Nemcok, M., Horton, B.K., Davila, H., 2013. On the lag time between internal strain and basement involved thrust induced exhumation: The case of the Colombian Eastern Cordillera. *Journal of Structural Geology*, 52, 96-118.
- Owens, S.A., Perkins, M.R., Eldridge, R.B., Schulz, K.W., **Ketcham, R.A.**, 2013. Computational fluid dynamics simulation of structured packing. *Industrial and Engineering Chemistry Research*, 52, 2032-2045.
- Ketcham, R.A.** and Carlson, W.D., 2012. Numerical simulation of diffusion-controlled nucleation and growth of porphyroblasts. *Journal of Metamorphic Geology*, 30, 489-512.
- Ekenseair, A.K., **Ketcham, R.A.**, and Peppas, N.A., 2012. Visualization of anomalous penetrant transport in glassy poly(methyl methacrylate) utilizing high-resolution X-ray computed tomography. *Polymer*, 53, 776-781.
- Gautheron, C., Tassan-Got, L., **Ketcham, R.A.**, and Dobson, K.J., 2012. Accounting for long alpha-particle stopping distances in (U-Th-Sm)/He geochronology: 3D modeling of diffusion, zoning, implantation, and abrasion. *Geochimica et Cosmochimica Acta*, 96, 44-56.
- Sanchez, C.J., Horton, B.K., Teson, E., Mora, A., **Ketcham, R.A.**, Stockli, D.F., 2012. Kinematic evolution of Andean fold-thrust structures along the boundary between the Eastern Cordillera and Middle Magdalena Valley basin. *Tectonics*, 31, TC3008, 24pp.

- Udawatta, R.P., Gantzer, C.J., Anderson, S.H., Rossi, A.M., Graham, R.C., **Ketcham, R.A.**, 2012. Analysis of three dimensional geometrical pore parameters from rock weathering. *Soil Science*, 177, 506-516.
- Ketcham, R.A.**, Gautheron, C., Tassan-Got, L., 2011. Accounting for long alpha-particle stopping distances in (U-Th-Sm)/He geochronology: refinement of the baseline case. *Geochimica et Cosmochimica Acta*, 75, 7779-7791.
- Farley, K.A., Shuster, D.L., and **Ketcham, R.A.**, 2011. U and Th zonation in apatite observed by laser ablation ICPMS, and implications for the (U-Th)/He system. *Geochimica et Cosmochimica Acta*, 75, 4515-4530.
- Gardner, J.E., and **Ketcham, R.A.**, 2011. Bubble nucleation in rhyolite and dacite melts: temperature dependence of surface tension. *Contributions to Mineralogy and Petrology* 162(5), 929-943.
- Marschallinger, R., Hofmann, P., Daxner-Höck, G., **Ketcham, R.A.**, 2011. Solid modeling of fossil small mammal teeth. *Computers and Geosciences*, 37, 1364-1371.
- Ketcham, R.A.**, Slotke, D.T., and Sharp, J.M. Jr., 2010. Three-dimensional measurement of fractures in heterogeneous materials using high-resolution X-ray CT. *Geosphere* 6(5), 499-514.
- Griffin, N.L., D'Aout, K., Ryan, T.M., Richmond, B.G., **Ketcham, R.A.**, and Postnov, A., 2010. Comparative forefoot trabecular bone architecture in extant hominids. *Journal of Human Evolution*, 59, 202-213.
- Huddlestone-Holmes, C.R., and **Ketcham, R.A.**, 2010. An X-ray computed tomography study of inclusion trail orientations in multiple porphyroblasts from a single sample: a new test for rotation/non-rotation. *Tectonophysics*, 480, 305-320.
- Molineux, A., Scott, R., Maisano, J., **Ketcham, R.A.**, and Zachos, L., 2010. Blending rudists with technology; non-destructive examination of the internal and external structures of rudists using high quality scanning and digital imagery. *Turkish Journal of Earth Science*, 19, 757-767.
- Mora, A., Horton, B.K., Mesa, A., Rubiano, J., **Ketcham, R.A.**, Parra, M., Blanco, V., Garcia, D., Stockli, D.F., 2010. Cenozoic deformation migration in the Eastern Cordillera of Colombia interpreted from fission track results and structural relationships: Implications for hydrocarbon systems. *American Association of Petroleum Geologists Bulletin*, 94(10), 1543-1580.
- Ryan, T.M., Colbert, M., **Ketcham, R.A.**, and Vinyard, C.J., 2010. Trabecular bone structure in the mandibular condyles of gouging and non-gouging platyrrhine primates. *American Journal of Physical Anthropology*, 141, 583-593.

- Zolensky, M., Herrin, J., Mikouchi, T., Ohsumi, K., Friedrich, J., Steele, A., Rumble, D., Fries, M., Sandford, S., Milam, S., Hagiya, K., Takeda, H., Satake, W., Kurihara, T., Colbert, M., Hanna, R., Maisano, J., **Ketcham, R.**, Goodrich, C., Le, L., Robinson, G., Martinez, J., Ross, K., Jenniskens, P., and Shaddad, M.H. (2010) Mineralogy and petrography of the Almahata Sitta ureilite. *Meteoritics and Planetary Science*, 45, 1618-1637.
- Ketcham, R.A.**, Donelick, R.A., Balestrieri, M.L., and Zattin, M., 2009. Reproducibility of apatite fission-track length data and thermal history reconstruction. *Earth and Planetary Science Letters*, 284, 504-515.
- Cardenas, M.B., Slotke, D.T., **Ketcham, R.A.**, and Sharp, J.M.Jr., 2009. Effects of inertia and directionality on flow and transport in a rough asymmetric fracture. *Journal of Geophysical Research*, 114, B06204, doi:10.1029/2009JB006336.
- Flowers, R.M., **Ketcham, R.A.**, Shuster, D.L, and Farley, K.A., 2009. Apatite (U-Th)/He thermochronometry using a radiation damage accumulation and annealing model. *Geochimica et Cosmochimica Acta* 73(8), 2347-2365.
- Gosman, J., and **Ketcham, R.A.**, 2009. Patterns in ontogeny of human trabecular bone from SunWatch Village in the prehistoric Ohio Valley: General features of microarchitectural change. *American Journal of Physical Anthropology*, 138(3), 318-332.
- Liu, Y., Taylor, L.A., Sarbadhikari, A.B., Valley, J.W., Ushikubo, T., Spicuzza, M.J., Kita, N., **Ketcham, R.A.**, Carlson, W., Shatsky, V., and Sobolev, N.V., 2009. Metasomatic origin of diamonds in the world's largest diamondiferous eclogite. *Lithos*, 112, 1014-1024.
- Owens, S.A., Kossman, A., Farone, J, Eldridge, R.B., and **Ketcham, R.A.**, 2009. Flow field visualization in structured packing using real time X-ray radiography. *Industrial and Engineering Chemistry Research*, 48, 3606-3618.
- Yuan, W., **Ketcham, R.A.**, Gao, S., Dong, J., Bao, Z., 2009. Annealing behavior of alpha recoil tracks in phlogopite. *Chemical Geology*, 266, 352-358.
- Benedix, G.K., **Ketcham, R.A.**, Wilson, L., McCoy, T.J., Bogard, D.D., Garrison, D.H., Herzog, G.F., Xue, S., Klein, J., and Middleton, R., 2008. The formation and chronology of the PAT 91501 impact-melt L-chondrite with vesicle-melt-sulfide assemblages. *Geochimica et Cosmochimica Acta*, 79, 2417-2428.
- Kyle, J.R., Mote, A.S., and **Ketcham, R.A.**, 2008. High resolution X-ray computed tomography studies of the Grasberg property Cu-Au ores, Papua, Indonesia. *Mineralium Deposita*, 43, 519-532.
- Lee, S.S., Gantzer, C.J., Thompson, A.L., Anderson, S.H., and **Ketcham, R.A.**, 2008. Soil surface-seal characterization using analysis of high resolution computed tomography. *Soil Science Society of America Journal*, 5, 1478-1485.

- Whitney, D.L., Goergen, E.T., **Ketcham, R.A.**, and Kunze, K., 2008. Formation of garnet polycrystals during metamorphic crystallization. *Journal of Metamorphic Geology*, 26, 365-383.
- Ketcham, R.A.**, Carter, A.C., Donelick, R.A., Barbarand, J., and Hurford, A.J., 2007. Improved measurement of fission-track annealing in apatite using c-axis projection. *American Mineralogist*, 92, 789-798.
- Ketcham, R.A.**, Carter, A.C., Donelick, R.A., Barbarand, J., and Hurford, A.J., 2007. Improved modeling of fission-track annealing in apatite. *American Mineralogist*, 92, 799-810.
- Arambula, E., Masad, E., Martin, A.E., **Ketcham, R.A.**, and Abbas, A.R., 2007. Assessment of moisture transport in hot mix asphalt using X-ray computed tomography. In: "Advanced Characterisation of Pavement Soil Engineering Materials, Vols 1 and 2" (Loizos, A., Scarpas, T and Al Qadi, I.L., eds.), International Conference on Advanced Characterisation of Pavement and Soil Engineering Materials, Athens, 729-738.
- Cardenas, M.B., Slotke, D.T., **Ketcham, R.A.**, and Sharp, J.M. Jr., 2007. Navier-Stokes flow and transport simulations using real fractures shows heavy tailing due to eddies. *Geophysical Research Letters*, 34, doi: 10.1029/2007GL030545.
- Dunkers, J.P., Leigh, S.D., Dean, D., Cooke, M., **Ketcham, R.A.** and Cicerone, M.T., 2007. Methodology for evaluating candidate geometric reference scaffolds. *Journal of Testing and Evaluation*, 35(6), 1-8.
- Fajardo, R.J., Müller, R., **Ketcham, R.A.**, Colbert, M., 2007. Nonhuman anthropoid primate femoral neck trabecular architecture and its relationship to locomotor mode. *The Anatomical Record*, 290(4), 422-436.
- Gantt, D.G., Kappelman, J., and **Ketcham, R.A.**, 2007. HRXCT analysis of hominid molars: A quantitative volumetric analysis and 3D reconstruction of coronal enamel and dentin, *in*: Bailey, S.E., and Hublin, J.-J., eds., *Dental Perspectives on Human Evolution*, Springer, Dordrecht, The Netherlands, pp. 117-136.
- Green, C.W., Farone, J., Briley, J.K., Eldridge, R.B., **Ketcham, R.A.**, and Nightingale, B., 2007. Novel application of X-ray computed tomography: Determination of gas/liquid contact area and liquid holdup in structured packing. *Industrial & Engineering Chemistry Research*, 46, 5734-5753.
- Hawkins, A.T., Selverstone, J., Brearly, A.J., Beane, R.J., **Ketcham, R.A.**, and Carlson, W.D., 2007. Origin and mechanical significance of honeycomb garnet in high-pressure metasedimentary rocks from the Tauern Window, Eastern Alps. *Journal of Metamorphic Geology*, 25(5), 565-583, doi:10.1111/j.1525-1314.2007.00714.x.

- Masad, E., Arambula, E., **Ketcham, R.A.**, Abbas, A.R., and Martin, A.E., 2007. Nondestructive measurements of moisture transport in asphalt mixtures. *Journal of the Association of Asphalt Paving Technologists*, 76, 919-952. [*Runner-up for 2007 Walter J. Emmons Award for Best Paper*]
- Molineux, A., Scott, R.W., **Ketcham, R.A.**, and Maisano, J., 2007. Rudist taxonomy by high-resolution X-ray CT. *Paleontologica Electronica* 10(3), 13A.
- Ketcham, R.A.**, 2006. Accurate three-dimensional measurements of features in geological materials from X-ray computed tomography data, *in*: Desrues, J., Viggiani, G., and Besuelle, eds., *Advances in X-ray Tomography for Geomaterials*, ISTE, London, 143-148.
- Ketcham, R.A.**, 2006. New algorithms for ring artifact removal. *Proceedings of SPIE*, 6318, 6318001-7.
- Brichau, S., Ring, U., **Ketcham, R.A.**, Carter, A., Stockli, D., and Brunel, M., 2006. Constraining the long-term evolution of the slip rate for a major extensional fault system in the central Aegean, Greece, using thermochronology. *Earth and Planetary Science Letters*, 241, 293-306.
- DeVore, M.L., Kenrick, P., Pigg, K.B., and **Ketcham, R.A.**, 2006. Utility of high-resolution X-ray computed tomography (HRXCT) for paleobotanical studies: an example using London Clay fruits and seeds. *American Journal of Botany*, 93, 1848-1851.
- Gantt, D.G., Kappelman, J., **Ketcham, R.A.**, Alder, M.E., and Deahl, T.H., 2006. Three-dimensional reconstruction of enamel thickness and volume in humans and hominoids. *European Journal of Oral Sciences*, 114 (s1), 360-364.
- Hu, S., Raza, A., Min, K., Kohn, B.P., Reiners, P.W., **Ketcham, R.A.**, Wang, J., and Gleadow, A.J.W., 2006. Late Mesozoic and Cenozoic thermotectonic evolution along a transect from the North China craton through the Qinling orogen into the Yangtze craton, central China. *Tectonics*, 25, TC6009, doi:10.1029/2006TC001985.
- Maga, M., Kappelman, J., Ryan, T.M., and **Ketcham, R.A.**, 2006. Preliminary observations on the calcaneal trabecular microarchitecture of the extant large bodied hominoids. *American Journal of Physical Anthropology*, 129, 410-417.
- McCoy, T.J., **Ketcham, R.A.**, Wilson, L., Benedix, G.K., Wadhwa, M., and Davis, M., 2006. Formation of vesicles in asteroidal basalt meteorites. *Earth and Planetary Science Letters*, 246, 102-108.
- Mote, A.S., **Ketcham, R.A.**, and Watson, W.P., 2006. Extracting particle orientations from three-dimensional datasets using BLOB3D, *in*: Desrues, J., Viggiani, G., and Besuelle, eds., *Advances in X-ray Tomography for Geomaterials*, ISTE, London, 407-413.

- Ketcham, R.A.**, 2005. Forward and inverse modeling of low-temperature thermochronometry data. *Reviews in Mineralogy and Geochemistry*, 58, 275-314.
- Ketcham, R.A.**, 2005. Three-dimensional textural measurements using high-resolution X-ray computed tomography. *Journal of Structural Geology*, 27, 1217-1228.
- Ketcham, R.A.**, 2005. The role of crystallographic angle in characterizing and modeling apatite fission-track length data. *Radiation Measurements*, 39, 595-601.
- Ketcham, R.A.**, 2005. Computational methods for quantitative analysis of three-dimensional features in geological specimens. *Geosphere*, 1(1), 32-41.
- Ketcham, R.A.**, Meth, C., Hirsch, D.M., and Carlson, W.D., 2005. Improved methods for quantitative analysis of three-dimensional porphyroblastic textures. *Geosphere*, 1(1), 42-59.
- Ketcham, R.A.** and Iturrino, G.J., 2005. Nondestructive high-resolution visualization and measurement of anisotropic effective porosity in complex lithologies using high-resolution X-ray computed tomography. *Journal of Hydrology*, 302, 92-106.
- Bement, L.C., Lundelius, E.L., and **Ketcham, R.A.**, 2005. Hoax or history: A bison skull with embedded Calf Creek projectile point. *Plains Anthropologist*, 50, 221-226.
- Clarke, J.A., Tambussi, C.P., Noriega, J.I., Erickson, G.M., and **Ketcham, R.A.**, 2005. First definitive fossil evidence for part of the extant avian radiation in the Cretaceous. *Nature*, 433, 305-308.
- Donelick, R.A., O'Sullivan, P.B. and **Ketcham, R.A.**, 2005. Apatite fission-track analysis. *Reviews in Mineralogy and Geochemistry*, 58, 49-94.
- Ehlers, T.A., Chaudhri, T., Kumar, S., Fuller, C.W., Willett, S.D., **Ketcham, R.A.**, Brandon, M.T., Belton, D.X., Kohn, B.P., Gleadow, A.J.W., Dunai, T.J., Fu, F.Q., 2005. Computational tools for low-temperature thermochronometer interpretation. *Reviews in Mineralogy and Geochemistry*, 58, 589-622.
- Huddleston-Holmes, C. and **Ketcham, R.A.**, 2005. Getting the inside story: using computed X-ray tomography to study inclusion trails in garnet porphyroblasts. *American Mineralogist*, 90, ea1-ea17 (Electronic Article).
- Mote, A.S., Kyle, J.R., **Ketcham, R.A.**, Melker, M.D., Jahraus, M.J., Brown, T.R., and Wawrzyniec, T.F., 2005. High-resolution X-ray computed tomography investigations of high grade gold ore zones in the Cripple Creek District, Colorado, in Rhoden, H.N., Steininger, R.C., and Vikre, P.G., eds., *Geological Society of Nevada Symposium 2005: Window to the World*, Reno, Nevada, May 2005, 1169-1175.

- Rowe, T. B., Eiting, T. P., Macrini, T. E., and **Ketcham, R. A.**, 2005. Organization of the olfactory and respiratory skeleton in the nose of the gray short-tailed opossum *Monodelphis domestica*: *Journal of Mammalian Evolution*, 12, 303-336.
- Ryan, T.M. and **Ketcham, R.A.**, 2005. The angular orientation of trabecular bone in the femoral head and its relationship to hip joint loads in leaping primates. *Journal of Morphology*, 265, 249-263.
- Ketcham, R.A.** and Ryan, T.M., 2004. Quantification and visualization of anisotropy in trabecular bone. *Journal of Microscopy*, 213, 158-171.
- Dominguez Alonso, P., Milner, A.C., **Ketcham, R.A.**, Cookson, M.J. and Rowe, T.B., 2004. The avian nature of the brain and inner ear of *Archaeopteryx*. *Nature*, 430, 666-669.
- Iturrino, G.J., **Ketcham, R.A.**, Christiansen, L., and Boitnott, G., 2004. Data report: Permeability, resistivity, and X-ray computed tomography measurements in samples from the PACMANUS hydrothermal system. In: Barriga, F.J.A.S., Binns, R.A., Miller, D.J., and Herzig, P.M. (Eds.), *Proc. ODP, Sci. Results*, 193, 1-14 [Online]. Available from World Wide Web: <http://www-odp.tamu.edu/publications/193_SR/205/205.htm>. College Station, TX (Ocean Drilling Program).
- Mickler, P.J., **Ketcham, R.A.**, Colbert, M.W., and Banner, J.L., 2004. Application of high-resolution X-ray computed tomography in determining the suitability of speleothem for use in paleoclimatic, paleohydrologic reconstructions. *Journal of Cave and Karst Studies*, 66(1), 3-8.
- Summers, A.P., **Ketcham, R.A.** and Rowe, T., 2004. Structure and function of the horn shark (*Heterodontus francisi*) cranium through ontogeny – the development of a hard prey specialist. *Journal of Morphology*, 260, 1-12.
- Ketcham, R.A.**, 2003. Observations on the relationship between crystallographic orientation and biasing in apatite fission-track measurements. *American Mineralogist*, 88, 817-829.
- Clack, J.E., Ahlberg, P.E., Finney, S.M., Dominguez Alonso, P., Robinson, J. and **Ketcham, R.A.**, 2003. A uniquely specialized ear in a very early tetrapod. *Nature*, 425, 65-69.
- Carlson, W.D., Rowe, T., **Ketcham, R.A.**, and Colbert, M.W., 2003. Geological applications of high-resolution X-ray computed tomography in petrology, meteoritics and palaeontology. In: F. Mees, R. Swennen, M. Van Geet, and P. Jacobs, Eds. *Applications of X-ray computed tomography in the geosciences*, 215, 7-22. Geological Society, London.
- Kyle, J.R. and **Ketcham, R.A.**, 2003. In-situ distribution of gold in ores using high-resolution X-ray computed tomography. *Economic Geology*, 98, 1697-1701.
- Torres, A.M., Christensen, A.M., Masters, T.E., and **Ketcham, R.A.**, 2003. From CT scans of embedded *Ivanovia* to models using rapid prototyping. *Palaeontology*, 46(4), 839-843.

- Brochu, C., and **Ketcham, R.A.**, 2002. Computed tomographic analysis of the skull of *Tyrannosaurus rex*. CD supplement to: Society of Vertebrate Paleontology Memoir 7. Journal of Vertebrate Paleontology, 22, supplement to No. 4.
- Helmle, K.P., Dodge, R.E., **Ketcham, R.A.**, 2002. Skeletal architecture and density banding in *Diploria strigosa* by X-ray computed tomography. Proceedings of the 9th International Coral Reef Symposium, Bali, Indonesia, 365-372.
- Koerberl, C., Denison, C., **Ketcham, R.A.**, and Reimold, W.U., 2002. High-resolution X-ray computed tomography of impactites. Journal of Geophysical Research, 107(E10), 5089, doi:10.1029/2001JE001833.
- Ryan, T.M., and **Ketcham, R.A.**, 2002. Femoral head trabecular bone structure in two omomyid primates. Journal of Human Evolution, 43, 241-263.
- Ryan, T.M. and **Ketcham, R.A.**, 2002. The three-dimensional structure of trabecular bone in the femoral head of strepsirrhine primates. Journal of Human Evolution, 43, 1-26.
- Tykoski, R.S., Rowe, T.B., **Ketcham, R.A.**, and Colbert, M.W., 2002. *Calsoyasuchus valliceps*, a new crocodyliform from the early Jurassic Kayenta Formation of Arizona. Journal of Vertebrate Paleontology, 22, 593-611.
- Ketcham, R.A.** and Carlson, W.D., 2001. Acquisition, optimization and interpretation of X-ray computed tomographic imagery: Applications to the geosciences. Computers and Geosciences, 27, 381-400.
- Rowe, T., **Ketcham, R.A.**, Denison, C., Colbert, M., Xu, X., and Currie, P.J., 2001. The *Archaeoraptor* forgery. Nature, 410, 539-540.
- Ketcham, R.A.**, Donelick, R.A., and Donelick, M.B., 2000. AFTSolve: A program for multi-kinetic modeling of apatite fission-track data. Geological Materials Research, v2n1.
- Hirsch, D.M., **Ketcham, R.A.**, and Carlson, W.D., 2000. An evaluation of spatial correlation functions in textural analysis of metamorphic rocks. Geological Materials Research, v2n3.
- Grimaldi, D., Nguyen, T., and **Ketcham, R.**, 2000. Ultra-high-resolution X-ray Computed Tomography (UHR CT) and the study of fossils in amber, in: Studies on Fossils in Amber, with Particular Reference to the Cretaceous of New Jersey (D. Grimaldi, ed.), Backhuys Publishers, Leiden, pp. 77-91.
- Taleff, E.M., Leon-Salamanca, T., **Ketcham, R.A.**, Reyes, R., and Carlson, W.D., 2000. Nondestructive evaluation of cavitation in an Al-Mg material deformed under creep conditions. Journal of Materials Research, 15, 76-84.

- Ketcham, R.A.**, Donelick, R.A., and Carlson, W.D., 1999. Variability of apatite fission-track annealing kinetics III: Extrapolation to geological time scales. *American Mineralogist*, 84, 1235-1255.
- Donelick, R.A., **Ketcham, R.A.**, and Carlson, W.D., 1999. Variability of apatite fission-track annealing kinetics II: Crystallographic orientation effects. *American Mineralogist*, 84, 1224-1234.
- Carlson, W.D., Donelick, R.A., and **Ketcham, R.A.**, 1999. Variability of apatite fission-track annealing kinetics I: Experimental results. *American Mineralogist*, 84, 1213-1223.
- Carlson, W.D., Denison, C., and **Ketcham, R.A.**, 1999. High-resolution X-ray computed tomography as a tool for visualization and quantitative analysis of igneous textures in three dimensions. *Electronic Geosciences* 4:3, 14p. [Also published as 2000, *Visual Geosciences* 4, 1-14].
- Denison, C., Carlson, W.D., and **Ketcham, R.A.**, 1997. Three-dimensional textural analysis of metamorphic rocks using high-resolution computed X-ray tomography: Part 1, methods and techniques. *Journal of Metamorphic Geology*, 15, 29-44.
- Ketcham, R.A.**, 1996. Thermal models of core complex evolution in Arizona and New Guinea: Implications for ancient cooling paths and present-day heat flow. *Tectonics*, 15, 933-951.
- Ketcham, R.A.**, 1996. The distribution of heat-producing elements in the upper and middle crust of southern and west-central Arizona: Evidence from the core complexes. *Journal of Geophysical Research*, B101, 13611-13632.
- Ketcham, R.A.**, 1996. An improved method for determination of heat production with gamma-ray scintillation spectrometry. *Chemical Geology*, 134, 175-194.
- Ketcham, R.A.**, Beam, E.C., and Kominz, M.A., 1995. Effects of temperature-dependent material properties and radioactive heat production on simple basin subsidence models. *Earth and Planetary Science Letters*, 130, 31-44.
- Carlson, W.D., Denison, C., and **Ketcham, R.A.**, 1995. Controls on the nucleation and growth of porphyroblasts: kinetics from natural textures and numerical models. *Geological Journal*, 30, 207-225.
- Karabinos, P. and **Ketcham, R.**, 1988. Thermal structure of active thrust belts. *Journal of Metamorphic Geology*, 6, 559-570.
- Publications accepted pending revision**
Asterisks denote publications with supervised students
- 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. Movement vectors and deformation mechanisms in kinematic restorations. A case study from the Colombian Eastern Cordillera. Submitted to Interpretation, February 2015.

*Hanna, R.D., **Ketcham, R.A.**, Zolensky, M., and Behr, W. Impact-induced brittle deformation, porosity loss, and aqueous alteration in the Murchison CM chondrite. Submitted to Geochimica et Cosmochimica Acta, May 2015.