

25 Prof. Cin-Ty A. Lee



Name: Cin-Ty A. Lee

Organization: Department of Earth Science, Rice University, Houston, USA

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Education

B.A. University of California, Berkeley, USA, 1996

Ph.D. Harvard University, Cambridge, USA, 2001

Work Experience

2011 Full Professor, Rice University, Dept. Earth Science

2008 Associate Professor, Rice University, Dept. Earth Science

2002 Assistant Professor, Rice University, Department of Geology and Geophysics

2001 Postdoctoral Fellow, California Institute of Technology (Prof. Gerald Wasserburg)

1995 grader: Geochemistry 131 "Theoretical geochemistry" (UC Berkeley, Prof. Harold Helgeson)

1994 lab assistant: thin section and sample preparation (UC Berkeley, Prof. Ian S. Carmichael)

1994 grader: Geology 10 "Planetary Geology" (UC Berkeley, Prof. Raymond Jeanloz)

1993 research assistant (geomorphology): United States Dept. Agriculture Pacific Southwest Research Station (supervisor, Peter Wohlgemuth)

1991 research assistant: United States Salinity Laboratory, Riverside, CA (supervisor, Dr. Suarez)

Research Interests

- 1) the petrogenetic and dynamic origins of continents, particularly the origin of continental lithospheric mantle and continental crust.
- 2) how continental lithospheric mantle is chemically modified and how this affects the long-term evolution of continental lithosphere
- 3) mantle geochemistry and petrology; constraints on trace element partitioning and mantle redox

Services & Awards

2014 Mineralogical Society of America Fellow

2013 Shen-Su Sun Lecturer, Chinese Geochemistry Society

2012 Agassiz Lecturer, Harvard University

2012 Miller Visiting Professor, UC Berkeley

2011 Mutch Lecturer, Brown University

2010 Geological Society of America Fellow

2009 Donath Medal – Geological Society of America

2009 Clarke Medal – Geochemical Society
2008 Kuno Award – American Geophysical Union – Volcanology, Geochemistry, Petrology
2005 David and Lucile Packard Fellow (www.packard.org)
2005 Great Texas Birding Classic – 2nd place team UTC section
2004 Great Texas Birding Classic – 1st place team UTC section (214 species in 24 hours)

Editor - G-cubed –2013 to present

Associate Editor – Journal of Geophysical Research (2011-2013)

Editorial Advisory Board for Earth and Planetary Science Letters (2009-present)

Major Publications

- Jiang, H., Lee, C.-T. A., Morgan, J. K., Ross, C. H., 2015, Geochemistry and thermodynamics of an earthquake: a case study of pseudotachylites within mylonitic granitoid, Earth and Planetary Science Letters 430:235-248.
- Lee, C.-T. A., N. R. McKenzie, 2015, Rise of the continents, Nature Geoscience 8:506-507, DOI: 10.1038/NGEO2466.
- Yu, X., Lee, C.-T. A., Chen, L.-H., Zeng, G., 2015, Magmatic recharge in continental flood basalts: insights from the Chifeng igneous province, Geochemistry, Geophysics, Geosystems, DOI: 10.1002/2015GC005805.
- Lee, C-T A, Thurner, S., Paterson, S., Cao, W., 2015, The rise and fall of continental arcs: interplays between magmatism, uplift, weathering, and climate, Earth and Planetary Science Letters, doi: 10.1016/j.epsl.2015.05.045.
- Lee, C-T A and Anderson, D., 2015, Continental crust formation at arcs, the arclogite “delamination” cycle, and one origin for fertile melting anomalies in the mantle, Science Bulletin DOI:10.1007/s11434-015-0828-6
- Shu, X-J., Lee, C.-T. A., 2015, Sulfur and major element determination by laser ablation high resolution magnetic sector ICP-MS applied to glasses, aphyric lavas, and micro-laminated sediments, Chinese Journal of Geochemistry, DOI 10.1007/s11631-015-0051-9.
- Chin, E. J., Lee, C-T A, Blichert-Toft, J., 2015, Geochronologic constraints on the thermal evolution of the deep lithosphere beneath continental arcs, Geochemical Perspectives Letters 1:20-32; doi:10.7185/geochemlet.1503.
- Lee, C-T A, Morton, D. M., Farner, M. J., Moitra, P., 2015, Field and model constraints on silicic melt segregation by compaction/hindered settling: The role of water and its effect on latent heat release, American Mineralogist; <http://dx.doi.org/10.2138/am-2015-5121>.
- Le Roux, V., Dasgupta, R., Lee, C.-T. A., 2015, Recommended mineral-melt partition coefficients for FRTEs (Cu), Ga and Ge during mantle melting, American Mineralogist; <http://dx.doi.org/10.2138/am-2015-5215>.
- Dong, L., Shen, B., Lee, C.-T. A., Shu, X., Peng, Y., Sun, Y., Tang, Z., Rong, H., Lang, X., Ma, H., Yang, F., Guo, W., 2015, Germanium/silicon of the Ediacaran-Cambrian Laobao cherts: Implications for bedded chert formation and paleoenvironment interpretations, Geochemistry, Geophysics, Geosystems; DOI: 10.1002/2014GC005595.
- Ding, S., Dasgupta, R., Lee, C.-T. A., Wadhwa, M., 2015, New bulk sulfur measurements of Martian meteorites and modeling the fate of sulfur during melting and

- crystallization—Implications for sulfur transfer from Martian mantle to crust-atmosphere system, *Earth and Planetary Science Letters*, 409: 157-167.
- Lee, C-T A, and Lackey, J. S., 2015, Global continental arc flare-ups and their relation to long-term greenhouse conditions, *Elements* 11:125-130; DOI: 10.2113/gselements.11.2.125.
- Zheng, J. P., Lee, C.-T. A., Lu, J. G., Zhao, J. H., Wu, Y. B., Xia, B., Li, X. Y., Zhang, J. F., Liu, Y.S., 2015, Refertilization-driven destabilization of subcontinental mantle and the importance of initial lithospheric thickness for the fate of continents, *Earth Planet. Sci. Lett.* 409: 225-231.
- Lee, C-T A, Morton, D. M., 2015, High silica granites: terminal porosity and crystal settling, *Earth and Planetary Science Letters* 409:23-31.
- Nielsen, S. G., Shimizu, N., Lee, C.-T. A., Behn, M. D., 2014, Chalcophile behavior of thallium during MORB melting and implications for the sulfur content of the mantle, *Geochemistry, Geophysics, Geosystems* 15; doi:10.1002/2014GC005536.
- Barnes, J. D., Beltrando, M., Lee, C.-T. A., Cisneros, M., Loewy, S., Chin, E., 2014, Geochemistry of Alpine serpentinites from rifting to subduction: a view across paleogeographic domains and metamorphic grade, *Chemical Geology* 389:29-47.
- Erdman, M., Lee, C-T A, 2014, Implications and limitations of buoyancy-driven exhumation of high-pressure and ultrahigh-pressure terranes, *Earth-Science Reviews* 139:33-46.
- Karlstrom, L., Lee, C-T A, Manga, M, 2014, The role of magmatic crustal thickening on arc front migration, *Geochemistry, Geophysics, Geosystems* 15: doi:10.1002/2014GC005355.
- Albarede, F., Albalat, E., Lee, C-T A, 2014, An intrinsic volatility scale relevant to the Earth and Moon and the status of water in the Moon, *Meteoritics and Planetary Sciences* 1-10; doi:10.1111/maps.12331.
- Huang, S., Lee, C.-T. A., Yin, Q.-Z., 2014, Missing lead and high $^3\text{He}/^4\text{He}$ in ancient sulfides associated with continent formation, *Scientific Reports* 4(5314); doi:10.1038/srep05314
- Lee, C.-T. A., Chin, E. J., 2014, Calculating melting temperatures and pressures of peridotite protoliths: implications for the origin of cratonic mantle, *Earth and Planetary Science Letters*, 397:184-200, doi:10.1016/j.epsl.2014.06.048.
- Clausen, B. L., Morton, D. M., Kistler, R. W., Lee, C.-T. A., 2014, Low initial-Sr felsic plutons of the northwestern Peninsular Ranges batholith, southern California, and the role of mafic felsic magma mixing in continental crust formation, *Geol. Soc. Am. Mem.* 211, 317-344, doi:10.1130/2014.1211(08).
- Morton, D. M., Miller, F. K., Kistler, R. W., Premo, W. R., Lee-, C.-T. A., Langenheim, V. E., Wooden, J. L., Snee, L. W., Clausen, B. L., Cossette, P., 2014, Framework and petrogenesis of the northern Peninsular ranges batholith, southern California, *Geol. Soc. Am. Mem.* 211:61-143, doi:10.1130/2014.1211(03).
- Turner, S., Palomeras, I., Levander, A., Carbonell, R., Lee, C.-T., 2014, Evidence for ongoing lithospheric removal in the western Mediterranean: Ps receiver function results from the PICASSO project, *Geochemistry, Geophysics, Geosystems*, 15:1113-1127, doi:10.1002/2013GC005124.
- Farner, M. J., Lee, C.-T. A., Putirka, K. D., 2014, Mafic-felsic magma mixing limited by reactive processes: a case study of biotite-rich rinds on mafic enclaves, *Earth Planet. Sci. Lett.* 393:49-59; <http://dx.doi.org/10.1016/j.epsl.2014.02.040>
- Lee, C.-T. A., Bachmann, O., 2014, How important is the role of crystal fractionation in making

- intermediate magmas? Insights from Zr and P systematics, *Earth Planet Sci. Letters*, 393:266-274; <http://dx.doi.org/10.1016/j.epsl.2014.02.044>.
- Chin, E. J., Lee, C.-T. A., Barnes, J., 2014, Thickening, refertilization, and the deep lithosphere filter in continental arcs: constraints from major and trace elements and oxygen isotopes, *Earth Planet. Sci.Lett.*397:184-200; <http://dx.doi.org/10.1016/j.epsl.2014.04.022>
- Lee, C-T A, 2014, The physics and chemistry of recycling lower continental crust, *Treatise of Geochemistry*, 2nd edition, <http://dx.doi.org/10.1016/B978-0-08-095975-7.00314-4>.
- Erdman, M., Lee, C.-T. A., Yang, W., Ingram, L., 2014, Sulfur concentration in rock standard reference materials by solution ICP-MS, *Geostandards and Geoanalytical Research*, 38:51-60, DOI:10.1111/j.1751-908X.2013.00226.x.