**Linda Tarbox Elkins–Tanton** **9/15/09**

Assistant Professor of Geology, Mitsui Career Development Chair
Massachusetts Institute of Technology
Dept. Earth, Atmospheric, and Planetary Sciences, 77 Massachusetts Ave., Cambridge MA 02139
617-253-1902 25 Marlborough St.
LTELKINS@mit.edu Southborough MA 01772

**Education**

Massachusetts Institute of Technology, Cambridge, MA

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|---|---|---|
| Ph.D., Geology and Geophysics | 2002 | Timothy L. Grove and Bradford H. Hager |
| M.S., Geochemistry and B.S., Geology | 1987 | Timothy L. Grove |

**Appointments and employment**

| | | |
|---|---|---|
| Mitsui Assistant Professor of Geology | Massachusetts Institute of Technology | 2008 - |
| Assistant Professor of Geology | Massachusetts Institute of Technology | 2007 - 2008 |
| Visiting Instructor | Massachusetts Institute of Technology | Spring 2007 |
| Senior Research Associate | Brown University | 2004-2006 |
| Post-Doctoral Research Associate | Brown University | 2002-2004 |
| Graduate student | Massachusetts Institute of Technology | 1997-2002 |
| Lecturer in Mathematics | St. Mary's College of Maryland | 1995-1997 |

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|---|---|
| Principal, Business Plan Writing, Annapolis, MD. Consulted to technology companies. | 1990-1995 |
| Circulation Analyst, US News & World Report, Washington DC. Forecast income. | 1989-1990 |
| Interim Publisher, International Wine Review Magazine, Ithaca, NY | 1988-1989 |
| Research Associate, Touche Ross & Co. Management Consulting, Philadelphia, PA | 1987-1988 |

**Papers published or submitted** (Graduate students in bold, undergraduates in bold and italic)

40. **Meyer, Jennifer**, Linda T. Elkins-Tanton, Jack Wisdom, Coupled thermal-orbital evolution of the early Moon, submitted to *Icarus*, 2009.
39. Elkins-Tanton, Linda T., Benjamin P. Weiss, Maria T. Zuber, Chondrites as samples of differentiated planetesimals, submitted to *Science*, 2009.
38. **Till, Christy B**, Linda T. Elkins-Tanton, and Karen M. Fischer, A mechanism for low extent melts at the lithosphere-asthenosphere boundary, submitted to $G^3$, 2009.
37. **Suckale, Jenny**, Bradford Hager, Linda T. Elkins-Tanton, and Jean-Christophe Nave, Simulations of buoyancy-driven flow in the presence of large viscosity contrasts: II. Implications for modeling normal Strombolian activity, in revision for *Journal of Geophysical Research*, 2009.

**2009**

36. **Miller-Ricci, E**., M. Meyer, S. Seager, L. Elkins-Tanton, On the emergent spectra of hot protoplanet collision afterglows, accepted at *Astrophysical Journal*, 2009.
35. ***Brown, S***. and L. T. Elkins-Tanton, Composition of Mercury's oldest crust from magma ocean models, accepted at *Earth and Planetary Science Letters*, 2009.
34. **West, John D**., Matthew J. Fouch, Jeffrey B. Roth, Linda T. Elkins-Tanton, Geophysical detection of lithospheric delamination beneath the Great Basin, *Nature Geoscience*, 10.1038/NGEO526, 2009.
33. McCanta, M., L. Elkins-Tanton, M.J. Rutherford, Expanding the application of the Eu-oxybarometer to the lherzolitic shergottites and nakhlites: implications for the oxidation state heterogeneity of the Martian interior, *Meteoritics and Planetary Science* 44(5), 725-745, 2009.

**2008**

32. Weiss, B.P., ***J.S. Berdahl***, L. Elkins-Tanton, S. Stanley, A. J. Irving, E.A. Lima, L. Carporzen, M.E. Zucolotto, Magnetism on the angrite parent body and the early evolution of planetesimals, *Science* 322, 713-716, 2008.
31. Elkins-Tanton L.T. and S. Seager, Coreless terrestrial exoplanets, *Astrophysical Journal* 688, 628-635, 2008.
30. Stanley, S., L. Elkins-Tanton, M. Zuber, and E.M. Parmentier, Mars' paleomagnetic field as the result of a single-hemisphere dynamo, *Science* 321, 1822-1825, 2008.
29. Elkins-Tanton L.T. and S. Seager, Ranges of atmospheric mass and composition for terrestrial exoplanets, *Astrophysical Journal* 685, 1237-1246, 2008.
28. Elkins-Tanton L.T., Linked magma ocean solidification and atmospheric growth for Earth and Mars, *Earth and Planetary Science Letters 271*, 181-191, 2008.
27. **Adams E.R**., S. Seager, L. Elkins-Tanton, Ocean planet or thick atmosphere: On the mass-radius relation for solid exoplanets with massive atmospheres, *Astrophysical Journal 673*, 1160-1164, 2008.
26. Farmer, G.L., **T. Gailley**, L.T. Elkins-Tanton, Mantle "source volumes" and the origin of the mid-Tertiary ignimbrite flare-up in the southern Rocky Mountains, Western U.S., *Lithos 102*, 279-294, 2008.

**2007**

25. Smrekar, S.E., L.T. Elkins-Tanton, J. Leitner, A. Lenardic, S. Mackwell, L. Moresi, C. Sotin, E.R. Stofan, Tectonic and thermal evolution of Venus and the role of volatiles: Implications for understanding the terrestrial planets, In AGU monograph *Venus as a Terrestrial Planet*, 2007.
24. **Cagnioncle, A**., E. M. Parmentier, and L. T. Elkins-Tanton. Effect of solid flow above a subducting slab on water distribution and melting at convergent plate boundaries, *Journal of Geophysical Research* 112, B09402, doi:10.1029/2007JB004934, 2007.
23. Elkins-Tanton, L. T., S. E. Smrekar, P. C. Hess, and E. M. Parmentier, Volcanism and volatile recycling on a one-plate planet: Applications to Venus. *Journal of Geophysical Research* 112, E04S06, doi:10.1029/2006JE002793, 2007.
22. Elkins-Tanton, L. T., Continental magmatism, volatile recycling, and a heterogeneous mantle caused by lithospheric gravitational instabilities, *Journal of Geophysical Research* 112, B03405, doi:10.1029/2005JB004072, 2007.
21. Elkins-Tanton L.T., D. Draper, C. Agee, ***J. Jewell***, ***A. Thorpe***, P. Hess, The last lavas erupted during the main phase of the Siberian flood basalts: Results from experimental petrology, *Contributions to Mineralogy and Petrology* 153(2), doi:10.1007/s00410-006-0140-1, 191-209, 2007.

**2006**

20. Shearer C.K., P.C. Hess, M.A. Wieczorek, M.E. Pritchard, E.M. Parmentier, L.E. Borg, J. Longhi, L.T. Elkins-Tanton, C.R. Neal, I. Antonenko, R.M. Canup, A.N. Halliday, T.L. Grove, B.H. Hager, D.-C. Lee, U. Weichert, Thermal and magmatic evolution of the Moon, in *New Views of the Moon*, B.L. Joliff, M.A Wieczorek, C.K. Shearer, C.R. Neal, *Eds*, Reviews in Mineralogy and Geochemistry 60, Mineral. Soc. America, Chantilly, Virginia, 2006.

**2005**

19. Elkins-Tanton L.T., E.M. Parmentier, P.C. Hess, Possible formation of ancient crust on Mars through magma ocean processes, *Journal of Geophysical Research* 110, E12S01, doi:10.1029/2005JE002480, 2005.
18. Elkins-Tanton L.T. and B. H. Hager, Giant meteoroid impacts can cause volcanism, *Earth and Planetary Science Letters*, 239, 219-232, doi: 10.1016/j.epsl.2005.07.029, 2005.
17. Elkins-Tanton L.T., **S. Zaranek**, and E.M. Parmentier, Early magnetic field and magmatic activity on Mars from magma ocean overturn, *Earth and Planetary Science Letters* 236, 1-12, 2005.
16. Elkins-Tanton L.T., Continental magmatism caused by lithospheric delamination, in *Plates, Plumes, and Paradigms*, eds. G.R. Foulger, J.H. Natland, D.C. Presnall, D.L. Anderson, Geological Society of America, 449-461, 2005.
15. Grove T.L., M.B. Baker, R.C. Price, S.W. Parman, L.T. Elkins-Tanton, N. Chatterjee, and O. Müntener, Magnesian andesite and dacite lavas from Mt. Shasta, northern California: products of fractional crystallization

of $H_2O$-rich mantle melts. *Contributions to Mineralogy and Petrology*: DOI: 10.1007/s00410-004-0619-6, 2005.

**2004**

14. Elkins-Tanton L.T., B. H. Hager, and T.L. Grove, Magmatic effects of the Lunar Late Heavy Bombardment. *Earth and Planetary Science Letters*: 222, 17-27, 2004.
13. Kelly, D.C. and L.T. Elkins-Tanton, A possible new tektite strewn field at 5 Ma, *Meteoritics and Planetary Science* 39, 1921-1929, 2004.

**2003**

12. Elkins-Tanton L.T. and T.L. Grove, Evidence for deep melting of hydrous, metasomatized mantle: Pliocene high potassium magmas from the Sierra Nevadas, *Journal of Geophysical Research*: 108, 2350, DOI 10.1029/2002JB002168, 29 July 2003.
11. Elkins-Tanton L.T., P. Aussillous, J. Bico, D. Quéré, J.W.M. Bush, A laboratory investigation of tektites, *Meteoritics and Planetary Science*: 38, 1331-1340, 2003.
10. Elkins-Tanton L.T., E.M. Parmentier, and P.C. Hess, Magma ocean fractional crystallization and cumulate overturn in terrestrial planets: Implications for Mars, *Meteoritics and Planetary Science*: 38, 1753-1771, 2003.
9. Elkins-Tanton L.T., N. Chatterjee, and T.L. Grove, Magmatic processes that produced lunar fire fountains, *Geophysical Research Letters*: 30(10), p. 1513, DOI 10.1029/2003GL017082, 2003.
8. Grove T.L., L.T. Elkins-Tanton, S.W. Parman, N. Chatterjee, O. Müntener, G.A. Gaetani, Fractional crystallization and mantle-melting controls on calc-alkaline differentiation trends, *Contributions to Mineralogy and Petrology*: 145, p 515-533, DOI 10.1007/s00410-003-0448-z, 2003.
7. Elkins-Tanton L.T., N. Chatterjee, and T.L. Grove, Experimental and petrological constraints on lunar differentiation from the Apollo 15 green picritic glasses, *Meteoritics and Planetary Science*: 38, 515-527, 2003.

**2002**

6. Elkins-Tanton L.T., J. A. Van Orman, B. H. Hager, and T. L. Grove, Reexamination of the lunar magma ocean cumulate overturn hypothesis: Melting or mixing is required, *Earth and Planetary Science Letters*: 196, 249-259, 2002.

**2001**

5. Elkins Tanton L.T., T.L. Grove, and J. Donnelly-Nolan, Hot shallow melting under the Cascades volcanic arc, *Geology*: 29, 631-634, 2001.

**2000 and previous**

4. Elkins Tanton L.T. and Bradford H. Hager, Melt intrusion as a trigger for lithospheric foundering and the eruption of the Siberian flood basalt, *Geophysical Research Letters*: 27, 3937-3940, 2000.
3. Elkins L.T., T.L. Grove, J. Delano, V. Fernandez, Origin of lunar ultramafic green glasses: Constraints from phase equilibrium studies, *Geochimica et Cosmochimica Acta*: 64, 2339-2350, 2000.
2. Elkins, Linda T. and Timothy L. Grove, Ternary feldspar experiments and thermodynamic models, American *Mineralogist*: 75, 544-559, 1990.
1. Karig, D.E. and L.T. Elkins, Geology of the Cayuga Lake region, *NYSGA Annual Meeting Guidebook*, 1986.

**Grants and fellowships**

14. Catastrophes, tedium, discoveries: When expeditions do science, a grant from the MIT Research Funds for development of a freshman seminar and eventual course. Co-I with P.I. Mary Fuller.
13. Lunar volatiles and magma ocean differentiation: Reconciling new results with old ideas, Co-I. with P.I. Molly McCanta, Tufts University, NASA LASER program, 7/1/09 – 6/30/12.
12. Moon as cornerstone to the terrestrial planets: The formative years. Team member with P.I. Carle Pieters, Brown University, and Institutional P.I. Maria Zuber, MIT: A NASA Lunar Institute centered at Brown University and MIT.

11. Unusual lavas in Arctic Siberia: Connections to the world's largest volcanic event, the world's largest extinction, and river channels on Venus. P.I., MIT Research grant from the Wade fund. 7/1/08 – 6/30/09.
10. Collaborative research: The Siberian Traps and the end-Permian extinction: Coincidence and causality. Lead P.I., NSF Continental Dynamics, 7/1/06 – 6/30/13.
9. CAREER: Building rocky planets: From Mercury and Vesta to GL 581c. P.I. NSF Astronomy. 7/1/08 – 6/30/13.
8. Consequences of tidal heating on the internal evolution of the early Earth, with comparison to Venus, Mars, and Mercury. Strategic University Research Partnership, MIT-JPL. 7/1/08-6/30/09.
7. Collaborative research: Lithospheric removal: The Sierra Nevada as the prototype of a fundamental process in mountain building. P.I., NSF Continental Dynamics, 9/1/06 – 8/31/10.
6. The role of water in the early formation of Mars: Wet magma ocean crystallization, the growth of a water atmosphere, and retention of water in the mantle. P.I., NASA Mars Fundamental Research, 6/1/06 – 5/31/09
5. The lithosphere-asthenosphere boundary: Integrated modeling of scattered wave observations and mantle dynamics. Co-I. with P.I. K. Fischer, NSF Geophysics, 4/1/06 – 3/31/09.
4. Workshop on the Siberian traps and the end-Permian extinction. P.I., NSF Continental Dynamics, 9/1/05 – 12/31/06.
3. Early crustal formation on Mars. P.I., NASA Mars Fundamental Research, 7/1/05 – 12/31/06.
2. Petrology and physics of magma ocean crystallization. P.I., NASA Mars Fundamental Research, 4/1/04 – 3/31/05.
1. Lithospheric controls on flood basalt volcanism. P.I., NSF Petrology and Geochemistry, 7/1/03 – 12/1/05

National Defense Science and Engineering Graduate fellowship, 1997-2000, full tuition plus stipend.

Amelia Earhart graduate fellowships, 1999 and 2000, from the Xonta International Foundation (two year limit).

**Academic service, honors, etc.**

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| Honors and Awards: | Outstanding MIT Faculty Undergrad Research Mentor Award | 2008-2009 |
| | Mitsui Career Development Chair | 2008-2011 |
| | National Academy of Sciences Kavli Fellow, Frontiers of Science, U.S. (participant) | Nov. 6-8, 2008 |
| | National Academy of Sciences Kavli Fellow, Frontier of Science France-US, France (speaker) | Nov. 20-22, 2008 |
| | National Science Foundation CAREER award | June, 2008 |
| Books published: | The Solar System, a six-book reference series, published by Chelsea House, an imprint of Facts on File, Inc, 2006. In revision for second edition. *The Sun, Mercury, and Venus, The Earth and the Moon, Mars, Asteroids, Meteorites, and Comets, Jupiter and Saturn, Uranus, Neptune, Pluto, and the Outer Solar System* | |
| Proposal reviewer for: | *NASA*: Mars Fundamental Research Program, Interdisciplinary Exploration Science, Cosmochemistry, Planetary Geology and Geophysics<br>*NSF*: Petrology and Geochemistry, Geophysics, Instrumentation and Facilities, Polar Programs, Collaboration in Mathematical Geosciences<br>*NWO*: Netherlands Organization for Scientific Research<br>*NERC*: United Kingdom | |
| Panel/committee member: | NAS NASA Decadal Survey Mars Panel | 2009-2012 |
| | NSF Continental Dynamics | 2009-2011 |
| | SENCR-Microanalytical and Imaging Center Advisory Board | 2009-2012 |
| | International Lunar Network Science Definition Team | 2008 |
| | NASA Mars Data Analysis Program | 2005 |
| Reviewer for: | American Geophysical Union books | |

*Bulletin of Volcanology*
*Chemical Geology*
*Contributions to Mineralogy and Petrology*
*Earth and Planetary Science Letters*
*Geochimica et Cosmochimica Acta*
*Geological Society of America Bulletin*
*Geology*
*Geophysical Research Letters*
*Journal of Geophysical Research*
*Journal of Metamorphic Geology*
*Journal of Petrology*
*Meteoritics and Planetary Science*
*Nature*
*Nature Geoscience*
*Physics of the Earth and Planetary Interiors*
*Space Science Reviews*
*Tectonophysics.*

Memberships: American Geophysical Union, Geological Society of America, Meteoritical Society, Sigma Xi, The Explorer's Club, American Astronomical Society.

Invited talks:

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| Ludwig-Maximilians-Universität München | January 2010 |
| University of Massachusetts at Amherst | September, 2009 |
| CIDER meeting, keynote speaker | May, 2009 |
| University of Minnesota | April, 2009 |
| Lehigh University, Pennsylvania | April, 2009 |
| University of Oregon | January, 2009 |
| American Geophysical Union (2 sessions), San Francisco | December, 2008 |
| Kavli Frontiers of Science NAS-France, Brittany, France | November, 2008 |
| Origin and Evolution of Planets, Ascona, Switzerland | July, 2008 |
| University of Iowa | April, 2008 |
| Cornell University | April, 2008 |
| University of New Mexico, Albuquerque | February, 2008 |
| American Geophysical Union session, San Francisco | December, 2007 |
| U. Mass. Amherst, NAGT "On the Cutting Edge" series | April, 2007 |
| Massachusetts Institute of Technology | October, 2006 |
| Lunar and Planetary Institute, Houston | September, 2006 |
| Stanford University ("Frontiers in Petrology" series) | May, 2006 |
| Brown University | April, 2006 |
| Harvard University | April, 2006 |
| Mt. Holyoke College | March, 2006 |
| Chapman Venus Conference, Florida | February, 2006 |
| University of Rhode Island | October 2005 |
| Chapman Plume Conference, Scotland | August 2005 |
| Harvard University | May, 2005 |
| California Institute of Technology | February, 2005 |
| Massachusetts Institute of Technology | February, 2005 |
| Brown University | February, 2005 |
| University of Massachusetts at Amherst | November, 2004 |
| Harvard University | September, 2004 |
| Carnegie Institute of Washington, DTM | March, 2004 |
| Rice University | March ,2004 |
| Wood's Hole Oceanographic Institute | February, 2004 |
| Princeton University | November, 2003 |
| University of Wisconsin at Madison | October, 2003 |
| University of Chicago | October, 2003 |

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| | EGS/AGU/EUG joint meeting, France | April, 2003 |
| | Wood's Hole Oceanographic Institute | January, 2003 |
| | Brown University | November, 2001 |
| | Brown University | October, 2000 |

Workshops:

Scientific Organizing Committee, Differentiation of the Terrestrial Planets: A Multi-Planetary and Multi-Disciplinary Perspective (Lunar and Planetary Institute), Sonoma CA, December 2006

Convener, The Siberian flood basalts and the end-Permian extinction, Brown University, September 2005

Organizing Committee, Kavli Frontier of Science France-U.S. 2009

Scientific Organizing Committee, Venus Geochemistry: Progress, Prospects, and New Missions, Lunar and Planetary Institute workshop held at the Gilruth Center at the NASA Johnson Space Center, Houston TX, February 2009.

**Post-docs**

Romain Meyer, Petrology of unstable continental lithosphere

**Graduate students**

*Primary advisor or co-advisor*

Jenny Suckale
Ben Black
Aaron Scheinberg, starting September 2009
Sondy Springmann, Consequences of a terrestrial magma ocean

*Advisor for secondary project*

Sonia Tikoo, The fate of water in the interior of the early Earth
Christy Till, The nature of the lithosphere-asthenosphere boundary
Terry Blackburn, Viscosity requirements for lithospheric stability
Seth Burgess, Time scales for solidification of the newly-formed Moon

**Undergraduate research students**

*Massachusetts Institute of Technology*

Sean Wahl, Effects of tidal heating on the very young Earth (2009)
Xindi Song, Volcanism in Central Europe (2009)
Stephanie Brown, Formation of Mercury (2007-2009) (Dwornik honorable mention for student presentation at the Lunar and Planetary Science Conference, 2008)
Sarah Gelman, Hot terrestrial exoplanets (2009) (Goetze award for best thesis, 2009)
Elizabeth Maroon, Formation of Vesta (2007)

*Brown University*

Shane Schoepfer, convection and particle settling experiments in a fluid tank (2006)
Karinna Sjo-Gaber, building a tank for fluid dynamic experiments (2006)
Andrew Thorpe, "Evidence from experimental petrology for olivine addition in meimechite magma generation" Senior honors thesis, Brown University (2004) (Bachelor's degree)
Jessica Jewell, "An experimental study of meimechites: Evidence for shallow melting and subsequent fractionation in the Siberian flood basalts" Senior honors thesis, Brown University (2004) (Bachelor's degree)

**Papers presented at conferences**

1. Elkins, Linda T. and Timothy L. Grove, Phase equilibrium investigations of ternary feldspars, Geological Society of America Abstracts, 1987.
2. Stark, R, L.T. Elkins, S. Strickland, Conveying the beauty of mathematics in a liberal arts course, Mathematical Association of America mid–Atlantic Spring conference, 1996.

3. Grove T.L., G.A. Gaetani, S.W. Parman, and L.T. Elkins, Mass transfer processes in the southern Cascade subduction zone: The influence of variable water content on mantle melting, Materials Recycling near Convergent Plate Boundaries, Carnegie Institute of Washington, Puerto Azul, Philippines, p.24, 1997.
4. Van Orman J., L.T. Elkins, T. L. Grove, Origin of high-Ti lunar ultramafic glasses: Experimental evidence from melting of magma ocean cumulates and depths of positive buoyancy for melts of varying Ti-content, Lunar and Planetary Science Conference XXX Abstracts, 1999.
5. Elkins, L.T. and T.L. Grove, Origin of lunar ultramafic green glasses: Constraints from phase equilibrium studies, Lunar and Planetary Science Conference XXX Abstracts, 1999.
6. Donnelly-Nolan J., L.T. Elkins, T.L. Grove, Primitive high-alumina olivine tholeiites from Medicine Lake Volcano — Mt. Shasta region, N. California: Depths and extents of mantle melting, American Geophysical Union Abstracts, Fall Meeting, 1999.
7. Elkins, L.T. and B. Hager, An emplacement model for the Siberian flood basalts to fit geologic, tectonic, and paleoclimatic constraints, American Geophysical Union Abstracts, Fall Meeting, 1999.
8. Elkins Tanton, L.T., J.A. Van Orman, B.H. Hager, and T.L. Grove, Constraints on early lunar high titanium cumulate overturn, Workshop on New Views of the Moon III Abstracts, Lunar and Planetary Institute, Houston TX, 2000.
9. Elkins Tanton, L.T. and T.L. Grove, Lunar mantle composition and thermal history: Constraints from phase equilibrium studies, Workshop on New Views of the Moon III Abstracts, Lunar and Planetary Institute, Houston TX, 2000.
10. Elkins Tanton, L.T. and B.H. Hager, Giant impact craters lead to flood basalts: A viable model, GSA Annual Meeting Abstracts, 2000.
11. Elkins Tanton, L.T. and T.L. Grove, Lunar mantle compositions and thermal history: Constraints from phase equilibrium studies, Lunar and Planetary Science Conference XXXII Abstracts, 2001.
12. Elkins Tanton, L.T., J.A. Van Orman, and T.L. Grove, Is the sinking high-Ti cumulate hypothesis sunk? Lunar and Planetary Science Conference XXXII Abstracts, 2001.
13. Elkins Tanton, L.T., B.H. Hager, and T.L. Grove, Magmatic effects of the lunar late heavy bombardment, American Geophysical Union Abstracts, Spring Meeting, 2001.
14. Elkins Tanton, L.T. and T.L. Grove, Evidence of a Deep Origin for Primitive Pliocene Absarokites From the Sierra Nevada, California, American Geophysical Union Abstracts, Fall Meeting, 2001.
15. Elkins Tanton, L.T., B.H. Hager, and T.L. Grove, Magmatic effects of the lunar late heavy bombardment, Lunar and Planetary Science Conference XXXIII Abstracts, 2002.
16. Elkins-Tanton, L.T., D.C. Kelly, J. Bico, J.W.M. Bush, Microtektites as vapor condensates, and a possible new strewn field at 5 Ma, Lunar and Planetary Science Conference XXXIII Abstracts, 2002.
17. Kelly, C.K., L.T. Elkins-Tanton, Bottle-green microtektites from the South Tasman Rise (ODP Site 1169): Evidence for an impact near the Miocene/Pliocene boundary, GSA Annual Meeting Abstracts, 2002.
18. Parmentier, E.M. and L.T Elkins-Tanton, Convection and layering in the Martian mantle, Unmixing the SNCs: Chemical, Isotopic, and Petrologic Components of the Martian Meteorites, workshop at the Lunar and Planetary Science Institute, Houston TX, October 2002.
19. Elkins-Tanton L.T. and T.L. Grove, Evidence for the formation of Pliocene Sierran high potassium magmas from deep melting of a phlogopite-clinopyroxene metasomatized peridotite, American Geophysical Union Abstracts, Fall Meeting, 2002.
20. Grove T.L., L.T. Elkins-Tanton S.W. Parman, N. Chatterjee, G.A. Gaetani, O. Müntener, Mantle melting controls on liquid lines of descent in magmatic systems, American Geophysical Union Abstracts, Fall Meeting, 2002.
21. Elkins-Tanton L.T., E.M. Parmentier, P.C. Hess, A model for Martian magma ocean crystallization and overturn, Lunar and Planetary Science Conference XXXIIII Abstracts, 2003.

22. Elkins-Tanton L.T., N. Chatterjee, T.L. Grove, Magmatic processes that produced lunar fire fountains: Evidence from vesicular rims on picritic glass beads, Lunar and Planetary Science Conference XXXIIII Abstracts, 2003.
23. Elkins-Tanton L.T., E.M. Parmentier, P.C. Hess, A model for Martian magma ocean crystallization and overturn, EGS/AGU/EUG combined meeting abstracts, Spring 2003. INVITED.
24. Elkins-Tanton L.T., P. Aussillous, J. Bico, D. Quéré, J.W.M. Bush, A laboratory model for splash-form tektites, EGS/AGU/EUG combined meeting abstracts, Spring 2003. INVITED.
25. Grove, T.L., Parman, S.W., Elkins-Tanton, L.T., and Müntener, O., Mantle melting and plate tectonic controls on magmatism in the cascade arc: a petrologic perspective, GSA Annual Meeting Abstracts, 2003.
26. Grove, T.L., Elkins-Tanton, L.T., and Hesse, M., Melting processes in continental lithosphere: effects of mantle metasomatism on melt composition, GSA Annual Meeting Abstracts, 2003.
27. Rilling J.L., A.M. Cagnioncle, L.T. Elkins-Tanton, and E.M. Parmentier, Melting due to Buoyant Migration of Water in the Hot Mantle Wedge Above a Subducting Plate, American Geophysical Union Abstracts, Fall Meeting, 2003.
28. Elkins-Tanton L.T., Jessica Jewell, and Paul C. Hess, Preliminary experimental results on a meimechite composition from Meymecha, Siberia, American Geophysical Union Abstracts, Fall Meeting, 2003.
29. Elkins-Tanton L.T. and E.M. Parmentier, Consequences of high crystallinity for the evolution of the lunar magma ocean: trapped plagioclase, Lunar and Planetary Science Conference XXXV Abstracts, March 2004.
30. Zaranek S.E., E.M. Parmentier, and L.T. Elkins-Tanton, Overturn of unstably stratified, inhomogeneous fluids: Implications for the early evolution of planetary mantles, Lunar and Planetary Science Conference XXXV Abstracts, March 2004.
31. Cagnioncle A.M., L.T. Elkins-Tanton, and E.M. Parmentier, Melting and Fluid Migration in the Hot Mantle Wedge Above a Subducting Plate, American Geophysical Union Abstracts, Spring Meeting, 2003.
32. Zaranek S.E., Elkins-Tanton L.T, Parmentier E.M., Role of Compositional Stratification on the Evolution of Planets, Computer Measurement Group Conference 2004, Courant Institute of Mathematical Sciences, New York, June 2004.
33. Elkins-Tanton L.T., S.E. Zaranek, and E.M. Parmentier, Martian early magnetic field as a result of magma ocean cumulate overturn, Workshop on Hemispheres apart: the origin and modification of the Martian crustal dichotomy, Houston TX, October 2004.
34. Elkins-Tanton L.T., S.E. Zaranek, and E.M. Parmentier, Martian early crust as a result of magma ocean cumulate overturn, Workshop on Hemispheres apart: the origin and modification of the Martian crustal dichotomy, Houston TX, October 2004.
35. Elkins-Tanton L.T., S.E. Zaranek, and E.M. Parmentier, Magma ocean cumulate overturn: Generation of an early magnetic field, Second Conference on Early Mars: Geologic, hydrologic, and climatic evolution and implications for life, Jackson Hole WY, October 2004.
36. Elkins-Tanton L.T., S.E. Zaranek, and E.M. Parmentier, Magma ocean cumulate overturn: Generation of an early crust, Second Conference on Early Mars: Geologic, hydrologic, and climatic evolution and implications for life, Jackson Hole WY, October 2004.
37. Draper D., L.T. Elkins-Tanton, J. Jewell, A. Thrope, C. Agee, High Volatile Content and Shallow Melting at the end of the Siberian Flood Basalts: Experimental Results, American Geophysical Union Abstracts, Fall Meeting, 2004.
38. Elkins-Tanton L.T., Lithospheric Delamination as a Process to Introduce Water Into the Mantle, American Geophysical Union Abstracts, Fall Meeting, 2004.
39. Zaranek S., L.T. Elkins-Tanton, E. Parmentier, Magma Ocean Overturn: Implications for The Creation of Large Scale Mantle Heterogeneities and Influences on Planetary Evolution, American Geophysical Union Abstracts, Fall Meeting, 2004.
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