

**CURRICULUM VITAE**  
**TIMOTHY DALE SWINDLE**

Professor of Geosciences and Planetary Sciences  
Head, Department of Planetary Sciences  
Director, Lunar and Planetary Laboratory  
Director, Arizona Space Grant Consortium  
University of Arizona  
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**Research Interests:**

Noble gas geochronology of extraterrestrial materials  
In situ geochronology on planetary surfaces  
Volatile evolution of the terrestrial planets

**Education:**

University of Evansville (Indiana), 1973-1978:  
    B.S., Journalism, 1977; B.A., Math and Physics, 1978; Summa Cum Laude  
Washington University, 1979-1986:  
    M.A., Physics, 1981; Ph.D., Physics, 1986  
    Dissertation: "Iodine-xenon and other noble gas studies of individual chondrules from the  
    Chainpur meteorite"

**Experience:**

Washington University, 1979-1986:  
    Teaching Assistant, 1979-1981; Research Assistant, 1981-1986  
University of Arizona, 1986-  
    Assistant Professor of Planetary Sciences, 1986-1995  
    Associate Professor of Planetary Sciences, 1995-2000  
    Professor of Planetary Sciences, 2000-  
    Professor of Geosciences, 2001-  
    Assistant Department Head, Planetary Sciences, 2008-2012  
    Acting Department Head, Planetary Sciences, 2010, 2011  
    Department Head and Director, Department of Planetary Sciences and Lunar and Planetary  
    Laboratory, 2012-  
    Director, Arizona Space Grant Consortium, 2012-

**RESEARCH:**

**Grants (\$10 million total):**

"Noble gas studies of early solar system history" and successors (NASA Cosmochemistry), 1987-  
"Acquisition of a noble gas mass spectrometer" (NSF), 1989  
"Lunar He-3 and fusion" (Science Industry System Consulting), 1989 Co-I with C. Glass  
"Abundance of helium-3 and other solar-wind-derived volatiles in lunar soils" (NASA/Space  
    Engineering Research Center), 1991-1992  
"Technician support: Noble gas mass spectrometry laboratory" (NSF), 1995-2000

"Incorporation of noble gases into interstellar ice residue analogs" (NASA Origins), 1996-2002

"The University of Arizona's Center for Thermochronology and Noble Gas Studies" (Wm. Keck Foundation) Co-Investigator with S. Baldwin, 1996

"An *in situ* Geochronology System based on Laser-Induced Breakdown Spectroscopy and Noble Gas Mass Spectrometry" (NASA PIDDP), 2000-2003

"A study of *in situ* chronology in the outer solar system" (JPL), 2001-2002

"Mars Scout Urey Mission" (NASA Mars Scout preliminary study), Co-I, J. Plescia, PI, 2001-2002

"Argon Geochronology Experiment (AGE): In Situ geochronology for Mars based on Laser-Induced Breakdown Spectroscopy and Mass Spectrometry" (NASA MIDP), 2003-2006

"Implantation of Martian Atmosphere into Meteorites as a Function of Temperature (NASA Mars Fundamental Research), 2006-2009

"Support for the 70<sup>th</sup> Annual Meeting of the Meteoritical Society, Tucson, Arizona, 2007" (NASA Cosmochemistry), 2007

"Configuring innovative regolith moving techniques for lunar outposts" (NASA Broad Agency Announcement), Co-I, R. Whittaker, PI, 2008

"Improvements on dating of extraterrestrial materials" (NASA Earth and Space Science Fellowship), 2008-2011 (Fellowship for graduate student J. Weirich)

"Setting the stage for life: from interstellar clouds to early Earth and Mars" (NASA Astrobiology Institute), Co-I, D. Whittet, PI, 2009-2013

"Impact processes in the origin and evolution of the Moon: New sample-driven perspectives" (NASA Lunar Institute), Co-I, D. Kring, PI, 2009-2013

"Purchase of a diode laser system" (NASA Cosmochemistry Major Equipment), 2009

"Lunar Greenhouse Prototype for Bioregenerative Life Support Systems" (NASA Ralph Steckler Space Grant Colonization Research and Technology Development Opportunity Phase II), 2012

"Arizona Space Grant Consortium" (NASA Space Grant), 2012-

"ASCENDING Further: Engaging More Students from Community Colleges in STEM Activities through expansion of the Arizona Space Grant Consortium ASCEND program" (NASA Space Grant), 2014-

"Inner Solar System Impact Processes: An Integrated Analysis Using Extraterrestrial Samples, Astronomical Observations, and Modeling" (NASA SSERVI), Co-I, D. Kring, PI, 2014-

"Lunar Greenhouse Prototype for Bioregenerative Life Support Systems" (NASA Ralph Steckler Space Grant Colonization Research and Technology Development Opportunity Phase III), 2015-2016

**Publications (Total, 1982-2017):**

86 peer-reviewed articles in journals or chapters in books (listed below)

127 extended abstracts (two pages or more)

114 other abstracts

25 other publications (published technical reports, commentaries, book reviews, unrefereed book chapters or magazine articles)

**Spacecraft proposals:**

Co-Investigator, "BIFROST" (P. Lucey, PI), Discovery, 1999 (unsuccessful)

Co-Investigator, Instrument PI, "Urey" (J. Plescia, PI), Mars Scout, 2002 (unsuccessful)

Collaborator, “Moonrise” (M. Duke, PI), New Frontiers, 2005 (unsuccessful)  
Co-Investigator, “OSIRIS” (M. Drake, PI), Discovery, 2006 (unsuccessful)  
Co-Investigator, “Moonrise” (B. Jolliff, PI), New Frontiers, 2009 (unsuccessful)  
Collaborator, “OSIRIS-Rex” (M. Drake, PI), New Frontiers, 2009 (successful)  
Deputy Principal Investigator, “Potassium-Argon Laser Experiment” (B. Cohen, PI), Mars 2020  
Instruments, 2014 (unsuccessful)  
Co-Investigator, “CORSAIR” (S. Sandford, PI), New Frontiers, 2017 (pending)  
Collaborator, “MoonRise” (B. Jolliff, PI), New Frontiers, 2017 (pending)

### **Honors:**

Named Fellow of Meteoritical Society (2008) (1% of membership every 2 years named Fellows)  
Asteroid 8690 named “Swindle”

### **TEACHING:**

#### **PhD dissertations supervised:**

M. K. Burkland (Physics), 1998  
B. A. Cohen (Planetary Sciences), 2001  
J. R. Weirich (Planetary Sciences), 2011  
S. P. Beard (Planetary Sciences), 2018 (anticipated)

#### **Master’s thesis supervised:**

K. Block (Planetary Sciences), 2011

#### **Courses taught:**

Humanity and the University: Origin and Destiny (General Education Tier I)  
The Golden Age of Planetary Exploration (General Education Tier II)  
Life on Mars in Fact and Fiction\* (Freshman Seminar)  
Exploration and Science in Antarctica\* (Freshman Seminar)  
Planetary Chemistry (Upper Division Undergraduate)  
The Searches for Life on Mars in Fact and Fiction\* (Upper Division Undergraduate)  
Asteroids, Comets, and Kuiper Belt Objects\* (Upper Division Undergraduate/Graduate Elective)  
Mars (Upper Division Undergraduate/Graduate Elective)  
Meteorites (Graduate Elective)  
\* Designed as new course

#### **Teaching awards**

College of Science Teaching Award, 1997  
Provost’s General Education Teaching Award, 2004  
Nominated for University Distinguished Professor, 2007

#### **Teaching-oriented service**

Supervised 7 Space Grant interns  
Earth Science Teaching Major committee, 1991-1992  
Ad hoc committee to develop course on Science and Civilization, 1991-1992  
Departmental Awards Committee (Office of Undergraduate Education), 1994

Academic Planning Team, Arizona International College, 1995  
Ad hoc committee to develop Information Literacy workshops for General Education science students, 1999-2000  
General Education Program Review Committee, 2004-2005  
College of Science ad hoc committee on scheduling General Education courses, 2011-2012  
Director, University of Arizona Teaching Teams Program, 2011-2017

## **MEMBERSHIPS AND SERVICE**

### **Memberships:**

Meteoritical Society (Elected to Society Council, 1991-1994; Treasurer 2001-2002; Investments Committee, 2003-2012 (Chair, 2007-2011); Leonard Medal Committee, 2003-2007 (Chair, 2007); Organizing Committee Co-Chair for 2007 Annual Meeting; Committee on dues (Chair, 2009-2010), Legacy Fundraising Committee, 2012-2014)  
Geochemical Society (Goldschmidt Conference Program Committee, 1997)  
Division of Planetary Science, American Astronomical Society (Student Travel Awards Committee, 1992)  
American Geophysical Union

### **Professional Service:**

NASA Lunar and Planetary Sample Team, 1987-1993  
Organizing committee, "The Sun in Time" conference and book, 1988-1990  
Organizing committee, "Protostars and Planets III," 1989-1990  
Meteorite Working Group (NASA/NSF), 1989-1992  
Editorial advisory board, Van Nostrand-Rheinhold Encyclopedia of Planetary Sciences, 1992  
Curation and Analysis Planning Team for Extraterrestrial Materials (NASA), 1993-1994  
Lecturer at Workshop on Meteoritics and Planetology, Roztez, Czech Republic, 1994  
Working group leader, Isotopic Analysis and Evolved Gases, Planetary Surface Instrument Workshop, Houston, 1995  
Organizer, symposium on Comparative Geochemistry of Earth and Mars, Goldschmidt Conference, Tucson; also on Program committee, 1997  
Member of ANSMET Antarctic meteorite collection field teams, 1997-1998, 2003-2004, 2007-2008, 2011-2012  
Discussion leader, Mars In Situ Analysis Workshop, Chicago, 2000  
Mars Exploration Payload Assessment Group (NASA), 2001-2005  
Sample Preparation and Distribution Study Team for Mars Science Laboratory (JPL), 2003  
Associate Editor, Meteoritics and Planetary Science, 2004-2011  
Co-organizer, Annual meeting of the Meteoritical Society, 2007  
Invited participant, CalTech Keck Institute for Space Sciences workshop, Long Beach, 2010  
Member of Steering Committee for Small Bodies Assessment Group (NASA), 2012-  
Organizing committee, Workshop on Martian Volatiles (LPI), 2014  
Organizing committee, Workshop on Early Bombardment (LPI), 2015  
Nominating committee, NASA Space Grant Directors' Council, 2014-2017  
Chair, Science Goals subcommittee for Small Bodies Assessment Group (NASA), 2015-2016  
Organizer, NASA Space Grant National Meeting, 2015  
Chair, NASA Small Bodies Assessment Group, 2016-2018

Chair, Special Action Team for the NASA Small Bodies Assessment Group, investigating linkages between the Asteroid Redirect Mission and the Small Bodies Strategic Knowledge Gaps and the Decadal Survey, 2016

Member, NASA Planetary Sciences Subcommittee, 2016

Member, University of Central Florida Physics Department External Review Committee, 2017

**Proposal review panels:**

11 panels in nine different programs, mostly NASA, but also German Research Foundation

**Service to the University, the College of Science, or other departments:**

Geosciences Faculty Search Committees, 1990, 2006

Earth Science Teaching Major committee, 1991-1992

Ad hoc committee to develop course on Science and Civilization, 1991-1992

College of Science Sunset Review Committees, 1994:

Laboratory for Isotope Geochemistry

Environmental Radioisotope Center

Laboratory for Organic Geochemistry

Departmental Awards Committee (Office of Undergraduate Education), 1994

Academic Planning Team, Arizona International College, 1995

Search committee, director of Flandrau Planetarium, 1998

Faculty Senate, 1998-2000

Ad hoc committee to develop Information Literacy workshops for General Education science students, 1999-2000

Geosciences Department 5-year Review Committee for Chair, 2000

General Education Program Review Committee, 2004-2005

Search committee for department head, Hydrology, 2010

College of Science ad hoc committee on scheduling General Education courses, 2011-2012

Director, University of Arizona Teaching Teams Program, 2011-

College of Science Dean's External Advisory Board, 2013-2016

UA Export Controls Policy Committee, 2013-2014

UA Campus Data Management Subcommittee, 2013-2016

Search Committee for UA Director of Federal Legislative Affairs, 2014

Search Committee for UA Defense and Security Research Institute Director, 2014

Speaker and part of organizing team for College of Science Lecture Series, 2015

Discussion leader, Strategic Planning Workshop on Space Systems for Office of Research and Discovery, 2015

Hiring committee, UA Earth Dynamics Observatory cluster, 2015-2017

Hiring committee, UA Space Situational Awareness cluster, 2015-2016

External Review Panel for Academic Program Review for Department of Mining and Geological Engineering, 2016

Ad hoc committee on Recruitment of Undergraduates, College of Science, 2017

**LPL committees chaired:**

Graduate Student Affairs, 1989-1995  
Peer Review Committee for Research Staff, 1990  
Teaching Peer Review, 1995-1999  
Curriculum, 1996-1997, 2008-2010  
Performance Review, Other Appointed Personnel, 1996  
Faculty performance review committee, 2001  
Academic Performance Review Self-Study, 2005-2006  
Faculty Search Committee, 2009-2010  
Organizer for Journal Club, 2010-2011

**Other:**

Antarctic Service Medal (2000)  
Testified before U.S. House of Representatives Subcommittee on Space and Technology about lunar  $^3\text{He}$  and about the scientific importance of the early impact history of the Moon (2004)  
Coordinated LPL contributions to “Mars and Beyond” display at Science Downtown (2011)  
Co-creator, co-host of “Arizona Science” on KUAZ-FM (NPR), weekly conversations with southern Arizona scientists (2015- )

**PUBLICATIONS – TIMOTHY D. SWINDLE**  
**REFEREED PAPERS - ARTICLES IN JOURNALS AND CHAPTERS IN BOOKS**

1. M. W. Caffee, C. M. Hohenberg, T. D. Swindle, and B. Hudson (1982) I-Xe ages of individual Bjurböle chondrules. *Proc. Lunar Planet. Sci. Conf. 13th*, in *J. Geophys. Res.* **87**, A303-A317.
2. M. W. Caffee, C. M. Hohenberg, F. Hörz, B. Hudson, B. M. Kennedy, F. A. Podosek, and T. D. Swindle (1982) Shock disturbance of the I-Xe system. *Proc. Lunar Planet. Sci. Conf. 13th*, in *J. Geophys. Res.* **87**, A318-A330.
3. M. W. Caffee, J. N. Goswami, C. M. Hohenberg, and T. D. Swindle (1983) Cosmogenic neon from pre-compaction irradiation of Kapoeta and Murchison. *Proc. Lunar Planet. Sci. Conf. 14th*, in *J. Geophys. Res.* **88**, B267-B273.
4. T. D. Swindle, M. W. Caffee, and C. M. Hohenberg (1983) Radiometric ages of chondrules. In *Chondrules and Their Origins* (E. King, ed., Lunar and Planetary Institute, Houston), pp. 246-261.
5. T. D. Swindle, M. W. Caffee, C. M. Hohenberg, and M. M. Lindstrom (1983) I-Xe studies of individual Allende chondrules. *Geochim. Cosmochim. Acta* **47**, 2157-2177.
6. T. D. Swindle, M. W. Caffee, C. M. Hohenberg, G. B. Hudson, J. C. Laul, S. B. Simon, and J. J. Papike (1985) Noble gas component organization in Apollo 14 breccia 14318:  $^{129}\text{I}$  and  $^{244}\text{Pu}$  regolith chronology. *Proc. Lunar Planet. Sci. Conf. 15th*, in *J. Geophys. Res.* **90**, C517-C539.
7. T. D. Swindle, M. W. Caffee, C. M. Hohenberg, and S. R. Taylor (1986) I-Pu-Xe dating and the relative ages of the Earth and Moon. In *The Origin of the Moon* (W. K. Hartmann, R. J. Phillips, and G. J. Taylor, eds., Lunar and Planetary Institute, Houston), pp. 331-358.
8. T. D. Swindle, M. W. Caffee, and C. M. Hohenberg (1986) Xenon and other noble gases in shergottites. *Geochim. Cosmochim. Acta*, **50**, 1001-1015.
9. M. W. Caffee, C. M. Hohenberg, T. D. Swindle, and J. N. Goswami (1987) Evidence in meteorites for an active early sun. *Astrophys. J.*, **313**, L31-L35.
10. T. D. Swindle (1988) Trapped noble gases in meteorites. In *Meteorites and the Early Solar System* (J. F. Kerridge and M. S. Matthews, eds., Univ. of Arizona Press, Tucson), pp. 535-564.
11. T. D. Swindle and F. A. Podosek (1988) Iodine-xenon dating. In *Meteorites and the Early Solar System* (J. F. Kerridge and M. S. Matthews, eds., Univ. of Arizona Press, Tucson), pp. 1127-1146.

12. F. A. Podosek and T. D. Swindle (1988) Extinct radionuclides. In *Meteorites and the Early Solar System* (J. F. Kerridge and M. S. Matthews, eds., Univ. of Arizona Press, Tucson), pp. 1093-1113.
13. F. A. Podosek and T. D. Swindle (1988) Nucleocosmochronology. In *Meteorites and the Early Solar System* (J. F. Kerridge and M. S. Matthews, eds., Univ. of Arizona Press, Tucson), pp. 1114-1126.
14. T. J. Bernatowicz, F. A. Podosek, T. D. Swindle, and M. Honda (1988) Iodine-xenon studies of LL-chondrites. *Geochim. Cosmochim. Acta* **52**, 1113-1121.
15. T. D. Swindle, M. W. Caffee, and C. M. Hohenberg (1988) I-Xe studies of Allende inclusions: EGGs and the Pink Angel. *Geochim. Cosmochim. Acta* **52**, 2215-2227.
16. D. S. McKay, T. D. Swindle, and R. Greenberg (1989) Asteroidal regoliths. In *Asteroids II* (R. Binzel, T. Gehrels, and M. S. Matthews, eds., Univ. of Arizona Press, Tucson), 617-642.
17. T. D. Swindle, D. H. Garrison, J. N. Goswami, C. M. Hohenberg, R. H. Nichols and C. T. Olinger (1990) Noble gases in the howardites Bholghati and Kapoeta. *Geochim. Cosmochim. Acta* **54**, 2183-2194.
18. M. Caffee, C. Hohenberg, R. Nichols, C. Olinger, J. Goswami, P. Signer, R. Wieler, A. Pedroni, and T. Swindle (1991) Possible evidence for ancient solar-cosmic-ray-produced rare gases. In *The Sun in Time* (C. Sonnett, M. Giampapa and M. S. Matthews, eds., Univ. of Arizona Press, Tucson), pp. 413-425.
19. D. S. Musselwhite, M. J. Drake, and T. D. Swindle (1991) Early outgassing of Mars: Inferences from the geochemistry of iodine and xenon. *Nature* **352**, 697-699.
20. T. D. Swindle, M. W. Caffee, C. M. Hohenberg, M. M. Lindstrom, and G. J. Taylor (1991) Iodine-xenon studies of petrographically and chemically characterized Chainpur chondrules. *Geochim. Cosmochim. Acta* **55**, 861-880.
21. T. D. Swindle, J. N. Grossman, D. H. Garrison, and C. T. Olinger (1991) Iodine-xenon, chemical and petrographic studies of Semarkona chondrules. *Geochim. Cosmochim. Acta* **55**, 3723-3734.
22. T. D. Swindle, J. S. Lewis, and L. A. McFadden (1991) The case for planetary sample return missions: 4. Near-Earth asteroids and the dynamical history of the solar system. *Eos* **72**, 473, 479-480.
23. T. D. Swindle, P. D. Spudis, G. J. Taylor, R. L. Korotev, R. H. Nichols and C. T. Olinger (1991) Searching for Crisium basin ejecta: Chemistry and ages of Luna 20 impact melts. *Proc. Lunar Planet. Sci. Conf. 21st*, 167-181.
24. T. D. Swindle (1993) Extinct radionuclides and evolutionary timescales. *Protostars and Planets III* (E. H. Levy, J. I. Lunine and M. S. Matthews, eds., Univ. of Arizona Press,



Tucson), pp. 867-881.

25. B. H. Fegley Jr. and T. D. Swindle (1993) Lunar volatiles: Implications for lunar resource utilization. *Resources of Near-Earth Space* (J. S. Lewis, M. S. Matthews, and M. L. Guerrieri, eds., Univ. of Arizona Press, Tucson), pp. 367-426.
26. T. D. Swindle (1993) Noble gases in ancient asteroidal atmospheres. *J. Geophys. Res.* **98**, 15,069-15,077
27. M. J. Drake, T. D. Swindle, T. Owen, and D. Musselwhite (1994) Fractionated Martian atmosphere in the nakhlites? *Meteoritics* **29**, 854-859.
28. T. D. Swindle, J. A. Grier, and M. K. Burkland (1995) Noble gases in orthopyroxenite ALH84001: A different kind of Martian meteorite with an atmospheric signature. *Geochim. Cosmochim. Acta* **59**, 793-801.
29. M. K. Burkland, T. D. Swindle and S. L. Baldwin (1995) Diffusion studies of the I-Xe system in the meteorite Bjurböle. *Geochim. Cosmochim. Acta* **59**, 2085-2094.
30. T. D. Swindle (1995) How many Martian noble gas reservoirs have we sampled? In *Volatiles in the Earth and Solar System* (K. Farley, ed., American Institute of Physics, New York), pp. 175-185.
31. T. D. Swindle, A. M. Davis, C. M. Hohenberg, G. J. MacPherson, and L. E. Nyquist (1996) Formation times of chondrules and Ca-Al-rich inclusions: Constraints from short-lived radionuclides. *Chondrules and the Protoplanetary Nebula* (R. Hewins, R. Jones, and E. Scott, eds., University Printing House, Cambridge), pp. 77-86.
32. P. H. Warren, B. G. Drake, G. E. Lofgren, and T. D. Swindle (1996) Designing a robotic sampler to collect Moon rocks. *Eos* **77**, pp. 33, 37, 41.
33. D. A. Kring, T. D. Swindle, D. T. Britt and J. A. Grier (1996) Cat Mountain: A meteoritic sample of an impact-melted asteroidal regolith. *J. Geophys. Res.*, **101**, 29,353-29,371.
34. T. D. Swindle and J. H. Jones (1997) The xenon isotopic composition of the primordial Martian atmosphere: Contributions from solar and fission components. *J. Geophys. Res.*, **102**, 1671-1678.
35. T. D. Swindle and D. A. Kring (1997) Implications of small comets for the noble gas inventories of Earth and Mars. *Geophys. Res. Lett.*, **24**, 3113-3116.
36. T. D. Swindle, D. A. Kring, M. K. Burkland, D. H. Hill, and W. V. Boynton (1998) Noble gases, bulk chemistry, and petrography of olivine-rich achondrites Eagles Nest and LEW88763: Comparison to brachinites. *Meteoritics Planet. Sci.*, **33**, 31-48.
37. D. A. Kring, T. D. Swindle, J.D. Gleason, and J. A. Grier (1998) Formation and relative ages of maskelynite and carbonate in ALH84001. *Geochim. Cosmochim. Acta*, **62**, 2155-2166.

38. J. N. Goswami, S. Sahijpal, K. Kehm, C. M. Hohenberg, T. Swindle, and J. N. Grossman (1998) In situ determination of iodine content and I-Xe systematics in silicates and troilite phases in chondrules from the LL3 chondrite Semarkona. *Meteoritics Planet. Sci.*, **33**, 127-133.
39. T. D. Swindle (1998) Implications of I-Xe studies for the timing and location of secondary alteration. *Meteoritics Planet. Sci.*, **33**, 1147-1155.
40. H. Campins and T. D. Swindle (1998) Expected characteristics of cometary meteorites. *Meteoritics Planet. Sci.*, **33**, 1201-1211.
41. J. R. Johnson, T. D. Swindle, and P. Lucey (1999) Estimated solar wind-implanted helium-3 distribution on the Moon. *Geophys. Res. Lett.*, **26**, 385-388.
42. A. N. Krot, A. J. Brearley, A. A. Ulyanov, V. V. Biryukov, T. D. Swindle, K. Keil, D. W. Mittlefehldt, E. R. D. Scott, R. N. Clayton, and T. K. Mayeda (1999) Mineralogy, petrography, bulk chemical, iodine-xenon, and oxygen-isotopic compositions of dark inclusions in the reduced CV3 chondrite Efremovka. *Meteoritics Planet. Sci.*, **34**, 67-89.
43. J. A. Grier, T. D. Swindle, D. A. Kring, and H. J. Melosh (1999)  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  analyses of samples from the Gardnos impact structure. *Meteoritics Planet. Sci.*, **34**, 803-807.
44. T. D. Swindle, A.H. Treiman, D.J. Lindstrom, M. K. Burkland, B. E. Cohen, J. A. Grier, B. Li, and E. K. Olson (2000) Noble gas studies of iddingsite from the Lafayette meteorite: Evidence for the timing of liquid water on Mars. *Meteoritics Planet. Sci.*, **35**, 107-115. (Note: Lead item in *Science* magazine's "Editor's Choice," Feb. 25, 2000).
45. B.A. Cohen, T.D. Swindle and D.A. Kring (2000) Support for the lunar cataclysm hypothesis from lunar meteorite impact melt ages. *Science* **290**, 1754-1756
46. D. Musselwhite, T. Swindle and J.I. Lunine (2001) Liquid CO<sub>2</sub> breakout and the formation of recent small gullies on Mars. *Geophys. Res. Lett.*, **28**, 1283-1286.
47. J.C. Bridges, D.C. Catling, J.M. Saxton, T.D. Swindle, I.C. Lyon and M.M. Grady (2001) Alteration assemblages in Martian meteorites: implications for near-surface processes. *Space Science Reviews*, **96**, 365-392.
48. D. Musselwhite and T. D. Swindle (2002) Is polar clathrate storage fractionation of the Martian atmosphere the cause of the nakhlite Kr to Xe ratio? *Icarus* **154**, 207-216.
49. J. R. Johnson, W.C. Feldman, P.G. Lucey, S. Maurice, and T.D. Swindle (2002) Hydrogen distribution on the Moon from Lunar Prospector. *Journal of Geophysical Research – Planets* **107** (E2), 10.1029/2000JE001430.
50. T. D. Swindle (2002) Noble gases in the moon and meteorites: radiogenic components and early volatile chronologies. *Rev. Mineral. Geochem.* **47**, 101-124.

51. T. D. Swindle (2002) Martian noble gases. *Rev. Mineral. Geochem.* **47**, 171-190.
52. R. D. Lorenz, A. J. T. Jull, T. D. Swindle, and J. I. Lunine (2002) Radiocarbon on Titan. *Meteoritics Planet. Sci.* **37**, 867-874.
53. I. J. Daubar, D. A. Kring, T. D. Swindle, and A. J. T. Jull (2002) Northwest Africa 482: A crystalline impact melt breccia from the lunar highlands. *Meteoritics Planet. Sci.*, **37**, 1797-1813.
54. D. A. Kring, J. D. Gleason, T. D. Swindle, K. Nishiizumi, M. W. Caffee, D. H. Hill, A. J. T. Jull, and W. V. Boynton (2003) Composition of the first bulk melt sample from a volcanic region of Mars: Queen Alexandra Range 94201. *Meteoritics Planet. Sci.* **38**, 1833-1848.
55. H. Campins, T. D. Swindle, and D. A. Kring (2003) Evaluating comets as a source of Earth's water. In *Cellular Origin and Life in Extreme Habitats*, Vol. 6, *Origins: Genesis, Evolution and Diversity of Life* (J. Seckbach, ed.). Kluwer.
56. D. W. Beaty et al. (T. D. Swindle as one of 24 other authors) (2003) Planning for a Mars in situ Sample Preparation and Distribution (SPAD) system. *Planet. Space Sci.*, **52**, 55-66.
57. T. D. Swindle and E. K. Olson (2004)  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  studies of whole-rock nakhlites: Evidence for the timing of aqueous alteration on Mars. *Meteoritics Planet. Sci.*, **39**, 755-766.
58. P. T. Doran and 14 others (including T. D. Swindle) (2004) Mars chronology: assessing techniques for quantifying surficial processes. *Earth Sci. Rev.*, **67**, 313-337.
59. J. A. Grier, D. A. Kring, T. D. Swindle, A. S. Rivkin, B. A. Cohen and D. T. Britt (2004) Analyses of the chondritic meteorite Orvinio (H6): Further insight into the origins and evolution of shocked H-chondrite material. *Meteoritics Planet. Sci.*, **39**, 1475-1493.
60. T. D. Swindle and H. Campins (2004) Do comets have chondrules and CAIs? Evidence from the Leonid meteors. *Meteoritics Planet. Sci.*, **39**, 1733-1740.
61. T. D. Swindle, J. Masarik, D. Kollár, K. J. Kim and R. C. Reedy (2005) The potential for in situ geochronology on the surface of Europa. *Icarus*, **174**, 205-214.
62. B. A. Cohen, T. D. Swindle, and D. A. Kring (2005) Geochemistry and  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  geochronology of impact-melt clasts in feldspathic lunar meteorites: Implications for lunar bombardment history. *Meteoritics Planet. Sci.*, **40**, 755-777.
63. F. Barra, T. D. Swindle, R. L. Korotev, B. L. Jolliff, R. A. Ziegler, E. Olson (2006)  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  dating of Apollo 12 regolith: Implications for the age of Copernicus and the source of nonmare materials. *Geochim. Cosmochim. Acta*, **70**, 6016-6031.
64. J. W. Delano, N. E. B. Zellner, F. Barra, E. Olson, T. D. Swindle, N. J. Tibbetts, D. C. B. Whittet (2007) An integrated approach to understanding Apollo 16 impact glasses:

- Chemistry, isotopes, and shape. *Meteoritics Planet. Sci.*, **42**, 993-1004.
65. T. D. Swindle, C. E. Isachsen, J. R. Weirich, D. A. Kring (2009)  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  ages of H-chondrite impact melt breccias. *Meteoritics Planet. Sci.*, **44**, 747-762.
66. T. D. Swindle, C. Thomas, O. Mousis, J.I. Lunine, S. Picaud (2009) Incorporation of argon, krypton and xenon into clathrates on Mars. *Icarus*, **203**, 66-70.
67. N. E. B. Zellner, J. W. Delano, T. D. Swindle, F. Barra, E. Olsen, and D. C. B. Whittet (2009) Apollo 17 regolith, 71501,262: A record of impact events and mare volcanism in lunar glasses. *Meteoritics Planet. Sci.*, **44**, 839-851.
68. N. E. B. Zellner, J. W. Delano, T. D. Swindle, F. Barra, E. Olsen, and D. C. B. Whittet (2009) Evidence for an increase in the impact rate ~800 Ma Ago. *Geochim. Cosmochim. Acta*, **73**, 3963-3980.
69. A. Wittmann, T. D. Swindle, L. C. Cheek, E. A. Frank, and D. A. Kring (2010) Impact craters on the H chondrite parent asteroids. *Journal of Geophysical Research*, **115**, E07009, doi:10.1029/2009JE003433..
70. I. Loes ten Kate, E. H. Cardiff, J. P. Dworkin, S. H. Feng, V. E. Holmes, C. A. Malespin, J. Stern, T. D. Swindle, D. P. Glavin (2010) Validation of the VAPoR instrument concept for in situ evolved gas analysis and resource exploration on the Moon. *Planetary and Space Science*, **58**, 1007-1017.
71. J. R. Weirich, A. Wittmann, D. A. Kring, and T. D. Swindle (2010) Miller Range 05029: An exceptionally old chondritic impact melt rock. *Meteoritics and Planetary Sciences*, **45**, 1868-1888.
72. A. E. Rubin and T. D. Swindle (2011) Flattened chondrules in the LAP 04581 LL chondrite: Evidence for frictional shear heating of LL3 material in an oblique impact. *Meteoritics and Planetary Sciences*, **46**, 587-600.
73. A. Wittmann, D. A. Kring, J. M. Friedrich, J. Troiano, R. J. Macke, D. T. Britt, T. D. Swindle, J. R. Weirich, D. Rumble III, and J. Lasue (2011) H/L chondrite LaPaz Icefield 031047 – A feather of Icarus? *Geochimica et Cosmochimica Acta*, **75**, 6140-6159.
74. A. Smith and 60 others (including T. Swindle) (2012) Lunar Net – A proposal in response to an ESA M3 call in 2010 for a medium sized mission. *Experimental Astronomy*, **33** (2), 587-644.
75. J. R. Weirich, C. E. Isachsen, J. R. Johnson, and T. D. Swindle (2012) Variability of diffusion in albite, pyroxene, and olivine in shocked and unshocked samples. *Geochimica et Cosmochimica Acta*, **77**, 547-560.
76. D. P. Glavin, C. Malespin, I. L. ten Kate, S. A. Getty, V. E. Holmes, E. Mumm, H. Franz, M. Noriega, N. Dobson, A. E. Southard, S. H. Feng, C. A. Kotecki, J. P. Dworkin, T. D.

- Swindle, J. E. Bleacher, J. W. Rice, and P. R. Mahaffy (2012) Volatile Analysis by Pyrolysis of Regolith for planetary resource exploration. *IEEE Aerospace Conference Proceedings*, #1180.
77. J. R. Weirich, T. D. Swindle, and C. E. Isachsen (2012)  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  age of Northwest Africa 091: More evidence for a link between L chondrites and fossil meteorites. *Meteoritics and Planetary Science*, **47**, 1324-1335.
78. J. R. Weirich, T. D. Swindle, C. E. Isachsen, T. G. Sharp, C. Li, and R. T. Downs (2012) Source of potassium in ordinary chondrites. *Geochimica et Cosmochimica Acta*, **98**, 125-139.
79. O. Mousis, E. Chassefière, J. Lasue, V. Chevrier, M. D. Elwood Madden, A. Lakhlifi, J. I. Lunine, F. Montmessin, S. Picaud, F. Schmidt, and T. D. Swindle (2013) Volatile trapping in Martian clathrates. *Space Science Reviews*, **174**, 213-250.
80. T. D. Swindle, D. A. Kring, and J. R. Weirich (2014)  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  ages of impacts involving ordinary chondrite meteorites. In  *$^{40}\text{Ar}$ - $^{39}\text{Ar}$  dating: from geochronology to thermochronology, from archaeology to planetary sciences* (F. Jourdan, D. Mark, and C. Verati, eds.), *Geological Society, London, Special Publications*, **378**, 333-347.
81. J. M. Friedrich, A. E. Rubin, S. P. Beard, T. D. Swindle, C. E. Isachsen, M. L. Rivers, R. J. Macke (2014) Ancient porosity preserved in ordinary chondrites: Shock, compaction and thermal metamorphism. *Meteoritics and Planetary Science*, **49**, 1214-1231.
82. D. J. Gombosi, S. L. Baldwin, E. B. Watson, T. D. Swindle, J. W. Delano, and W. G. Roberge (2014) Argon diffusion in Apollo 16 impact glass spherules: Implications for  $^{40}\text{Ar}/^{39}\text{Ar}$  dating of lunar impact events. *Geochimica et Cosmochimica Acta*, **148**, 251-268.
83. B. Cohen, J. Miller, Z.-H. Li, T. Swindle, and R. French (2014) The Potassium-Argon Laser Experiment (KArLE): In situ geochronology for planetary robotic missions. *Geostandards and Geoanalytical Research*, **38**, 421-439.
84. W.F. Bottke, D. Vokrouhlický, S. Marchi, T. Swindle, E. R. D. Scott, J.R. Weirich, and H. Levison (2015) Dating the Moon-forming impact event with asteroidal meteorites. *Science*, **348**, 321-323.
85. M. Schmieder, D. Kring, T. Swindle, J. Bond, and C. Moore (2016) The Gao-Guenie impact melt breccia – Sampling a rapidly cooled impact melt dike on the H-chondrite parent asteroid? *Meteoritics and Planetary Science*, **51**, 1022-1045.
86. S. P. Beard and T. D. Swindle (2017) Evidence for source event grouping among ureilites. Submitted to *Meteoritics and Planetary Science*, in press.