CURRICULUM VITAE
TIMOTHY DALE SWINDLE

Director, Arizona Space Grant Consortium
Director Emeritus, Department of Planetary Science
University of Arizona
Tucson, AZ 85721-0092

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., Communication, 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, 2000-2021
Professor of Geosciences, 2001-2021
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, 2012-2021
Director, Arizona Space Grant Consortium, 2012-
Founding Director, University of Arizona Space Institute, 2020-2023

RESEARCH:

Grants (>$15 million total):

"Noble gas studies of early solar system history" and successors (NASA Cosmochemistry), 1987-2017
"Acquisition of a noble gas mass spectrometer" (NSF), 1989
"Lunar He-3 and fusion" (Science Industry System Consulting), 1989 Co-I, J. S. Lewis PI
"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-Principal 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 70th 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), 2014-2017

"Inner Solar System Impact Processes: An Integrated Analysis Using Extraterrestrial Samples, Astronomical Observations, and Modeling" (NASA SSERVI), Co-I, D. Kring, PI, 2014-2018

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

"In Situ Geochronology for the Next Decade" (NASA Planetary Mission Concept Studies), Co-I, B. Cohen, PI, 2020

Publications (Total, 1982-2026):

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

139 extended abstracts (two pages or more)

120 other abstracts

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

H-index of 33 (Web of Science) to 40 (Google Scholar)

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 (unsuccessful)
Collaborator, "MoonRise" (B. Joliff, PI), New Frontiers, 2017 (unsuccessful)

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

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, Nominating Committee (Chair, 2023)
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), 2012-2020
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
Co-organizer, Arizona-JAXA Workshops, 2016, 2017
Chair, NASA Small Bodies Assessment Group, 2016-2019
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
Advisory Committee, Planetary Science Workforce Survey, 2017-2018
Member, International MSR Objectives and Samples Team (International Mars Exploration Working Group); Lead for Volatiles Section, 2017-2018
Small Bodies co-lead, Workshop on Autonomy for Future NASA Science Missions, 2018-2019
Member, University of Tokyo Department of Earth and Planetary Sciences External Review Committee, 2019-2020
Board of Directors, Space Grant Foundation, 2019-2021, 2025-
Member of Strategic Team, Mars Sample Return Science Planning Group-2, 2020-2021
Chair, Ad hoc team to develop arguments for dedicated atmospheric sample return from Mars, 2020-2021
Co-organizer, Interstellar Research Group conference, 2021
Chair, Mars Sample Return Gas Sample Team, 2022-2023
Board of Directors, Space Grant Alliance, 2022-2025

Proposal review panels:

14 panels in nine different programs, mostly NASA, but also German Research Foundation (DFG)

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, 2011-2017

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
Strategic Planning Committee, 2018
University of Arizona Press Editorial Advisory Board, 2019-
Chair of Interim Executive Council for University of Arizona Space Institute, 2019-2020
Founding Director and Chair of Executive Panel, University of Arizona Space Institute, 2020-2023
Member, Steering Group, Collaborative program between University of Arizona and Centre national de la recherche scientifique, 2022-2023
Steering Committee for UA Space Law Event, "The Future is Almost Now", 2022

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}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
Lecturer in College of Science Lecture Series, "Life in the Solar System," 2015
Co-creator, co-host of "Arizona Science" on KUAZ-FM (NPR), weekly conversations with southern Arizona scientists, 2015-
Content expert, College of Science trip to view total solar eclipse, 2017
Coordinated Tucson activities surrounding 50th anniversary of Apollo 11 lunar landing, 2019
Elected Fellow of The Explorers Club, 2025

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 Bjurbole 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}I and ^{244}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 Bjurbole. *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}Ar-^{39}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_2 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}Ar-^{39}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.

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