



School of Earth & Space Exploration
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EDUCATION AND CAREER

- 2016 – Postdoctoral Research Scientist
School of Earth & Space Exploration
Arizona State University, Tempe, Arizona
- 2013 – 2016 Henri Poincaré Postdoctoral Prize Fellow
Lagrange Laboratory, Université Côte d’Azur
Observatoire de la Côte d’Azur, Nice, France
- 2010 – 2013 Bateman Postdoctoral Prize Fellow
Department of Geology and Geophysics
Yale University, New Haven, Connecticut
- 2004-2010 M.S., Ph.D. in Planetary Science. Dissertation thesis: “Chemical and isotopic consequences of the Moon-forming giant impact”; Advisor: David Stevenson; California Institute of Technology, Pasadena, California
- 2000-2004 B.S. in Astronomy with Honors. Thesis: “Orbital Evolution of the Galilean Satellites”, Advisor: Douglas Hamilton, University of Maryland, College Park, Maryland

HONORS AND AWARDS

- 2013-2015 Henri Poincaré Fellowship (Observatoire de la Côte d’Azur)
- 2010-2012 Bateman Postdoctoral Fellowship (Yale University)
- 2010 Institute Postdoctoral Fellowship (ETH Zurich – respectfully declined)
- 2007 *Nature* Research Highlights of 2007 (for EPSL paper published in same year)
- 2004-2005 Institute Research Fellowship (Caltech) 2004-2005

SUBMITTED/ACCEPTED PUBLICATIONS

- 2018 **Pahlevan, K.**, Schaefer, L., Hirschmann, M.M. Magma ocean outgassing and hydrogen isotopic constraints on the Hadean Earth (submitted to *EPSL*).
- Canup, R., Righter, K., Dauphas, N., **Pahlevan, K.**, Cuk, M., Lock, S., Stewart, S., Salmon, J., Rufu, R., Nakajima, M., Magna, T. Origin of the Earth and Moon (submitted for inclusion in *New Views of the Moon II*)

Pahlevan, K. Gammie, C. Isotopic fractionation in the proto-lunar disk: constraints on equilibration (submitted to *EPSL*)

Wu, J., Desch, S., Schaefer, L., Elkins-Tanton, L., **Pahlevan, K.**, Buseck, P. Origin of Earth's water: chondritic inheritance plus nebular ingassing and storage of hydrogen in the core (in press, *JGR Planets*)

Greenwood, J. P., Karato, S. I., Vander Kaaden, K. E., **Pahlevan, K.**, & Usui, T. (2018). Water and Volatile Inventories of Mercury, Venus, the Moon, and Mars. *Space Science Reviews*, 214(5), 92.

Pahlevan, K. (2018) Telltale tungsten and the Moon, *Nature Geoscience*, 11, 16-18.

2016 **Pahlevan, K.**, Karato, S., Fegley, B. (2016) Speciation and dissolution of hydrogen in the proto-lunar disk, *Earth and Planetary Science Letters*. 445, 104-113.

2015 **Pahlevan, K.**, Morbidelli, A. (2015) Collisionless encounters and the origin of the lunar inclination, *Nature*, 527, 492-494. News and Views: The Moon's tilt for Gold, 455-456.

2014 **Pahlevan, K.** (2014) Isotopes as tracers of the sources of the lunar material and processes of lunar origin. *Phil Trans. R. Soc. A*. 372, 20130257.

2011 **Pahlevan, K.**, Stevenson, D.J., Eiler, J. (2011) Chemical fractionation in the silicate vapor atmosphere of the Earth, *Earth and Planetary Science Letters*. 301, 433-443.

2009 Li, K-F., **Pahlevan, K.**, Kirschvink, J.L., Yung, Y.L. (2009) Atmospheric pressure as a natural climate regulator for a terrestrial planet with a biosphere, *Proceedings of the National Academy of Sciences*, 106 (24) 9576-9579.

2007 **Pahlevan, K.**, Stevenson, D.J. (2007) Equilibration in the aftermath of the lunar forming giant impact, *Earth and Planetary Science Letters*. 262, 438-449. News and Views: Isotopic Lunacy, *Nature*, 450, 356-357. Research highlights of 2007, *Nature*, 450, 1130-1133.

INVITED LECTURES

November, 2017 "A massive hydrogen-rich Martian greenhouse recorded in D/H", Department of Terrestrial Magnetism, Carnegie Institution of Washington.

April, 2017 "Chemical and dynamical signatures of Earth-Moon origin", University of Illinois, Urbana-Champaign.

October, 2016 "Interpreting the isotopic record: signatures of planetary origin", Institute of Geological Sciences, Freie Universität, Berlin.

- January, 2016 “Cosmochemical and dynamical signatures of lunar origin”, Institute de Physique du Globe de Paris (IPGP), Paris.
- November, 2015 “Cosmochemical and dynamical signatures of lunar origin”, Laboratoire de Geology, Ecole Normale Superieure (ENS), Lyon.
- October, 2014 “Cosmochemical signatures of lunar origin via giant impact”, Institute of Geochemistry and Petrology, Swiss Federal Institute of Technology (ETH), Zurich.
- February, 2014 “Cosmochemical signatures of lunar origin via giant impact”, Le Centre de Recherche Pétrographique et Géochimique (CRPG), Nancy.
- July, 2013 “Evolution of the proto-lunar disk: constraints from the isotopic record”, Southwest Research Institute (SwRI), Boulder, Colorado.
- March, 2013 “Evolution of the proto-lunar disk: constraints from the isotopic record”, School of Physics, University of Bristol, Bristol, UK.
- May, 2012 “When the Moon was a Cloud: A Creation Myth”, Department of Earth Sciences, Oxford University, Oxford, UK.
- May, 2012 “When the Moon was a Cloud: A Creation Myth”, Seminar at the Observatoire de la Côte d’Azur (OCA), Nice, France.
- March, 2012 “When the Moon was a Cloud: A Creation Myth”, Lunar & Planetary Institute (LPI) Spring Seminar Series, Houston, Texas.
- February, 2012 “When the Moon was a Cloud: A Creation Myth”, GEOTOP Seminar Series, Department of Earth and Planetary Sciences, McGill University, Montreal.
- November, 2011 “When the Moon was a Cloud: A Creation Myth”, Department of Earth and Planetary Sciences Colloquium, Harvard University, Cambridge.
- September, 2011 “When the Moon was a Cloud: A Creation Myth”, Department of Geosciences, State University of New York (SUNY) at Stony Brook, New York.
- April, 2011 “Neutrinos and the History of the Sun’s Luminosity”, Institute for Theory and Computation (ITC) Luncheon, Center for Astrophysics (CfA), Harvard University, Cambridge.
- April, 2011 “When the Moon was a Cloud: A Creation Myth”, Institute for Theory and Computation (ITC) Colloquium, Center for Astrophysics (CfA), Harvard University, Cambridge.
- March, 2011 “When the Moon was a Cloud: A Creation Myth”, Department of Astronomy Seminar, University of Texas at Austin, Texas.

- November, 2010. “When the Moon was a Cloud: A Creation Myth”, Department of Astronomy Seminar, University of Maryland, College Park.
- November, 2010 “Towards a Predictive Theory of Lunar Origin”, Department of Geosciences Colloquium, Brown University, Providence.
- November, 2010 “The Giant Impact Hypothesis – Where We Stand”, Department of Geosciences Lunch Seminar, Brown University, Providence.
- September, 2010 “Chemical and Isotopic Consequences of the Moon-forming Giant Impact”, Department of Geosciences, Solid Earth Brown Bag Seminar, Princeton University, Princeton.
- July, 2009 “When the Moon was a Cloud: A Creation Myth”, Institute of Geochemistry and Mineral Resources Seminar, Swiss Federal Institute of Technology (ETH), Zurich.
- July, 2009 “When the Moon was a Cloud: A Creation Myth”, Department of Terrestrial Magnetism (DTM) Seminar, Carnegie Institute of Washington.
- May, 2009 “Fractionation after the Moon-Forming Giant Impact”, Geochemistry Seminar, Department of Earth, Planetary, and Space Sciences, University of California, Los Angeles (UCLA).
- July, 2007 “Mixing During Planet Formation and After the Moon-Forming Impact” Theoretical Institute for Advanced Research in Astrophysics Workshop on Solar System Mixing, Academia Sinica, Taipei.

CONFERENCE/WORKSHOP PRESENTATIONS

- 2017 **Pahlevan, K.**, Schaefer, L., Elkins-Tanton, L., Desch, S. (2017) A massive hydrogen-rich primordial greenhouse recorded in Martian D/H, American Geophysical Union, Fall Meeting, New Orleans.
- Pahlevan, K.**, Schaefer, L., Elkins-Tanton, L., Desch, S. (2017) Hydrogen isotopic fractionation during crystallization of the terrestrial magma ocean, Lunar and Planetary Science Conference, Houston.
- 2016 **Pahlevan, K.**, Schaefer, L., Elkins-Tanton, L., Desch, S. (2016) Hydrogen isotopic fractionation during crystallization of the terrestrial magma ocean, American Geophysical Union, Fall Meeting, San Francisco.
- Pahlevan, K.** (2016) Isotopic constraints on proto-lunar disk evolution, 47th Lunar & Planetary Science Conference, The Woodlands, Texas.
- 2015 **Pahlevan, K.** (2015) Major element isotopic fractionation in the proto-lunar disk, Goldschmidt Conference, Prague.
- Pahlevan, K.**, Morbidelli, A. (2015) Collisionless encounters and the origin of the lunar inclination, Solar System Bombardment III, Houston.

- 2014 **Pahlevan, K.**, Morbidelli, A. (2014) Excitation of the lunar inclination via three-body interactions, International interdisciplinary workshop on accretion and early differentiation of the terrestrial planets, Nice, France.
- Pahlevan, K.**, Morbidelli, A. (2014) The lunar inclination as a dosimeter for terrestrial late stage accretion, 45th Lunar & Planetary Science Conference, The Woodlands, Texas.
- 2013 **Pahlevan, K.** (2013) Isotopic Constraints on Physical Models, Royal Society Meeting on the Origin of the Moon, London (invited).
- Pahlevan, K.**, Karato, S., Fegley, B. (2013) Loss of Volatile Elements After the Moon-Forming Giant Impact, Goldschmidt Conference, Florence.
- Pahlevan, K.** (2013) Developing the Rare Earth Element Constraint for Scenarios of Lunar Origin, 44th Lunar & Planetary Science Conference, The Woodlands, Texas.
- 2012 **Pahlevan, K.** (2012) What do Moons of Terrestrial Planets Tell us about their Origins? Planetary Origins and Frontiers of Exploration, Weizmann Institute of Science, Rehovot, Israel (keynote).
- Pahlevan, K.** (2012) Origin of the Moon – Evolution of an Impact-Generated Disk, Micro-symposium 53 (co-sponsored by Brown University, Vernadsky Institute, MIT, and the NASA Lunar Science Institute), The Woodlands, Texas (keynote).
- 2011 **Pahlevan, K.** (2011) Isotopic Abundances as Tracers of the Processes of Lunar Formation, American Geophysical Union (invited).
- Pahlevan, K.**, Karato, S. (2011) Volatile Loss via Outgassing of the Lunar Magma Ocean, Goldschmidt Conference, Prague.
- 2009 **Pahlevan, K.**, Stevenson, D.J. (2009) Chemical Fractionation after the Moon-forming Giant Impact, 40th Lunar & Planetary Science Conference, The Woodlands, Texas.
- Pre-2009 **Pahlevan, K.**, Stevenson, D.J. (2008) Volatile loss Following the Moon-forming Giant Impact, Goldschmidt Conference, Vancouver.
- Pahlevan, K.**, Stevenson, D.J. (2007) Equilibration of the Earth-Moon System Following the Giant Impact, Goldschmidt Conference, Cologne.
- Pahlevan, K.**, Stevenson, D.J. (2006) Mixing in the Aftermath of the Giant Impact – Implications for Planet Formation, Meeting of the Division for Planetary Sciences of the American Astronomical Society, Pasadena, CA.

Pahlevan, K., Stevenson, D.J. (2005) The Oxygen Isotope Similarity of the Earth and Moon: Source Region or Formation Process? 36th Lunar & Planetary Science Conference, Houston, Texas.

PROFESSIONAL ACTIVITIES

Journal Referee

2009-2018 Science, Nature, Nat. Geoscience, Icarus, Earth & Planetary Science Letters, Journal of Geophysical Research, Astronomy & Astrophysics, Geochimica et Cosmochimica Acta, Philosophical Transactions of the Royal Society A

Conference Service

2017 Contributed talk session co-chair, Goldschmidt Conference, Paris
2015 Scientific Organizing Committee, Workshop on Solar System Bombardment III held at the Lunar and Planetary Institute, Houston, Texas, February, 2015
2014 Contributed talk session co-chair on: “Protolunar Disk and Magma Ocean: Models and Sample Constraints”, Lunar and Planetary Science Conference, The Woodlands, Texas, March, 2014.

Grant Proposal/Fellowship Review Service

2017 External Reviewer for NASA Earth and Space Science Fellowship (NESSF)
2013-2017 External Reviewer for Swiss National Science Foundation proposal (SNSF)
2013 Executive Secretary for NASA Origins of Solar Systems (OSS) Panel

Professional Organization Memberships:

2004- American Geophysical Union
2006- Division of Planetary Sciences
2006- American Astronomical Society
2007- Geochemical Society

TEACHING AND PUBLIC OUTREACH

2012-2018 Engagement with Reporters/Public Audiences:
Interview with NY Times, *Scientists Link Moon’s Tilt and Earth’s Gold*
Interview with Chicago Tribune, *Moon struck? Creation story faces new tests*
Public lecture at New Haven Public Library (6/2012)

2010-2012 Guest Lecturer – Yale University
Planet Formation Seminar
Courses on Life in the Universe, Exoplanets

2006-2009 Guest Lecturer – California Institute of Technology
Planetary Structure and Evolution
Planetary Evolution and Habitability
Order of Magnitude Physics

RESEARCH GRANTS

2018 Evolution of Primordial Atmospheres: Linking Models with Observations, NASA Emerging Worlds Program, PI, 12/1/2018-11/30/2021 (pending)