

SIMON J. LOCK

Department of Earth and Planetary Sciences
20 Oxford Street
Harvard University
Cambridge, MA 02138, U.S.A

slock@fas.harvard.edu
(617) 520-4813
www.people.fas.harvard.edu/~slock/
orcid.org/0000-0001-5365-9616

Research Interests

The formation, structure, and evolution of terrestrial and giant planets.

EDUCATION

Graduate Student. Department of Earth and Planetary Sciences, Harvard University, Cambridge, MA	Anticipated May 2018
M.A. Department of Earth and Planetary Sciences, Harvard University, Cambridge, MA	2014
MSci. (1st Class) Natural Sciences (Experimental and Theoretical Physics), University of Cambridge, Cambridge, UK	2012
B.A. (Hons, 1st Class) Natural Sciences (Experimental and Theoretical Physics), University of Cambridge, Cambridge, UK	2012

PROFESIONAL EXPERIENCE

Graduate Student Fellow. Department of Earth and Planetary Sciences, Harvard University, Cambridge, MA	2012–present
Masters and Undergraduate Student. Natural Sciences University of Cambridge, Cambridge, UK	2008-2012
SURF Fellow. Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA	2011

AWARDS AND HONORS

NASA Earth and Space Science Fellowship	2013–2016
University Certificate of Distinction in Teaching, Harvard University	2013 & 2014
Dirac Prize, St. John's College, University of Cambridge	2012
Morton Prize, St. John's College, University of Cambridge	2012
United Steel Companies Scholarship, St. John's College, University of Cambridge	2011 & 2012
Elected a member of "The Foundation of the College of St. John the Evangelist in the University of Cambridge"	2011

PROFFESIONAL MEMBERSHIPS

American Geophysical Union
Institute of Physics, UK

TEACHING EXPERIENCE

Guest lecturer, <i>GEL36: The solar system</i> , UC Davis	2017
Guest lecturer & advisor, <i>GEL251: Thermodynamics of the Earth and planets</i> , UC Davis	2015
Teaching fellow, <i>SPU30: Life as a planetary phenomena</i> , Harvard University	2014
Teaching fellow, <i>SPU14: How to build a habitable planet</i> , Harvard University	2013

OTHER SKILLS AND INTERESTS

Fluent or highly competent in several programming and scripting languages including: C; C++; Fortran; Python, MATLAB; Bash and C Shell. Keen interest in scientific communication and public outreach.

PEER-REVIEWED PUBLICATIONS

2. **Lock, S. J.** and S. T. Stewart. The structure of terrestrial bodies: Impact heating, corotation limits and synestias. *JGR: Planets* **122**, pp 950-982, doi:10.1002/2016JE005239, 2017.
1. Čuk, M., D. Hamilton, **Lock, S. J.** and S. T. Stewart. Tidal evolution of the Moon from a high-obliquity, high-angular-momentum Earth. *Nature* **539**, pp 402-406, doi:10.1038/nature19846, 2016.

IN PROGRESS

1. **Lock, S. J.**, S. T. Stewart, M. I. Petaev, Z. M. Leinhardt, M. T. Mace, S. B. Jacobsen and M. Čuk. The origin of the Moon within a terrestrial synestia. *JGR: Planets*, in review.
2. **Lock, S. J.**, S. T. Stewart and S. Mukhopadhyay. The last stage of Earth's formation: Increasing the pressure. In prep.
3. **Lock, S. J.**, S. T. Stewart and S. Mukhopadhyay. Atmospheric loss by giant impacts: A stochastic process in planet formation. In prep.
4. E. V. Quintana, T. Barclay, **S. J. Lock**, S. T. Stewart, J. E. Chambers, J. J. Lissauer. Mars as a remnant planetary embryo that survived the giant impact phase. In prep.

OTHER PUBLICATIONS

1. **Lock, S. J.** A new theory of how the Moon formed. *Scientific American*, 2017.

INVITED TALKS AND SEMINARS

University of Cambridge, Bullard Laboratories seminar, 2017. *The last stage of Earth's formation: Increasing the pressure.*

University of Cambridge, Institute of Astronomy, 2017. *A new exhibit in the planetary zoo: Hot, rotating rocky planets.*

ACCRETE International Interdisciplinary Workshop, 2017. *A new model for lunar origin: Equilibration with Earth beyond the corotation limit.*

American Geophysical Union Fall Meeting, 2016. *Preservation of primordial mantle in the aftermath of a giant impact.*

University of California, Berkeley, CIPS seminar, 2016. *A new exhibit in the planetary zoo: Hot, rotating rocky planets.*

University of Bristol, Astrophysics seminar, 2016. *A new model for lunar origin: Equilibration with Earth beyond the hot spin stability limit.*

American Geophysical Union Fall Meeting, 2015. *Condensing the Moon from a MAD Earth.*

The University of Chicago, Geophysical Sciences Department Colloquium, 2015. *Condensing the Moon from a MAD Earth.*

SELECTED CONFERENCE PROCEEDINGS

6. **Lock, S. J.**, S. T. Stewart, M. I. Petaev, Z. M. Leinhardt, M. T. Mace, S. B. Jacobsen and M. Čuk. A new model for lunar origin: Equilibration with Earth beyond the hot spin stability limit. *Lunar & Planet. Sci. Conf.* **47**, Abs. 2881, 2016.
5. **Lock, S. J.** and S. T. Stewart. A hot spin stability limit for terrestrial planets. *Lunar & Planet. Sci. Conf.* **47**, Abs. 2856, 2016.
Huang, S., M. I. Petaev, W. Wang, **S. J. Lock**, Z. Wu, S. T. Stewart and S. B. Jacobsen. Lunar origin beyond the hot spin stability limit: Stable isotopic fractionation. *Lunar & Planet. Sci. Conf.* **47**, Abs. 2261, 2016.
4. Stewart, S. T., **S. J. Lock** and S. Mukhopadhyay. Partial atmospheric loss and partial mantle melting during the giant impact stage of planet formation. *AGU Fall Meeting*, Abs. P44A-06, 2014.
3. **Lock, S. J.**, S. T. Stewart and S. Mukhopadhyay. Was the atmosphere lost during the Moon-forming giant impact? *Lunar & Planet. Sci. Conf.* **45**, Abs. 2843, 2014.
2. Stewart, S. T., **S. J. Lock** and S. Mukhopadhyay. Atmospheric loss and volatile fractionation during giant impacts. *Lunar & Planet. Sci. Conf.* **45**, Abs. 2869, 2014.
1. **Lock, S. J.** and S. T. Stewart. Atmospheric loss during high angular momentum giant impacts *Lunar & Planet. Sci. Conf.* **44**, Abs. 2608, 2013.