Karin I. Öberg Curriculum Vitae

CONTACT INFORMATION

Harvard-Smithsonian Center for Astrophysics
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EMPLOYMENT

Professor of Astronomy
Harvard University, July 2017 and onwards

Thomas D. Cabot Associate Professor of Astronomy
Harvard University, July 2016 – June 2017

Assistant Professor of Astronomy
Harvard University, July 2013 – June 2016

Assistant Professor of Chemistry and Astronomy
University of Virginia, August 2012 – June 2013

Hubble Postdoctoral Fellow
Harvard-Smithsonian Center for Astrophysics, October 2009 – August 2012

EDUCATION

Leiden University, Netherlands
Ph.D. Astrophysics (cum laude), September 2009
Promotores: Prof. Dr. Ewine F. van Dishoeck and Prof. Dr. Harold Linnartz
Thesis: *Complex processes in simple ices: laboratory and observational studies of gas-grain interactions during star formation*

California Institute of Technology, CA, United States
B.Sc. Chemistry (cum laude), June, 2005

HONORS AND AWARDS

Newton Lacy Pierce Award, American Astronomical Society (2016)
Packard Fellow (2014)
Alfred P. Sloan Research Fellow in Physics (2014)
Paul Hertelendy (PH) Lecturer, Harvard-Smithsonian CfA (2012)
C.J. Kokprijs: best Ph.D. thesis, Leiden University natural sciences faculty (2010)
Hubble postdoctoral fellowship (2009)

PUBLICATIONS

89 refereed articles, 28 as first author, and 23 first-authored by Öberg Group members.
4813 citations, h-index = 36 (June 2017 using Google Scholar)

RESEARCH INTERESTS

The interactions between chemical and physical processes in astronomical environments, with the main focus on the chemistry of planet formation and how this chemistry affects planet bulk compositions and chemical habitability. I pursue these aims through a combination of laboratory, theory, and multi-wavelength observational studies.

Teaching and Advising

Teaching:
Astro 203: The interstellar medium and star formation (Harvard 2017)
Astro 16: Introduction to astrophysics (Harvard 2016)
Astro 201b: The interstellar medium and star formation (Harvard 2015)
Astro/Chem 5559: Introduction to Astrochemistry (U.Va. 2013)

Mentor for 5 Post Doctoral Scholars:
Dr. Pavlo Maksiutenko 2017–2020
Dr. L. Ilsedore Cleeves (with David Wilner) 2015–2018
Dr. Viviana Guzman 2014–2016
Dr. Edith Fayolle (Rubicon Fellow 2013–2015) 2013–2017
Dr. Mahesh Rajappan (research associate and laboratory manager) 2012 –

Advisor for 9 Ph.D students:
Jamila Pegues, 2016-2021 (expected)
Ellen Price, 2015–2020 (expected)
Jennifer Bergner, 2014–2019 (expected)
Jane Huang, 2014–2019 (expected)
Ilse Cooke (U.Va., designated local advisor: Eric Herbst), 2015– 2018 (expected)
Ryan Loomis 2013–2018 (expected)
Dawn Graninger 2011–2017
Ana Maria Piso, 2014–2016
Edith Fayolle (Leiden, co-promotor, promotor: Harold Linnartz), 2009–2013

Advisor for 2 M.Sc. students
Trish Lauck, U.Va., 2012–2014
Edith Fayolle, Leiden, 2008–2009

Advised 18 Undergraduate Research Projects, including two senior theses that were awarded Harvard Hoopes prizes (Charles Law and Jod Balfe)

Selected Service at Harvard-Smithsonian CfA

Astronomy Graduate student admissions committee, 2013, 2016
Submillimeter Array (SMA) post doc selection committee, 2016
Harvard Astronomy Planning Committee, 2016
Hoopes Natural Science Committee, 2015
Submillimeter Array (SMA) time allocation committee, 2013–2015
ITC post doc selection committee, 2014–2015
Astronomy Junior faculty search committee, 2013–2014

Professional Service outside of Harvard

Peer-review referee for Nature, Science, ApJ, A&A, MNRAS, PASJ, Physical Review Letters, J. Phys. Chem., Chemical Physics Letters, Chemical Reviews, and Physical Chemistry Chemical Physics (PCCP), PNAS

Advisory committees:
ALMA North America Science Advisory Committee (ANASAC) 2012– (Chair 2015–)
ALMA Science Advisory Committee (ASAC), 2015–2018

NRAO User Committee 2012–2018
NGVLA 'Cradle of Life' working group 2014–2015
Laboratory Astrophysics Panel of DoE's NNSA 'Basic Research Directions at NIF'

Selected scientific organizing committees:
International Astronomical Union meeting on hydride molecules, Paris, France, 12-16 Dec 2016
Lorentz workshop: Ice Age - the era of JWST, Leiden, Netherlands, Oct. 4-7, 2016
Exoplanets and Disks: bridging compositions and communities, towards the future, STScI, September 11-14 2016
Protoplanetary DISCussions, Edinburgh, UK, 7-11 March 2016
From clouds to protoplanetary disks: the astrochemical link, Berlin, 2015
Goldschmidt session 'Protoplanetary disks in the age of ALMA: physics and chemistry of dust and volatiles in the Solar Nebula and its analogues', Prague, 2015
Characterizing Planetary Systems across the HR Diagram, Cambridge, UK, 2014
Transformational Science with ALMA: the Formation and Evolution of Planetary Systems 2013

Selection committees:
NRAO Astronomer search committee, 2015
Jansky postdoctoral selection committee 2014-2016

Proposal review panels:
NRAO and ALMA Student Observing Support program panelist, 2016
Reviewer for ERC grant program, 2015
Member of the ALMA Review Panel (ARP), 2013–2015
Panel reviewer for NASA Origins of Solar System and Laboratory Astrophysics research grant programs
Proposal reviewer for ANR (France)

Recent Outreach

Harvard Alumni Association (HAA) Speakers Bureau Program 2017
Interviewed for the 'Living Universe' TV show, 2016
Faculty organizer for the Thomistic Institute at Harvard 2016–
Co-founder and board member of the Society of Catholic Scientists, 2016
Lecturer at the Science and Religion Seminar series for Catholic high school teachers, University of Notre Dame, 2016
Interviewed for Smithsonian channel documentary: Eyes of the Atacama, 2015 (aired September 2016)
Interviewed for NHK documentary on chemical complexity in space, 2015
Profiled for the 'The Year In Space calendar', 2015
Press release on Öberg et al. Nature, 2015 and substantial press coverage including Washington Post, LA Times, and the Discovery channel

Selected Invited Conference Talks

The Hydride Toolbox , Paris, France December 12-15, 2016

Exoplanets I conference in Davos, Switzerland, from 3-8 July 2016

XXIX IAU General Assembly Focus Meeting 6 : "Highlights in the exploration of Small Worlds", Honolulu, Hawaii, August 11-13, 2015

XXIX IAU General Assembly Focus Meeting 15 : "Search for water and life's building blocks in the universe", Honolulu, Hawaii, August 3-5, 2015

XXIX IAU General Assembly Focus Meeting 12 : "Bridging Laboratory Astrophysics and Astronomy", Honolulu, Hawaii, August 3-5, 2015

IAU Symposium #314 , "Young Stars & Planets Near the Sun", Atlanta, GA (USA) May 11-15, 2015

Second Workshop on Experimental Laboratory Astrophysics in Poipu, Kauai, Hawaii, February 23-26, 2015

Revolution in Astronomy with ALMA – The 3rd Year Tokyo, Japan, December 8–12, 2014

Circumstellar Disks and Planet Formation Ann Arbor, MI, USA, October 12–14 2014.

DIET 14: 14th International Workshop on Dynamics, Interactions and Electronic Transitions at Surfaces, Monterey Bay, California, USA, October 13–17, 2014

Spring 2014 ACS Astrochemistry Symposium 'Chemistry in the Interstellar Medium - New Frontiers in Laboratory, Theory, and Observations, Dallas, March 16–20, 2014

Gordon Conference on the Origins of Life Galveston, January 12-17, 2014

Gordon Conference on the Origins of Solar Systems, Mount Holyoke College, South Hadley, MA, June 23–28, 2013

Life in the Cosmos workshop, Washington DC, September 5–6, 2012

IAU 280: The Molecular Universe, Toledo, Spain, 30 May – 3 June 2011

Gordon Research Conferences: Radiation Driven Processes, Andover, NH, 18-23 July 2010

ACS National Meeting: Recent Advances in Observational and Experimental Astrochemistry, San Francisco, CA, 21-25 March 2010

Recent Invited Seminars and Colloquia

U. Toronto , Toronto, Canada, Feb 24, 2017

Northwestern University , Chicago, IL, Jan 27, 2017

U.Mass. Amherst , Amherst, MA, Dec 1, 2016

IAS and Princeton University Colloquium , Princeton, NJ, Nov 1, 2016

JPL Astrophysics Colloquium , Pasadena, CA, June 9, 2016

Hans E. Suess Memorial Lecture UCSD, San Diego, CA, May 25, 2016

Department of Physics and Astronomy at Rutgers Colloquium April 13, 2016

University of Victoria colloquia, Victoria, Canada, Jan 20 2016

NRC Herzberg and UBC colloquia, British Colombia, Canada, Jan 18-19 2016

UCLA Astronomy colloquium, CA, Nov 2 2015

Boston University Astronomy seminar, Boston, Nov 23, 2015

NRAO-Socorro colloquium, Oct 30 2015.

Munich Joint Astronomy Colloquium Sept 30 2015

Harvard College PRISE 10th Anniversary Distinguished Speaker lecture, July 14 2015

Steward/ NOAO Tucson, AZ, Nov 20 2014

University of Bern, Switzerland, Nov 11 2014.

Heidelberg joint Astronomy Colloquium, Heidelberg, Germany, June 25, 2014

Caltech Astronomy colloquium Pasadena, CA, May 28, 2014

Key Publications

Karin Öberg and advised post docs and students in **bold**. ApJ = Astrophysical Journal. A&A = Astronomy and astrophysics. For a complete biography, see https://www.cfa.harvard.edu/∼koberg/Publications.html

14. **Öberg, K.I.** *Photochemistry and Astrochemistry: UV induced ice chemical pathways to interstellar complexity.* Chemical Reviews, 2016, 116(17), 9631
13. **Öberg**, K.I., Furuya, K., **Loomis, R.**, Aikawa, Y., Andrews, S.M., Qi, C., van Dishoeck, E.F., Wilner, D.J. *Double DCO^+ rings reveal CO ice desorption in the outer disk around IM Lup.* ApJ 2015, 810,112
12. **Öberg, K.I., Guzman, V.G.**, Furuya, K., et al. *The cometary composition of a protoplanetary disk as revealed by complex cyanides.* Nature, 2015, 520, 7546, 198
11. Cleeves, L.I., Bergin, E.A, Alexander, C.M.OD., Du, F., **Graninger, D., Öberg, K.I.**, Harries, T.J., *The ancient heritage of water ice in the solar system*, Science, 2014, 345, 1590
10. Qi*, C., **Öberg*, K.I.**, Wilner, D.J., et al. *Imaging of the CO snow line in a solar nebula analog*, Science, 2013, 341, 6146, 630 (*listed as contributed equally)
9. Bergin, E.A., Cleeves, L.I., Gorti, U., Zhang, K., Blake, G.A., Green, J.D., Andrews, S.M, Evans II, N.J., Henning, T., **Öberg, K.I.,** Pontoppidan, K., Qi, C., Salyk, C., van Dishoeck, E.F., 2013, *An old disk still capable of forming a planetary system*, Nature, 493, 644
8. **Öberg, K.I.**, Murray-Clay, R., Bergin, E.A., 2011, *The effects of snowlines on C/O in planetary atmospheres*, ApJL, 743, L16
7. **Öberg, K.I.**, Boogert, A.C.A., Pontoppidan, K.M., et al., 2011, *The Spitzer Ice Legacy: Ice Evolution from Cores to Protostar*, ApJ, 740, 109
6. **Öberg, K.I.**, Qi, C., Fogel, J.F.J, et al., *Disk Imaging Survey of Chemistry with SMA (DISCS): I. Taurus Protoplanetary Disk Data*, ApJ, 2010, 720, 1, 480-493

5. **Öberg, K.I.**, Bottinelli, S., Jørgensen, J.K. and van Dishoeck, E.F. *A cold complex chemistry toward the low-mass protostar B1-b: evidence for complex molecule production in ices*, ApJ, 2010, 716, 1, 825-834
4. **Öberg, K.I.**, Garrod, R.T., Fayolle, E.C., Cuppen, H.M., van Dishoeck, E.F., Linnartz, H. *Formation rates of complex organics in UV irradiated CH_3OH-rich ices. I. Experiments*, A&A, 2009, 504, 3, 891-913
3. **Öberg, K.I.**, Visser, R. van Dishoeck, E.F., Linnartz, H. *Photodesorption of Ices II: H_2O and D_2O*, ApJ, 2009, 93, 1209-1218
2. **Öberg, K.I.**, van Dishoeck, E.F., Linnartz, H. *Photodesorption of Ices I: CO, N_2 and CO_2*, A&A, 2009, 496, 281-293
1. **Öberg, K.I.**, Awad, Z., Fuchs, G.W., Linnartz, H., van Dishoeck, E.F. *Photodesorption of CO ice*, ApJL, 2007, 662, L23-L26