PONTIFICIA ACADEMIA SCIENTIARVM

# THE AWARD
OF THE
# PIUS XI GOLD MEDAL

2026

*The aim of the Pontifical Academy of Sciences, which was founded on 28 October 1936 by the Holy Father Pius XI, is to honour pure science, wherever this may be found, to ensure its freedom, and to support the research essential for the progress of applied science.*

*On 28 October 1961, on the occasion of the 25th anniversary of the foundation of the Pontifical Academy of Sciences, the Holy Father John XXIII established the Pius XI Gold Medal in honour of the founder of the Academy. The medal should be awarded to a young scientist who has already gained an international reputation.*

*The Council of the Academy unanimously decided to award the "Pius XI Gold Medal" for the year 2026 to*

PROF. KARIN INGEGERD ÖBERG

*in recognition of his great merits as a scholar and the important contribution of his research to scientific progress.*


PIVS · XI · PONTIFEX · MAXIMVS · FVNDATOR
ACADEMIA · SCIENTIARVM · PONTIFICIA
KARIN I. ÖBERG
A.D.
MMXXVI

**KARIN INGEGERD ÖBERG**



*Full Name:* Karin Ingegerd Öberg

*Scientific Discipline:* Astrophysics

*Current Professional Activity:*
Professor of Astronomy
Harvard University, Since July 2017
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

*Date of Birth*: August 27, 1982

*Place of Birth*: Nyköping, Sweden

*Academic Qualifications:*

**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

## MEMBERSHIP OF PROFESSIONAL SOCIETIES

- 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)

## HONOURS

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)

# BRIEF ACCOUNT OF SCIENTIFIC ACTIVITY

I am an Astrochemist interested in 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.

With my Astrochemistry Research Group, I wish to address the chemical evolution present during star and planet formation and its effects on planet compositions, the fundamental physical chemical processes that underpin this evolution, and the development of new molecular probes of different aspects of star and planet formation.

So far, we have detected the first complex carbon molecule in a protoplanetary disk, the Methyl cyanide (CH3CN) that is thought to be important for the origins of life because it contains carbon-nitrogen bonds, which make up amino acids, the building blocks of proteins. Using the Atacama Large Millimeter/submillimeter Array (ALMA), I have been able with my group, to survey the orbital debris of the newly formed star MWC 480, to discover enough methyl cyanide to fill all of Earth's oceans and the presence of other simpler molecules such as hydrogen cyanide. I am convinced that comet records suggest the presence of complex organic molecules in other protoplanetary disks as well.

# MAJOR PUBLICATIONS

1. **Oberg, K.I.¨** *Photochemistry and Astrochemistry: UV induced ice chemical pathways to interstellar complexity.* Chemical Reviews, 2016, 116(17), 9631
2. **Oberg¨** , 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
3. **Oberg, 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
4. Cleeves, L.I., Bergin, E.A, Alexander, C.M.OD., Du, F., **Graninger, D., Oberg, K.I.¨** , Harries, T.J., *The ancient heritage of water ice in the solar system*, Science, 2014, 345, 1590
5. Qi*, C., **Oberg*, 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)
6. 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., **Oberg, 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
7. **Oberg, K.I.¨** , Murray-Clay, R., Bergin, E.A., 2011, *The effects of snowlines on C/O in planetary atmospheres*, ApJL, 743, L16
8. **Oberg, 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
9. 6**Oberg, 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
10. **Oberg, 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
11. **Oberg, 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
12. **Oberg, K.I.¨** , Visser, R. van Dishoeck, E.F., Linnartz, H. *Photodesorption of Ices II: $H_2O$ and $D_2O$*, ApJ, 2009, 93, 1209-1218
13. **Oberg, K.I.¨** , van Dishoeck, E.F., Linnartz, H. *Photodesorption of Ices I: CO, $N_2$ and $CO_2$*, A&A, 2009, 496, 281-293
14. **Oberg, K.I.¨** , Awad, Z., Fuchs, G.W., Linnartz, H., van Dishoeck, E.F. *Photodesorption of CO ice*, ApJL, 2007, 662, L23-L26

Printed by
The Pontifical Academy of Sciences
Casina Pio IV

Vatican City 2026