

Curriculum Vitae Jennifer B. Bergner

Positions

Assistant Professor, UC Berkeley Department of Chemistry	2023 –
Faculty Scientist, Lawrence Berkeley National Lab	2023 –
NASA Sagan Postdoctoral Fellow, University of Chicago Department of the Geophysical Sciences	2019 – 2022
Graduate Student, Harvard Chemistry and Harvard-Smithsonian Center for Astrophysics	2014 – 2019
Postbaccalaureate Intramural Research Training Award, National Institutes of Health, NIDDK	2013 – 2014
Undergraduate Research Assistant, UVA Departments of Chemistry & Environmental Engineering	2011 – 2013

Education

Ph.D. Chemistry & Chemical Biology	Harvard University, 2019
M.A. Chemistry & Chemical Biology	Harvard University, 2016
B.S. Chemistry	University of Virginia, 2013

Awards & Distinctions

Chevron Chair in Chemistry, UC Berkeley	2023
Scialog Fellow for Signatures of Life in the Universe, Research Corporation for Science Advancement	2023
American Astronomical Society Laboratory Astrophysics Division Dissertation Prize	2021
International Astronomical Union PhD Prize, Division H (Interstellar Matter & the Local Universe)	2020
Robert L. Brown Outstanding Dissertation Award, National Radio Astronomy Observatory	2020
NASA Sagan Postdoctoral Fellowship	2019
Fireman Dissertation Award, Harvard Astronomy Department	2019
Rodger Doxsey Travel Prize, American Astronomical Society 223rd meeting	2019
Distinction in Teaching Award, Harvard Bok Center	2016 & 2017
Graduate Research Fellowship Program, National Science Foundation	2014 – 2019
Outstanding Senior in Chemistry at UVA, American Chemical Society Virginia Section	2013
Distinguished Major in Chemistry: Highest Distinction, University of Virginia	2013
Harrison Undergraduate Research Award, University of Virginia	2012
Jefferson Public Citizen Award, University of Virginia	2011 & 2012

Service & Outreach

Laboratory Astrophysics Taskforce, NSF/NASA Astronomy and Astrophysics Advisory Committee	2023-
ngVLA Science Advisory Council Member	2022-
Co-Chair of Science Working Group 2: Astrochemistry and the Molecular Emergence of Life	
Science Team Member for NASA Pioneer class concept <i>POEMM</i>	2023-
Science Team Member for NASA far-IR Probe concepts: <i>SALTUS</i> , <i>PRIMA</i> , <i>SPICE</i>	2022-
Science Team Member for NASA MIDEX concept <i>OASIS</i>	2021-
Leader of 'Prebiotic Molecules' Science Working Group	
ISSI International Team member: Provenances of Our Solar System's relics	2019–
James Webb Space Telescope Master Class Participant (STScI)	2019–2020
and Workshop Leader (University of Chicago & Northwestern University)	
Reviewer for The Astrophysical Journal, Astronomy & Astrophysics, ACS Earth & Space Chemistry, Monthly Notices of the Royal Astronomical Society, Nature, Nature Communications, various NASA and NSF grants	
Exoplanet Journal Club organizer, University of Chicago	2021-2022
Women in STEM panel, University of Chicago Physical Sciences Division	March 2021

EDI Discussion Series, University of Chicago Department of the Geophysical Sciences Organizer & Facilitator	2020–2022
5-year EDI strategic plan working group, University of Chicago Physical Sciences Division	2020–2021
Harvard Banneker & Aztlán Institutes: Peer mentor, Lecturer, and Research supervisor	2016–2018
Astrobiology Graduate Conference Outreach Organizer	2017

Invited Research Talks

Institute of Geophysics and Planetary Physics Seminar, UC Santa Cruz, Santa Cruz CA	December 2023
Earth, Atmospheric and Planetary Sciences Department Lecture Series, MIT, Cambridge MA	November 2023
Chemistry Department Seminar, BYU, Provo UT	November 2023
Berkeley College of Chemistry Homecoming Lecture, Berkeley CA	October 2023
Bay Area Planetary Sciences meeting, Santa Cruz CA	September 2023
Life in the Universe II, Cambridge MA	September 2023
2023 IAU-Kavli Astrochemistry Symposium, Traverse City MI	July 2023
SETI Talks - Unveiling 'Oumuamua and its mysterious visit to our solar system (virtual)	June 2023
University of California Chemical Symposium, Lake Arrowhead CA	April 2023
Earth, Environmental and Planetary Sciences Colloquium, Brown University	February 2023
Vertical Shear Instability Meeting (virtual)	October 2022
Niels Bohr Legacy Symposium in Astrochemistry, Copenhagen	October 2022
Origins Seminar Series (virtual, hosted by Alien Earths collaboration)	August 2022
ACS National Meeting, "Inorganic and Organometallic Astrochemistry" Session, Chicago IL	August 2022
General Seminar Series, Carnegie Earth & Planets Lab, Washington DC	May 2022
CIERA Astronomy Seminar, Northwestern University, Evanston IL	May 2022
Astronomy Colloquium, University of Maryland, College Park MD	April 2022
Astronomy & Astrophysics Colloquium, Columbia University	March 2022
Physics & Astronomy Colloquium, Dartmouth College	March 2022
Astronomy Colloquium, Yale University	March 2022
Astronomy Seminar, UT Austin	February 2022
Astronomy Seminar, Penn State University	February 2022
Physical Chemistry Seminar, UC Berkeley	February 2022
Origins of Life Seminar, University of Wisconsin-Madison	January 2022
Geophysical Sciences Seminar, University of Chicago	January 2022
CLEVER Planets Seminar series (virtual)	October 2021
Astrophysical and Planetary Sciences Colloquium, CU Boulder	September 2021
238th AAS Meeting, LAD Dissertation Prize talk (virtual)	June 2021
Caltech Geological & Planetary Sciences Division Seminar	May 2021
ACS National Meeting, "Astrochemical Complexity in Planetary Systems" Session (virtual)	April 2021
Astrochemistry Discussions, Phosphorus Day (virtual)	February 2021
Physics & Astronomy Colloquium, Dartmouth College	January 2021
American Geophysical Union, "Accretion and Differentiation of Rocky Planets" Session (virtual)	December 2020
Origins of Life Speaker Series, University of Chicago Physical Sciences Division	October 2020
National Radio Astronomy Observatory Colloquium, Charlottesville VA	October 2020
Planetary Science Seminar, MIT	November 2019
Hubble Fellows Symposium, Washington, D.C.	October 2019
SOFIA Colloquium, NASA Ames Research Center, Mountain View CA	October 2019
Submillimeter Array Science Seminar, Harvard CfA	January 2019
Molecular Physics Seminar, Institut de Physique de Rennes	December 2018
Geophysical Sciences Seminar, University of Chicago	November 2018
Institute for Theory & Computation Lunch Seminar, Harvard CfA	September 2018
Astronomy Seminar, University of Connecticut	September 2018

Publications

First author

- Acceleration of 11/'Oumuamua from radiolytically produced H₂ in H₂O ice ADS
Bergner, J. B., & Seligman, D. Z. 2023, *Nature*, 615, 610
- HCN snowlines in protoplanetary disks: constraints from ice desorption experiments ADS
Bergner, J. B., Rajappan, M., & Öberg, K. I. 2022, *The Astrophysical Journal*, 933, 206
- First images of phosphorus molecules towards a proto-Solar analog ADS
Bergner, J. B., Burkhardt, A. M., Öberg, K. I., et al. 2022, *The Astrophysical Journal*, 927, 7
- Astrochemistry with the Orbiting Astronomical Satellite for Investigating Stellar Systems (OASIS) ADS
Bergner, J. B., Shirley, Y. L., Jørgensen, J. K., et al. 2022, *Frontiers in Astronomy & Space Sciences*, 8, 246
- Molecules with ALMA at Planet-forming Scales (MAPS) XI: CN and HCN as tracers of photochemistry in disks ADS
Bergner, J. B., Öberg, K. I., Guzmán, V. G., et al. 2021, *The Astrophysical Journal Supplement Series*, 257, 11
- Ice inheritance in dynamical disk models ADS
Bergner, J. B. & Ciesla, F. 2021, *The Astrophysical Journal*, 919, 45
- An evolutionary study of volatile chemistry in protoplanetary disks ADS
Bergner, J. B., Öberg, K. I., Bergin, E. A., et al. 2020, *The Astrophysical Journal*, 898, 97
- Detection of phosphorus-bearing molecules towards a Solar-type protostar ADS
Bergner, J. B., Öberg, K. I., Walker, S., Guzmán, et al. 2019, *The Astrophysical Journal Letters*, 884, 2
- Organic complexity in protostellar disk candidates ADS
Bergner, J. B., Martín-Doménéch, Öberg, K. I., et al. 2019, *ACS Earth & Space Chemistry*, 3, 1564
- A survey of C₂H, HCN, and C¹⁸O in protoplanetary disks ADS
Bergner, J. B., Öberg, K. I., Bergin, E. A., et al. 2019, *The Astrophysical Journal*, 876, 25
- Oxygen atom reactions with C₂H₆, C₂H₄, and C₂H₂ in ices ADS
Bergner, J. B., Öberg, K. I., & Rajappan, M. 2019, *The Astrophysical Journal*, 874, 115
- A survey of CH₃CN and HC₃N in protoplanetary disks ADS
Bergner, J. B., Guzmán, V. G., Öberg, K. I., et al. 2018, *The Astrophysical Journal*, 857, 69
- Methanol formation via oxygen insertion chemistry in ices ADS
Bergner, J. B., Öberg, K. I., & Rajappan, M. 2017, *The Astrophysical Journal*, 845, 29
- Complex organic molecules towards embedded low-mass protostars ADS
Bergner, J. B., Öberg, K. I., Garrod, R. T., & Graninger, D. M. 2017, *The Astrophysical Journal*, 841, 120
- Kinetics and mechanisms of the acid-base reaction between NH₃ and HCOOH in interstellar ice analogs ADS
Bergner, J. B., Öberg, K. I., Rajappan, M., & Fayolle, E. C. 2016, *The Astrophysical Journal*, 829, 85

Significant contributor

- The edge-on protoplanetary disk HH 48 NE. II. Modeling ices and silicates ADS
Sturm, J. A., McClure, M. K., **Bergner, J. B.**, et al. May 2023, *Astronomy & Astrophysics*, in press
- New Detections of Phosphorus Molecules towards Solar-type Protostars ADS
Wurmser, S. & **Bergner, J. B.** 2022, *The Astrophysical Journal*, 934, 153
- Chemical Feedback of Pebble Growth: Impacts on CO depletion and C/O ratios ADS
van Clepper, E., **Bergner, J. B.**, Bosman, A., et al. 2022, *The Astrophysical Journal*, 927, 206
- Hot corino chemistry in the Class I binary source Ser-emb 11 ADS
Martín-Doménéch, R., **Bergner, J. B.**, Öberg, K. I., et al. 2021, *The Astrophysical Journal*, 923, 155
- MAPS VI: Distribution of the small organics HCN, C₂H, and H₂CO ADS
Guzmán, V. G., **Bergner, J. B.**, Law, C. J., et al. 2021, *The Astrophysical Journal Supplement Series*, 257, 6
- An Atacama Large Millimeter/submillimeter Array Survey of Chemistry in Disks around M4-M5 Stars ADS
Pegues, J., Öberg, K. I., **Bergner, J. B.**, et al. 2021, *The Astrophysical Journal*, 911, 150
- The TW Hya Rosetta Stone Project I: Radial and vertical distributions of DCN and DCO⁺ ADS
Öberg, K. I., Cleeves, L. I., **Bergner, J. B.**, et al. 2020, *The Astrophysical Journal*, 161, 38
- An ALMA survey of H₂CO in protoplanetary disks ADS
Pegues, J., Öberg, K. I., **Bergner, J. B.**, et al. 2020, *The Astrophysical Journal*, 890, 142
- A new, rotating hot corino in Serpens ADS
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- Martín-Doménech, R., **Bergner, J. B.**, Öberg, K. I., & Jørgensen, J. K. 2019, *The Astrophysical Journal*, 880, 130
Carbon chain molecules toward embedded low-mass protostars ADS
- Law, C. J., Öberg, K. I., **Bergner, J. B.**, & Graninger, D. 2018, *The Astrophysical Journal*, 863, 88
- On the inference of the cosmic-ray ionization rate from the HCO⁺-to-DCO⁺ abundance ratio: The effect of nuclear spin
Shingledecker, C. N., **Bergner, J. B.**, Le Gal, R., et al. 2016, *The Astrophysical Journal*, 830, 151 ADS
- Collaborator*
- Potential Melting of Extrasolar Planets by Tidal Dissipation ADS
Seligman, D. Z., Feinstein, A. D., et al. incl. **Bergner, J. B.** 2023, *The Astrophysical Journal*, in press
- A JWST inventory of protoplanetary disk ices: The edge-on protoplanetary disk HH 48 NE ADS
Sturm, J. A., McClure, M., et al. incl. **Bergner, J. B.** 2023, *Astronomy & Astrophysics*, in press
- MAPS: Constraining Serendipitous Time Variability in Protoplanetary Disk Molecular Ion Emission ADS
Waggoner, A. R., Cleeves, L. I., et al. incl. **Bergner, J. B.** 2023, *The Astrophysical Journal*, 956, 103
- Interstellar Comets from Post-Main Sequence Systems as Tracers of Extrasolar Oort Clouds ADS
Levine, W. G., Taylor, A. G., et al. incl. **Bergner, J. B.** 2023, *The Planetary Science Journal*, 4, 124
- The edge-on protoplanetary disk HH 48 NE. I. Modeling the geometry and stellar parameters ADS
Sturm, J. A., McClure, M. K., Law, C. J., et al. incl. **Bergner, J. B.** 2023, *Astronomy & Astrophysics*, 667, 18
- Protoplanetary Disk Science with the OASIS Observatory ADS
Schwarz, K. R., Najita, J., **Bergner, J. B.**, et al. 2023, *Space Science Reviews*, 219, 12
- Dark Comets? Unexpectedly Large Nongravitational Accelerations on a Sample of Small Asteroids ADS
Seligman, D. Z., Farnocchia, D., Micheli, M., et al. incl. **Bergner, J. B.** 2023, *The Planetary Science Journal*, 4, 35
- CORINOS. I. JWST/MIRI Spectroscopy and Imaging of a Class 0 Protostar IRAS 15398-3359 ADS
Yang, Y., Green, J., Pontoppidan, K., et al. incl. **Bergner, J. B.** 2022, *The Astrophysical Journal Letters*, 1, L13
- Cold Deuterium Fractionation in the Nearest Planet-forming Disk ADS
Munoz-Romero, C. E., Öberg, K. I., Law, C. J., et al. incl. **Bergner, J. B.** 2022, *The Astrophysical Journal*, 943, 35
- UV-driven chemistry as a signpost of late-stage planet formation ADS
Calahan, J., Bergin, E., Bosman, A., et al. incl. **Bergner, J. B.** 2022, *Nature Astronomy*, 7, 49
- MAPS: A Circumplanetary Disk Candidate in Molecular-line Emission in the AS 209 Disk ADS
Bae, J., Teague, R., Andrews, S. M., et al. incl. **Bergner, J. B.** 2022, *The Astrophysical Journal Letters*, 934, L20
- Molecules with ALMA at Planet-forming Scales (MAPS): Special Issue of the Astrophysical Journal Supplement Series
Papers I, II, III, IV, V, VII, IX, X, XII, XIII, XIV, XV, XVI, XVII, XVIII, XIX
<http://alma-maps.info/publications.html>
- If you like C/O variations, you should have put a ring on it ADS
van der Marel, N., Bosman, A., Krijt, S., et al. incl. **Bergner, J. B.** 2021, *Astronomy & Astrophysics Letters*, 653, L9
- The TW Hya Rosetta Stone Project IV. A hydrocarbon rich disk atmosphere ADS
Cleeves, L. I., Loomis, R. A., Teague, R., et al. incl. **Bergner, J. B.** 2021, *The Astrophysical Journal*, 911, 29
- Dynamical Masses and Stellar Evolutionary Model Predictions of M Stars ADS
Pegues, J., Czekala, I., Andrews, S., et al. incl. **Bergner, J. B.** 2021, *The Astrophysical Journal*, 908, 42
- The TW Hya Rosetta Stone Project III. Resolving the Gaseous Thermal Profile of the Disk ADS
Calahan, J. K., Bergin, E., Zhang, K., et al. incl. **Bergner, J. B.** 2021, *The Astrophysical Journal*, 908, 8
- Rosetta Stone Project II: Spatially resolved emission of H₂CO hints at low-temperature gas-phase formation ADS
Terwisscha van Scheltinga, J. et al. incl. **Bergner, J. B.** 2020, *The Astrophysical Journal*, 906, 111
- An Unbiased ALMA Spectral Survey of the LkCa 15 and MWC 480 Protoplanetary Disks ADS
Loomis, R. A., Öberg, K. I., Andrews, S.M., et al. incl. **Bergner, J. B.** 2020, *The Astrophysical Journal*, 893, 101
- Sulfur chemistry in protoplanetary disks: CS and H₂CS ADS
Le Gal, R., Öberg, K. I., Loomis, R. A., Pegues, J., & **Bergner, J. B.** 2019, *The Astrophysical Journal*, 876, 72
- Desorption kinetics and binding energies of small hydrocarbons ADS
Behmard, A., Fayolle, E. C., Graninger, D. M., **Bergner, J. B.**, et al. 2019, *The Astrophysical Journal*, 875, 73
- The distribution and excitation of CH₃CN in a solar nebula analog ADS
Loomis, R. A., Cleeves, L. I., Öberg, K. I., et al. incl. **Bergner, J. B.** 2018, *The Astrophysical Journal*, 859, 131
- CO diffusion and desorption kinetics in CO₂ ices ADS
Cooke, I. R., Öberg, K. I., Fayolle, E. C., Peeler, Z., & **Bergner, J. B.** 2018, *The Astrophysical Journal*, 852, 75
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- N₂ and CO desorption energies from water ice ADS
Fayolle, E. C., Balfe, J., Loomis, R. A., **Bergner, J. B.**, et al. 2016, *The Astrophysical Journal Letters*, 816, L28
- Sphingosine-1-phosphate receptor 1 reporter mice reveal receptor activation sites in vivo JCI
Kono, M., Tucker, A. E., Tran, J., **Bergner, J. B.**, et al. 2014, *The Journal of Clinical Investigation*, 124, 2076
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