

Pooneh Nazari

[Personal website](#)

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ESO Headquarters,
Karl-Schwarzschild-Strasse 2, 85748,
Garching

Positions

ESO Fellow Garching, Germany	Oct 2023–present
IAU Gruber Foundation Fellow	Oct 2023–present

Education

Leiden University Ph.D. in Astrophysics Advisor: Prof. E. F. van Dishoeck – Thesis: “ Bridging the gap between physics and chemistry in early stages of star formation ”	Leiden, Netherlands Oct 2019–Feb 2024
University of Cambridge MPhil in Astrophysics Advisor: Prof. C. J. Clarke – Thesis: “ Observational consequences of planet migration ”	Cambridge, UK 2018–2019
MASc (Part III) in Astrophysics	2017–2018
University of St Andrews B.Sc. in Astrophysics	St Andrews, UK 2013–2017

Research Interests

Astrochemistry, Planet formation and composition, Disk winds/Outflows/Jets, Submillimetre and infrared astronomy, Radiative transfer and chemical modeling

Publications

I have **33** publications with **11** as first author (2 letters) and **9** as second to fourth author. H-index = 13, total citations > 500, first-author citations > 150. See the full list at the end of the CV.

Talks

I have given **29** talks including **11** invited. See the full list at the end of the CV.

Awards

▪ Gruber Foundation Fellowship	2023–2025
▪ ESO Fellowship	2023–2026
▪ Sheepshanks Scholarship and Studentship in Astronomy (Trinity College, Cambridge)	2017–2018
▪ Harvard Origins of Life Initiative Undergraduate Research Award	2017

- The Astrophysics Project Prize (University of St Andrews) 2017
- Royal Astronomical Society Undergraduate Research Bursary (University of St Andrews) 2015

Grants

- JWST General Observer Grant**, NASA/STScI, PI, Total: \$241,193 2025–2027
 JWST-GO-5857: Constraining the volatile budget in the birthplace of TRAPPIST-1-like systems
- Gruber Foundation Grant**, PI, Total: \$25,000 2023–2025
- Leids Kerkhoven-Bosscha Fonds (LKBF)**, PI, Total: ~\$1300 2022

Observing programs

- I am the **PI of 16.9 hours** of JWST NIRSpec-IFU observations and **co-I of 243 hours** of JWST NIRCам, NIRSpec, and MIRI observations.
- I am the **PI of 10.9 hours** and **co-I of 92.9 hours** of ALMA observations. I am the **delegee of 17.4 hours** of ALMA observations.

Major collaborations

- HEFE: High Angular Resolution observations of Stellar Emergence in Filamentary Environments 2024–present
 PI: T. Megeath
 JWST NIRCам, NIRSpec, and MIRI-MRS large program of the OMC2/3 region
- COMPASS: Complex Organic Molecules in Protostars with ALMA Spectral Surveys 2023–present
 PI: J. K. Jørgensen
 ALMA large program and NIRSpec MOS medium program of 11 protostars
- JOYS+: Jwst Observations of Young protoStars 2023–present
 PIs: E. F. van Dishoeck; M.E. Ressler; T. P. Ray; T. P. Greene
 Combination of MIRI-MRS and NIRSpec-IFU observations of ~30 protostars
- IPA: Investigating Protostellar Accretion JWST program 2023–present
 PI: T. Megeath
 MIRI-MRS and NIRSpec-IFU observations of 5 protostellar systems

Research visits

- Frequent research visits to University of Copenhagen 2023–present
- Extended research visit, Harvard University Oct 2022–Nov 2022
- Research visits, Universities of St Andrews, Cambridge, and Harvard University Summers 2015–2018

Supervision

- Kasra Hajian** (Sharif Univ. of Tech., Iran), Funded by my Gruber grant Summer 2024
 Worked on high-*z* universe as a summer student
At ESO, In collaboration with Danial Langeroodi

- Lauren Mason** (Univ. of Cambridge, UK), Funded by ESO Summer 2024
 Worked on protostellar disk winds as a summer student
 At *ESO*
- Jasmine Cheung**, (University of Hong Kong), Funded by Leiden Summer 2021
 Worked on complex organics around a low-mass protostar as a LEAPS student
 At *Leiden Observatory*
- Co-supervision of three MSc students 2020-2022
 At *Leiden Observatory*

Teaching

- Summer lecture on astrochemistry, ESO, 2024
- Teaching Assistant of Astrochemistry course taught by Prof. E. F. van Dishoeck, Leiden Observatory, 2022
- Teaching Assistant of SPF course taught by Prof. E. F. van Dishoeck and Dr. M. K. McClure, Leiden Observatory, 2020, 2021, 2022

Selected outreach and service activities

- Organiser of 'ESO-Gruber summer school: From nearby worlds to distant galaxies', 2025
- Co-organiser of 'Towards New Frontiers: The Astrochemical Journey from Young Stellar Nurseries to Exoplanets' workshop at ESO, 2025
- Part of the ESO PhD studentship selection committee, 2024
- Spending 25% of my time on ESO duties working with: Observing Programmes Office (OPO), ELT Observing Simulations, and Science Policies, 2023-present
- Scientific Assistant at ESO's Observing Programmes Committees (OPCs), 2024
- Reviewer for A&A, ApJ, Nat. Astron., and Front. Astron. Space Sci.
- Organiser of the NOVA Network II seminars in the Netherlands, 2019-2022
- Main author of a [CASSIS manual](#), 2022
- ALMA proposal reviewer, 2021-2024
- Invited talk at Astronomy on Tap, 2021
- Author at [She Speaks Science](#), 2018

Presentations

I have given 29 talks, including 11 *invited*.

- **Invited talk at the University of St Andrews** Online, 2024
 '*From Gas and Ice to Planets: Exploring Chemical and Physical Properties of Early Disks with ALMA and JWST*'
- **Contributed talk at 'Are We a Unique Species on a Unique Planet'** Copenhagen, 2024
 '*The dawn of planets: Tracing early planet formation in protostellar disks*'
- **Invited talk at COSPAR panel F3.4** South Korea, 2024
 '*Complex organic molecules in the gas and ices*'
- **Invited talk at 'Villa Vigoni workshop'** Villa Vigoni, 2024
 '*Complex organic molecules in the gas and ices around protostars*'
- **Invited talk at 'Celebrating 30 Years of Protoplanetary Disk Chemistry'** Ringberg, 2024
 '*Bridging the gap between physics and chemistry in early stages of star formation*'

- **PhD Colloquium** Leiden University, 2024
'Bridging the gap between physics and chemistry in early stages of star formation'
- **Star and Planet Formation Seminar** ESO, 2024
'Bridging the gap between physics and chemistry in early stages of star formation'
- **Invited talk at 'Workshop on Interstellar Catalysis'** Aarhus, 2023
'Complex organic molecules around protostars'
- **Contributed talk at NOVA Network II seminar** Netherlands, 2023
'Complex organic molecules around protostars'
- **Contributed talk at 'Blaauw workshop'** University of Groningen, 2023
'Evidence for ubiquitous carbon grain destruction around young protostars'
- **Origins seminar series** University of Arizona, 2022
'Complex organic molecules around low- and high-mass protostars'
- **Lunch talk** University of Virginia/NRAO, 2022
'Complex organic molecules around low- and high-mass protostars'
- **Star and planet formation meeting** University of Michigan, 2022
'Complex organic molecules around low- and high-mass protostars'
- **Star formation journal club** Harvard University, 2022
'Complex organic molecules around low- and high-mass protostars'
- **Disk and Astrochemistry meeting** Harvard University, 2022
'Complex organic molecules around low- and high-mass protostars'
- **Invited talk at 'Niels Bohr Legacy Symposium in Astrochemistry'** Copenhagen University, 2022
'Complex organic molecules toward low- and high-mass protostars'
- **Invited talk at Astrochemistry Seminar** Leiden University, 2022
'Can disks explain lack of COM emission from low-mass protostars?'
- **Invited talk at Iranian National Observatory workshop** Online, 2022
'Astrochemistry in the embedded phase of star formation'
- **Invited talk at InterCat Centre meeting** Online, 2021
'N-bearing complex organic molecules: From low- to high-mass protostars'
- **Star formation meeting** Leiden University, 2021
'Methanol emission from protostars: Can disks explain lack of emission from some sources?'
- **Informal seminar at Centre for Star and Planet Formation** Copenhagen University, 2021
'Complex organic molecules: From low- to high-mass protostars'
- **Contributed talk at 'Chemical processes in Solar-type star forming regions'** Torino, 2021
'Complex organic molecules: From low- to high-mass protostars'
- **Contributed talk at 'Astrochemical Frontiers'** Online, 2021
'Methanol emission from protostars: Can disks explain lack of emission from some sources?'
- **Invited talk at Astrochemistry Seminar** Leiden University, 2021
'Complex organic molecules in low-mass protostars'
- **Contributed talk at 'ALMA day'** Leiden University, 2021
'Complex organic molecules in low-mass protostars'
- **Contributed talk at 'Five Years After HL Tau'** Online, 2020
'Observational consequences of planet migration'
- **Seminar at Institute of Astronomy** University of Cambridge, 2020
'N-bearing complex organic molecules in low-mass protostars'
- **Contributed talk at Trinity forum, Trinity college** University of Cambridge, 2019

Publications

I have 33 publications with 11 as first author (2 letters) and 9 as second to fourth author. H-index = 13, total citations > 500, first-author h-index = 7, first-author citations > 150.

First author

11. **P. Nazari**, A. D. Sellek, and G. P. Rosotti, "Hidden under a warm blanket: If planets existed in protostellar disks, they would hardly produce observable substructures", *A&A Letters*, 2024 (first and second author had similar contribution)
10. **P. Nazari**, B. Tabone, A. Ahmadi, S. Cabrit, *et al.*, "ALMA view of the L1448-mm protostellar system on disk scales: CH₃OH and H¹³CN as new disk wind tracers", *A&A*, vol. 686, A201, 2024
9. **P. Nazari**, B. Tabone, G. P. Rosotti, and E. F. van Dishoeck, "Correlations among complex organic molecules around protostars: Effects of physical structure", *A&A*, vol. 687, A263, 2024
8. **P. Nazari**, W. R. M. Rocha, A. E. Rubinstein, K. Slavicinska, *et al.*, "Hunting for complex cyanides in protostellar ices with the JWST. A tentative detection of CH₃CN and C₂H₅CN", *A&A*, vol. 686, A71, 2024, See press release
7. **P. Nazari**, J. S. Y. Cheung, J. F. Asensio, N. M. Murillo, *et al.*, "A deep search for large complex organic species toward IRAS16293-2422 B at 3 mm with ALMA", *A&A*, vol. 686, A59, 2024
6. **P. Nazari**, B. Tabone, M. L. R. van't Hoff, J. K. Jørgensen, *et al.*, "Evidence for Ubiquitous Carbon Grain Destruction in Hot Protostellar Envelopes", *ApJ Letters*, vol. 951, L38, 2023
5. **P. Nazari**, B. Tabone, and G. P. Rosotti, "Importance of source structure on complex organics emission. III. Effect of disks around massive protostars", *A&A*, vol. 671, A107, 2023
4. **P. Nazari**, J. D. Meijerhof, M. L. van Gelder, A. Ahmadi, *et al.*, "N-bearing complex organics toward high-mass protostars. Constant ratios pointing to formation in similar pre-stellar conditions across a large mass range", *A&A*, vol. 668, A109, 2022
3. **P. Nazari**, B. Tabone, G. P. Rosotti, M. L. van Gelder, *et al.*, "Importance of source structure on complex organics emission. II. Do disks explain lack of methanol emission from low-mass protostars?", *A&A*, vol. 663, A58, 2022
2. **P. Nazari**, M. L. van Gelder, E. F. van Dishoeck, B. Tabone, *et al.*, "Complex organic molecules in low-mass protostars on Solar System scales. II. Nitrogen-bearing species", *A&A*, vol. 650, A150, 2021
1. **P. Nazari**, R. A. Booth, C. J. Clarke, G. P. Rosotti, *et al.*, "Revealing signatures of planets migrating in protoplanetary discs with ALMA multiwavelength observations", *MNRAS*, vol. 485, pp. 5914–5923, 2019

Second-Fourth author

9. J. C. Santos, M. L. van Gelder, **P. Nazari**, A. Ahmadi, *et al.*, "SO₂ and OCS toward high-mass protostars: A comparative study between ice and gas", *A&A*, 2024

8. K. Slavicinska, E. F. van Dishoeck, Ł. Tychoniec, **P. Nazari**, *et al.*, “[JWST detections of amorphous and crystalline HDO ice toward massive protostars](#)”, *A&A*, vol. 688, A29, 2024
7. M. L. van Gelder, M. E. Ressler, E. F. van Dishoeck, **P. Nazari**, *et al.*, “[JOYS+: Mid-infrared detection of gas-phase SO₂ emission in a low-mass protostar. The case of NGC 1333 IRAS 2A: Hot core or accretion shock?](#)”, *A&A*, vol. 682, A78, 2024
6. Y. Chen, M. L. van Gelder, **P. Nazari**, C. L. Brogan, *et al.*, “[CoCCoA: Complex Chemistry in hot Cores with ALMA. Selected oxygen-bearing species](#)”, *A&A*, vol. 678, A137, 2023
5. N. G. C. Brunken, A. S. Booth, M. Leemker, **P. Nazari**, *et al.*, “[A major asymmetric ice trap in a planet-forming disk. III. First detection of dimethyl ether](#)”, *A&A*, vol. 659, A29, 2022, See press release
4. M. L. van Gelder, **P. Nazari**, B. Tabone, A. Ahmadi, *et al.*, “[Importance of source structure on complex organics emission. I. Observations of CH₃OH from low-mass to high-mass protostars](#)”, *A&A*, vol. 662, A67, 2022
3. M. L. van Gelder, J. Jaspers, **P. Nazari**, A. Ahmadi, *et al.*, “[Methanol deuteration in high-mass protostars](#)”, *A&A*, vol. 667, A136, 2022
2. F. Meru, G. P. Rosotti, R. A. Booth, **P. Nazari**, *et al.*, “[Is the ring inside or outside the planet?: the effect of planet migration on dust rings](#)”, *MNRAS*, vol. 482, pp. 3678–3695, 2019, See press release
1. J. D. Ilee, C. J. Cyganowski, **P. Nazari**, T. R. Hunter, *et al.*, “[G11.92-0.61 MM1: a Keplerian disc around a massive young proto-O star](#)”, *MNRAS*, vol. 462, pp. 4386–4401, 2016, See press release

Other co-author

12. M. L. van Gelder, L. Francis, E. F. van Dishoeck, (incl. **P. Nazari**), *et al.*, “[JWST Observations of Young protoStars \(JOYS\). Overview of gaseous molecular emission and absorption in low-mass protostars](#)”, *A&A*, 2024
11. L. Francis, E. F. van Dishoeck, A. Caratti o Garatti, (incl. **P. Nazari**), *et al.*, “[JOYS: The \[D/H\] abundance derived from protostellar outflows across the galactic disk measured with JWST](#)”, *Submitted to A&A*, 2024
10. A. Caratti o Garatti, T. P. Ray, P. J. Kavanagh, (incl. **P. Nazari**), *et al.*, “[JWST Observations of Young protoStars \(JOYS\). HH 211: the textbook case of a protostellar jet and outflow](#)”, *A&A*, 2024
9. N. G. C. Brunken, E. F. van Dishoeck, K. Slavicinska, (incl. **P. Nazari**), *et al.*, “[JOYS+ study of solid state ¹²C/¹³C isotope ratios in protostellar envelopes: Observations of CO and CO₂ ice with JWST](#)”, *A&A*, 2024
8. A. E. Rubinstein, I. Evans Neal J., H. Tyagi, (incl. **P. Nazari**), *et al.*, “[IPA: Class 0 Protostars Viewed in CO Emission Using JWST](#)”, *ApJ*, 2023
7. D. A. Neufeld, P. Manoj, H. Tyagi, (incl. **P. Nazari**), *et al.*, “[JWST/MIRI detection of suprathreshold OH rotational emissions: probing the dissociation of the water by Lyman alpha photons near the protostar HOPS 370](#)”, *ApJL*, vol. 966, L22, 2024
6. N. G. C. Brunken, W. R. M. Rocha, E. F. van Dishoeck, (incl. **P. Nazari**), *et al.*, “[JWST observations of ¹³CO₂ ice: Tracing the chemical environment and thermal history of ices in protostellar envelopes](#)”, *A&A*, vol. 685, A27, 2024
5. M. Narang, P. Manoj, H. Tyagi, (incl. **P. Nazari**), *et al.*, “[Discovery of a Collimated Jet from the Low-luminosity Protostar IRAS 16253-2429 in a Quiescent Accretion Phase with the JWST](#)”, *ApJL*, vol. 962, L16, 2024

4. E. F. van Dishoeck, S. Grant, B. Tabone, (incl. **P. Nazari**), *et al.*, “The diverse chemistry of protoplanetary disks as revealed by JWST”, *Faraday Discussions*, vol. 245, pp. 52–79, 2023
3. G. M. Williams, C. J. Cyganowski, C. L. Brogan, (incl. **P. Nazari**), *et al.*, “ALMA observations of the Extended Green Object G19.01-0.03 - II. A massive protostar with typical chemical abundances surrounded by four low-mass pre-stellar core candidates”, *MNRAS*, vol. 525, pp. 6146–6169, 2023
2. G. M. Williams, C. J. Cyganowski, C. L. Brogan, (incl. **P. Nazari**), *et al.*, “ALMA observations of the Extended Green Object G19.01-0.03 - I. A Keplerian disc in a massive protostellar system”, *MNRAS*, vol. 509, pp. 748–762, 2022
1. A. J. Cridland, G. P. Rosotti, B. Tabone, (incl. **P. Nazari**), *et al.*, “Early planet formation in embedded protostellar disks. Setting the stage for the first generation of planetesimals”, *A&A*, vol. 662, A90, 2022