Pooneh **Nazari**

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Niels Bohrweg 2, 2333 CA, Leiden

Positions

ESO Fellow 2023–present
Garching, Germany

IAU Gruber Foundation Fellow 2023–present

Education

Leiden University Leiden, Netherlands
Ph.D. in Astrophysics 2019–2023
Supervisor: Prof. Ewine van Dishoeck

- Thesis: "Bridging the gap between physics and chemistry in early stages of star formation"

University of Cambridge Cambridge, UK
MPhil in Astrophysics 2018–2019
Supervisor: Prof. Cathie Clarke

- Thesis: "Observational consequences of planet migration"

MASt (Part III) in Astrophysics 2017–2018

University of St Andrews St Andrews, UK
B.Sc. in Astrophysics 2013–2017

Research visits

Frequent research visits to University of Copenhagen 2023–present

Extended research visit, Harvard University Oct 2022–Nov 2022

Research Interests

Interstellar molecules, Planet formation, Submillimetre and infrared astronomy, Astrochemistry

Awards

- Gruber Foundation Fellowship 2023–2025
- ESO Fellowship 2023–2026
- Funding from Leids Kerkhoven-Bosscha Fonds (LKBF) 2022
- 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

Selected Presentations

I have given 22 talks, including 7 ***invited*** talks.

- ***Invited talk*** **at Workshop on Interstellar Catalysis** Aarhus, 2023
  'Complex organic molecules around protostars'
- **NOVA Network II seminar** Netherlands, 2023
  'Complex organic molecules around protostars'
- **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'
- **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 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'
- **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'
- ***Invited talk*** **at Kavli Institute** University of Cambridge, 2019
  'Observational consequences of planet migration'

Publications

I have 23 publications with 10 as first author.

First author

10. **P. Nazari**, W. R. M. Rocha, A. E. Rubinstein, K. Slavicinska, M. G. Rachid, E. F. van Dishoeck, S. T. Megeath, R. Gutermuth, *et al.*, "Hunt for complex cyanides in protostellar ices with JWST: Tentative detection of CH_3CN and C_2H_5CN", *Submitted to A&A*, 2023

9. **P. Nazari**, B. Tabone, A. Ahmadi, S. Cabrit, E. F. van Dishoeck, C. Codella, J. Ferreira, L. Podio, Ł. Tychoniec, and M. L. van Gelder, "ALMA view of the L1448-mm protostellar system on disk scales: A new MHD disk wind candidate", *Submitted*, 2023

8. **P. Nazari**, B. Tabone, G. P. Rosotti, and E. F. van Dishoeck, "Physical factors can change the observed correlation among complex organics around protostars", *Submitted to A&A*, 2023

7. **P. Nazari**, J. S. Y. Cheung, J. Ferrer Asensio, N. M. Murillo, E. F. van Dishoeck, J. K. Jørgensen, T. L. Bourke, K.-J. Chuang, *et al.*, "A deep search for large complex organic species toward IRAS16293-2422 B at 3 mm with ALMA", *Submitted to A&A*, 2023

6. **P. Nazari**, B. Tabone, M. L. R. van't Hoff, J. K. Jørgensen, and E. F. van Dishoeck, "Evidence for Ubiquitous Carbon Grain Destruction in Hot Protostellar Envelopes", *ApJ Letters*, vol. 951, no. 2, 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, E. F. van Dishoeck, B. Tabone, D. Langeroodi, N. F. W. Ligterink, J. Jaspers, M. T. Beltrán, G. A. Fuller, Á. Sánchez-Monge, and P. Schilke, "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, R. Meshaka, and E. F. van Dishoeck, "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, M. L. R. van't Hoff, N. F. W. Ligterink, H. Beuther, A. C. A. Boogert, A. Caratti o Garatti, P. D. Klaassen, H. Linnartz, V. Taquet, and Ł. Tychoniec, "Complex organic molecules in low-mass protostars on Solar System scales. II. Nitrogen-bearing species", *A&A*, vol. 650, A150, Jun. 2021

1. **P. Nazari**, R. A. Booth, C. J. Clarke, G. P. Rosotti, M. Tazzari, A. Juhasz, and F. Meru, "Revealing signatures of planets migrating in protoplanetary discs with ALMA multiwavelength observations", *MNRAS*, vol. 485, no. 4, pp. 5914–5923, 2019

Second-Fourth author

7. M. L. van Gelder, M. E. Ressler, E. F. van Dishoeck, **P. Nazari**, B. Tabone, J. H. Black, Ł. Tychoniec, L. Francis, M. Barsony, *et al.*, "JOYS+: mid-infrared detection of gas-phase SO2 emission in a low-mass protostar: The case of NGC 1333 IRAS2A: hot core or accretion shock?", *Accepted to A&A*, 2023

6. Y. Chen, M. L. van Gelder, **P. Nazari**, *et al.*, "CoCCoA: Complex Chemistry in hot Cores with ALMA. Selected oxygen-bearing species", *A&A*, 2023

5. N. G. C. Brunken, A. S. Booth, M. Leemker, **P. Nazari**, N. van der Marel, and E. F. van Dishoeck, "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, E. F. van Dishoeck, M. T. Beltrán, G. A. Fuller, N. Sakai, Á. Sánchez-Monge, P. Schilke, Y.-L. Yang, and Y. Zhang, "Importance of source structure on complex organics emission. I. Observations of CH_3OH from low-mass to high-mass protostars", *A&A*, vol. 662, A67, 2022

3. M. L. van Gelder, J. Jaspers, **P. Nazari**, A. Ahmadi, E. F. van Dishoeck, M. T. Beltrán, G. A. Fuller, Á. Sánchez-Monge, and P. Schilke, "Methanol deuteration in high-mass protostars", *A&A*, vol. 667, A136, 2022

2. F. Meru, G. P. Rosotti, R. A. Booth, **P. Nazari**, and C. J. Clarke, "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, C. L. Brogan, D. H. Forgan, and Q. Zhang, "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

6. N. G. C. Brunken, W. R. M. Rocha, E. F. van Dishoeck, S. T. Megeath, R. Gutermuth, H. Tayagi, K. Slavicinska, **P. Nazari**, M. Narang, P. Manoj, A. E. Rubinstein, *et al.*, "JWST observations of 13CO2 ice: Tracing the chemical environment and thermal history of ices in protostellar envelopes", *Submitted to A&A*, 2023

5. M. Narang, P. Manoj, H. Tyagi, *et al.*, "Investigating Protostellar Accretion across the mass spectrum with the JWST: discovery of a collimated jet from the low luminosity protostar IRAS 16253-2429 in a quiescent accretion phase", *Submitted to ApJ Letters*, 2023

4. E. F. van Dishoeck, S. Grant, B. Tabone, *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, T. R. Hunter, **P. Nazari**, and R. J. Smith, "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*, 2023

2. G. M. Williams, C. J. Cyganowski, C. L. Brogan, T. R. Hunter, J. D. Ilee, **P. Nazari**, J. M. D. Kruijssen, R. J. Smith, and I. A. Bonnell, "ALMA observations of the Extended Green Object G19.01-0.03 - I. A Keplerian disc in a massive protostellar system", *MNRAS*, vol. 509, no. 1, pp. 748–762, 2022

1. A. J. Cridland, G. P. Rosotti, B. Tabone, Ł. Tychoniec, M. McClure, **P. Nazari**, and E. F. van Dishoeck, "Early planet formation in embedded protostellar disks. Setting the stage for the first generation of planetesimals", *A&A*, vol. 662, A90, 2022

Teaching and mentoring

- **Teaching Assistant** of 'Astrochemistry' course taught by Prof. Ewine van Dishoeck 2022
  Leiden Observatory
- **Daily supervisor** of a LEAPS student Summer 2021
  Leiden Observatory
- **Daily supervisor** of three MSc students 2020-2022
  Leiden Observatory
- **Teaching Assistant** of 'Star and Planet Formation' course taught by Prof. Ewine van Dishoeck and Dr. Melissa McClure 2020, 2021, 2022
  Leiden Observatory

Selected outreach and service activities

- **Organiser of the NOVA Network II seminars in the Netherlands, 2019-2022**
- **Main author of a CASSIS manual, 2022**

- **ALMA proposal reviewer, 2021-2023**
- **Invited talk at Astronomy on Tap, 2021**
- **Author at She Speaks Science, 2018**

REFERENCES

- **Prof. Ewine van Dishoeck**
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- **Dr. Giovanni Rosotti**
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