

# Tereza Constantinou

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## Education

<b>Institute of Astronomy, University of Cambridge, Trinity College</b> <i>PhD in Astronomy; supervised by Prof. Oliver Shorttle and Dr Paul B. Rimmer</i>	Oct 2022 – Present
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I combine chemical-kinetics, geochemical cycling, thermochemistry, and statistical methods. Within the Solar System, I have constrained Venus's past interior, volcanic outgassing, ancient oceans, and lightning, now extending to its tectonics and carbon cycle compared to Earth's. Beyond, I developed an empirical biosignature framework, am distinguishing lifeless worlds from those shaped by life, and exploring life's influence on habitability. I also collaborate on Venus's atmosphere-surface interactions, and early Earth's atmospheric chemistry.

<b>University of Cambridge, Trinity College</b> <i>Master of Astrophysics (M.Sc.) — 1<sup>st</sup> Class Honours</i>	Oct 2019 – Jun 2020
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- Research Project: “The Atmospheric Chemistry of Venus and Interactions with the Surface”
- Specialisation: Planetary Science, Exoplanets, Computational Modelling, Relativistic Astrophysics

<b>University of Cambridge, Trinity College</b> <i>Bachelor of Natural Sciences (B.A. Hons, M.A.)</i>	Oct 2016 – Jun 2019
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- Courseworks: Research Review (Astrophysics) & Research Project (in Python) — 1<sup>st</sup> Class
- 2<sup>nd</sup> and 3<sup>rd</sup> years: Theoretical Physics, Mathematics
- 1<sup>st</sup> year: Earth Sciences, Mathematics, Physics, Material Science

## Publications

4 first-author (2 published, 1 under review, 1 in press.), 8 co-author (5 published, 2 under review, 1 in press.)

- **Powerful Lightning On Venus Constrained By Atmospheric NO**

**T. Constantinou**, O. Shorttle, P.B. Rimmer  
*Planetary Science Journal* (2025)

- **Prediction of sulphate hazes in the lower Venus atmosphere**

P. Woitke, M. Scherf, C. Helling, P.B. Rimmer, M. Ferus, H. Lammer, ..., **T. Constantinou**  
*Planetary Science Journal* (2025)

- **Did Venus ever have oceans?**

**T. Constantinou**, G. Gillmann, S. Jordan, P.B. Rimmer, A. Rimmer, M. Turbet  
*Chapter to be published in Scrivener-Wiley book*

- **Veil or Shroud: two tales of the atmospheric evolution of Venus**

G. Gillmann, **T. Constantinou**, M. Scherf, H. Lammer, K. Gillmann  
*Chapter to be published in Scrivener-Wiley book*

- **Comparative Biosignatures**

**T. Constantinou**, O. Shorttle, M. Cranmer, P.B. Rimmer  
*MNRAS* (in review)

- **Abiotic Ozone in the Observable Atmospheres of Venus and Venus-like Exoplanets**

R. Calder, O. Shorttle, S. Jordan, P.B. Rimmer, **T. Constantinou**  
*MNRAS* (2025)

- **A dry Venusian interior constrained by atmospheric chemistry**

**T. Constantinou**, O. Shorttle, P.B. Rimmer  
*Nature Astronomy* (2024)

- **Large Interferometer For Exoplanets (LIFE). XIV. Finding terrestrial protoplanets in the galactic neighborhood**

L. Cesario, T. Lichtenberg, E. Alei,..., **T. Constantinou**, the LIFE Collaboration  
*Astronomy & Astrophysics* (2024)

- **Hydroxide Salts in the Clouds of Venus: Their Effect on the Sulfur Cycle and Cloud Droplet pH**  
P.B. Rimmer, S. Jordan, **T. Constantinou**, P. Woitke, O. Shorttle, R. Hobbs, A. Paschodimas  
*The Planetary Science Journal* (2021)
- **Photochemistry of Venus-like Planets Orbiting K- and M-dwarf Stars**  
S. Jordan, P.B. Rimmer, O. Shorttle, **T. Constantinou**  
*The Astrophysical Journal* (2021)

## Awards and funding

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- Travel sponsorship for Breakthrough Discuss Conference (£1200 from Breakthrough Initiatives), 2025
- ‘**Best Presentation Award**’, Leverhulme Centre for Life in the Universe Annual Science Day, 2025
- ‘**Murdin Prize**’, best publication by a Ph.D. student in Astronomy, University of Cambridge, 2024
- Travel funds for VeReDo Kick-Off Meeting (£1200 from VeReDo), 2025
- Travel funds for Life in the Universe II Conference (\$700 from Northeastern University), 2023
- Fee waiver for UK Exoplanet Conference (£200 from conference), 2023
- **STFC Studentship** for study towards a PhD in Cambridge (£85K), 2022-2026
- ‘**Institute of Astronomy Project Prize**’, best master’s research project, 2020

## Talks and Posters

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- **Invited seminar:** “*Defining lifeless worlds with Venus*”  
Geophysical Fluid Dynamics Seminars, ETH Zurich, Switzerland, October 2025
- **Co-hosted seminar:** “*Habitability of Icy Moons*”  
LCLU Coffee Meetings, Cambridge, UK, April 2025
- **Talk:** “*Comparative Biosignatures*” – Best Presentation Award  
LCLU Science Day, Cambridge, UK, March 2025
- **Invited talk:** “*Was Venus Ever Habitable?*”  
VeReDo Kick-off Meeting, Graz, Austria, November 2024
- **Invited Poster:** “*Comparative Biosignatures*”  
Origins Federation, Cambridge, UK, September 2024
- **Invited Seminar:** “*Link Between Geochemistry and Atmospheres*”  
LCLU Coffee Meetings, Cambridge, UK, January 2024
- **Talk:** “*Was Venus Ever Habitable?*”  
Rocky Worlds III, Zurich, Switzerland, January 2024
- **Talk:** “*Was Venus Ever Habitable?*”  
IoA Wednesday Seminar, Cambridge, UK, October 2023
- **Invited Poster:** “*Was Venus Ever Habitable?*”  
Life in the Universe II, Boston, US, September 2023
- **Talk:** “*Was Venus Ever Habitable?*”  
UKEXOM 2023, London, UK, August 2023
- **Talk:** “*Was Venus Ever Habitable?*”  
LCLU Science Day, Cambridge, UK, March 2023
- **Invited talk:** “*Venus as Candidate for Constraining Volcanism and Surface Conditions*”  
RAS Specialist Discussion Meeting: Abiotic baselines in astrobiology, London, UK, January 2023

## Publicity and Outreach

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- **Podcast interview** with BBC World Service - Science in Action about my work on Venus (2024)
- Over 750 international pieces of media coverage for “*A dry Venusian interior constrained by atmospheric chemistry*”; including **The Guardian**, **Reuters**, **Daily Mail**, **Independent**, and **Sky News**.
- **Podcast interview** about my work on Venus with BBC Cambridge’s The Naked Scientists (2024)
- **Youtube interview** with EarthSky about my work on Venus (2024)
- Hosted star-gazing for Public Open Evenings (2022-2023)
- Organised and ran Venus-themed workshop for departmental Public Open Day (>1000 attendees, 2024)

## Teaching

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- ‘Topics in Astrophysics’ Supervisor for Astronomy Part II (2024-2025)
- ‘Reading Group’ Supervisor for the Planetary Science and Life in the Universe MPhil (2024-2025)
- Supervised a summer intern on the formation and composition of Mercury (2023)
- Private tutor for Physics, Maths, and Oxbridge interview prep (2020-present)

## Academic service

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- Co-ran breakout session for Life in the Universe III Conference (2024)
- Co-organised Conference: Leverhulme Centre for Life in the Universe Annual Science Day, Cambridge (2024)
- Reviewed 1 research paper, 1 book proposal (2023-present)
- Wellbeing Advocate, Institute of Astronomy (2022-present)
- Exoplanet Journal Club Organiser, Cambridge (2022-present)
- Work-life balance Focus Group Member, EDI Committee (2022-present)
- International Women’s Day Co-Organiser, Institute of Astronomy (2022-2024)
- Student Representative, Cavendish Laboratory & Institute of Astronomy (through undergrad, masters & PhD)

## Other Work Experience

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**DocMe (BioTech Startup), London, UK**

Jun 2021 – Sep 2021

*Lead ML/AI Engineer*

- Created company management structure, led product roadmap, and managed 4-person ML team.
- Conducted competitor analysis and business plan refinement, resulting in three £10,000 pilot contracts.

*Machine Learning Engineer*

Jan 2021 – Jun 2021

- Designed medical-grade algorithms to measure SpO<sub>2</sub>, heart rate, respiratory rate, and HRV from selfie videos.

**Diverium (VR Tech Startup), London, UK**

Sep 2020 – Dec 2020

*Team Founding Member / Lead Software Engineer*

- Built website and app backend, app frontend.

**Education Partnerships Africa (Charity), Kisii, Kenya**

Jul 2019 – Sep 2019

*Volunteer Project Worker*

- Raised £4,000 for in-situ development work in rural Kenya through online fundraising.
- Led 7 concurrent projects, incl. water collection and purification, hygiene programs, and facility renovations.

**Procter & Gamble (P&G), Newcastle, UK**

Jul 2018 – Sep 2018

*R&D Intern – Product Research*

- Developed and implemented a laboratory method for testing new laundry detergent scents, adopted as a SOP.

**BP Institute for Multiphase Flow, University of Cambridge, UK**

Jun 2017 – Jul 2017

*Geophysics Research Assistant*

- Designed and executed laboratory experiments; analysed results with MATLAB video processing.

## Technical skills

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**Technologies:** Python, Git, Jupyter (advanced); R Fortran, MATLAB, C++(intermediate)**Languages:** English (fluent), Greek (native), French (intermediate)**Licences:** EU Driving License, Open Water Diver; Working towards: ‘Solo’ BGA Gliding Certificate, Small Boat/Zodiacs License