Julia C. Santos

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Education

Leiden University *Leiden, the Netherlands*
PH.D. IN ASTRONOMY *July 2021 - Expected: June 2025*
- Thesis: Unraveling the origin and fate of interstellar ices

São Paulo University *São Paulo, Brazil*
M.SC. IN ASTRONOMY *August 2019 - February 2021*
- Thesis: Methyl acetylene in G331. 512-0.103: Looking at massive star formation through the lens of chemistry

Federal University of Rio de Janeiro *Rio de Janeiro, Brazil*
B.SC. IN CHEMISTRY *August 2017 - July 2019*
- Thesis: Rotational spectrum simulations of astrochemically-relevant asymmetric tops

Publications

FIRST-AUTHOR PAPERS (9)

J. C. Santos, H. Linnartz, K.-J. Chuang. Formation of carbonyl sulfide (OCS) via SH radicals in interstellar CO-rich ice under dense cloud conditions. Submitted to A&A.

J. C. Santos, J. Enrique-Romero, T. Lamberts, H. Linnartz, K.-J. Chuang. Formation of S-bearing complex organic molecules in molecular clouds via ice reactions with C2H2, HS, and atomic H. Accepted in ACS Earth Space Chem.

J. C. Santos, M. L. van Gelder, P. Nazari, A. Ahmadi, E. F. van Dishoeck. SO2 and OCS toward high-mass protostars: A comparative study between ice and gas. Submitted to A&A.

J. C. Santos, H. Linnartz, K.-J. Chuang. Interaction of H2S with H atoms on grain surfaces under molecular cloud conditions. 2023, A&A, 678, A112.

J. C. Santos, K.-J. Chuang, J. G. M. Schrauwen, A. Traspas Muiña, J. Zhang, H. M. Cuppen, B. Redlich, H. Linnartz, S. Ioppolo. Resonant infrared irradiation of CO and CH3OH interstellar ices. 2023, A&A 672, A112.

J. C. Santos, K.-J. Chuang, T. Lamberts, G. Fedoseev, S. Ioppolo, H. Linnartz. Experimental confirmation of a new formation route to CH3OH in interstellar ices: CH3O + H2CO → CH3OH + HCO. 2022, ApJL, 931, L33.

J. C. Santos, F. Fantuzzi, H. M. Quitián-Lara, Y. Martins-Franco, K. Menéndez-Delmestre, H. M. Boechat-Roberty, R. R. Oliveira. Structure and stability of multiply charged naphthalene and its C10H8 isomers: bonding, spectroscopy, and astrophysical implications. 2022, MNRAS, 512, 4669.

J. C. Santos, L. Bronfman, E. Mendoza, J. R. D. Lépine, N. U. Duronea, M. Merello, R. A. Finger. A spectral survey of CH3CCH in the Hot Molecular Core G331.512-0.103. 2022, ApJ, 925, 3.

J. C. Santos, A. B. Rocha, R. R. Oliveira. Rotational spectrum simulations of asymmetric tops in an astrochemical context. 2020, J. Mol. Model., 26, 278.

CONTRIBUTED PAPERS (5)

K. Slavicinska, A. C. A. Boogert, Ł. Tychoniec, E. F. van Dishoeck, M. L. van Gelder, M. G. Navarro, **J. C. Santos**, P. D. Klaassen, P. J. Kavanagh, and K.-J. Chuang. Ammonium hydrosulfide (NH4SH): a potential significant sulfur sink in interstellar ices. Submitted to A&A.

J. Zhang, A. Traspas Muiña, D. V. Mifsud, Z. Kaňuchová, K. Cielinska, P. Herczku, K. K. Rahul, S. T. S. Kovács, R. Rácz, **J. C. Santos**, A. T. Hopkinson, L. Craciunescu, N. C. Jones, S. V. Hoffmann, S. Biri, I. Vajda, I. Rajta, A. Dawes, B. Sivaraman, Z. Juhász, B. Sulik, H. Linnartz, L. Hornekær, F. Fantuzzi, N. J. Mason, S. Ioppolo. A systematic FTIR and VUV spectroscopic investigation of ion, electron, and thermally processed ethanolamine ice. Submitted to MNRAS.

K.-J. Chuang, C. Jäger, **J. C. Santos**, Th. Henning. Formation of N-bearing complex organic molecules in molecular clouds: Ketenimine, acetonitrile, acetaldimine, and vinylamine via the UV photolysis of C_2H_2 ice. 2024, accepted in A&A.

T. Lamberts, G. Fedoseev, M. van Hemert, D. Qasim, K.-J. Chuang, **J. C. Santos**, H. Linnartz. Methane formation in cold regions from carbon atoms and molecular hydrogen. 2022, ApJ, 928, 48.

H. B. A. Cerqueira, **J. C. Santos**, F. Fantuzzi, F. de A. Ribeiro, M. L. M. Rocco, R. R. Oliveira, A. B. Rocha. Structure, stability, and spectroscopic properties of small acetonitrile cation clusters. 2020, J. Phys. Chem. A, 124, 34, 6845 – 6855.

Awards, Scholarships, & Grants

2024	**LUF CWB grant**, for a research stay of five weeks at the Center for Astrophysics, Harvard University, USA
2023	**IAU travel grant**, to attend the 2023 Kavli-IAU Astrochemistry Symposium
2023	**LKBF travel grant**, to attend the 2023 Kavli-IAU Astrochemistry Symposium
2019 - 2021	**Graduate research scholarship**, Academic Excellence Program, Coordenação de Aperfeiçoamento de Pessoa de Nível Superior, Brazil
2019	**First-ranked candidate**, for the M.Sc. program in Astronomy at São Paulo University, Brazil
2019	**EuroPAH travel grant**, to attend the EuroPAH Summer School
2019	**Best research of session**, 10a Semana de Integração Acadêmica, Brazil
2019	**Presentation award**, XX Brazilian Symposium of Theoretical Chemistry, Brazil
2018	**Presentation award**, 9a Semana de Integração Acadêmica, Brazil
2018	**Top 5 undergraduate research projects in the field of natural sciences**, XXII Encontro Latino Americano de Iniciação Científica, Brazil
2017 - 2019	**Undergraduate research scholarship**, Conselho Nacional de Desenvolvimento Científico, Brazil
2017	**Presentation award**, 8a Semana de Integração Acadêmica, Brazil

Mentorship Experience

2024-Pres.	**Kelly Ma**, M.Sc. student, Leiden University. Thesis: Directly testing hot core gas vs ice chemistry: ALMA vs JWST
2023-Pres.	**Iara Tiago**, M.Sc. student, Leiden University. Thesis: Non-thermal desorption of interstellar ices induced by H2 formation: an experimental investigation

Presentations

Invited and Contributed Talks

Seminar at the Astronomy department, Universidade Federal do Rio de Janeiro. 2024, Online - *Invited*

QuantumGrain Workshop. 2024, Barcelona, ES - *Contributed*

InterCat Retreat. 2024, Hella, IS - *Invited*

Seminar at the Astronomy department, Columbia University. 2024, New York, USA - *Invited*

Seminar at the Center for Astrophysics, Harvard University. 2024, Cambridge, USA - *Invited*

Seminar at the Astrochemistry Reading Club, Harvard University. 2024, Cambridge, USA - *Invited*

Seminar at the Chemistry department, Massachusetts Institute of Technology. 2024, Cambridge, USA - *Invited*

Netherlands ALMA+JWST Joint Science Day. 2024, Groningen, NL - *Contributed*

Workshop on Interstellar Catalysis. 2023, Fuglsøcentret, DK - *Invited*

Origins Center Conference. 2023, Groningen, NL - *Contributed*

InterCat Retreat. 2022, Helsingør, DK - *Invited*

NOVA Network II Meeting. 2022, Leiden, NL - *Contributed*

Astrochemistry LLAMA Meeting. 2019, São Paulo, BR - *Contributed*

10a Semana de Integração Acadêmica. 2019, Rio de Janeiro, BR - *Contributed*

9a Semana de Integração Acadêmica. 2018, Rio de Janeiro, BR - *Contributed*

XXII Encontro Latino Americano de Iniciação Científica. 2018, São José dos Campos, BR - *Contributed*

8a Semana de Integração Acadêmica. 2017, Rio de Janeiro, BR - *Contributed*

Poster Presentations

Kavli-IAU Astrochemistry Symposium. 2023, Traverse City, USA

Laboratory Astrophysics: Tracking the Evolution of Cosmic Matter Towards Molecular Complexity. 2022, Les Houches, FR

Niels Bohr Legacy Symposium in Astrochemistry. 2022, Copenhagen, DK

European Conference on Laboratory Astrophysics. 2021, Ana Capri, IT

Annual Meeting of the European Astronomical Society. 2021, Online

Physique et Chimie du Millieu Interstellaire. 2020, Online

XX Brazilian Symposium of Theoretical Chemistry. 2019, João Pessoa, BR

EuroPAH Summer School. 2019, Toulouse, FR

IV Winter School of the Valongo Observatory. 2019, Rio de Janeiro, BR

41st Annual Reunion of the Brazilian Chemical Society. 2018, Foz do Iguaçu, BR

XLI Annual Reunion of the Brazilian Astronomical Society. 2017, São Paulo, BR

Teaching Experience

2023	**Guest lecture, Astrochemistry course**, Bachelors degree in Astronomy, Federal University of Rio de Janeiro, Brazil
2021 - Pres.	**Bachelor Research Project**, Teaching Assistant, Leiden Observatory, Leiden University
2021	**Astrochemistry course**, Invited lecturer, 24th Chemistry Week of the Chemistry Institute, Federal University of Rio de Janeiro, Brazil

Service & Outreach

2023-Pres.	**Reviewer**, ACS Earth and Space Chemistry
2023-Pres.	**Reviewer**, The Astrophysical Journal
2021 - 2024	**Organizer**, Weekly meetings of the Laboratory for Astrophysics group, Leiden University
2023	**Interview about Laboratory Astrophysics**, Brazilian podcast “Café Debug”
2023	**Interview about Laboratory Astrophysics**, Brazilian YouTube channel “Astrotubers”, live broadcast
2021 - 2023	**Organizer**, Biweekly journal club of Leiden Observatory on interstellar ices