

Publication List

- Total: 66 peer-reviewed publications; 16 as the first author; 9 as a second author; 41 as a co-author. All publications are listed in reverse chronological order.
- Total citations >2650. h-index >28. First-author citations >1000.
- Author of 1 book. Three press releases.

First authored papers

16. **Bisbas, T. G.**, Zhang, Z-Y., Kyrmanidou, M. C., et al., 2025, A&A, 697, 115. *Metallicity dependence of the CO-to-H₂ and the [CII]-to-H₂ conversion factors in galaxies.*
15. **Bisbas, T. G.**, Zhang, Z-Y., Gjergeric, E., et al., 2024, MNRAS, 527, 8886. *α -enhanced Astrochemistry: the Carbon cycle in extreme galactic conditions.*
14. **Bisbas, T. G.**, van Dishoeck, E. F., Hu, C-Y, Schrubba, A., 2023, MNRAS, 519, 729. *PDFchem: a new fast method to determine ISM properties and infer environmental parameters using probability distributions.*
13. **Bisbas, T. G.**, Walch, S., Naab T., Lahén, N., Herrera-Camus, R., Stenwandell, U. P., Fotopoulou, C. M., Hu, C-Y., Johansson, P. H., 2022, ApJ, 934, 115. *The Origin of the [CII] Deficit in a Simulated Dwarf Galaxy Merger-driven Starburst.*
12. **Bisbas, T. G.**, Tan, J. C., Tanaka, K.E.I., 2021, MNRAS, 502, 2701. *Photodissociation Region diagnostics across galactic environments.*
11. **Bisbas, T. G.**, Schrubba, A. van Dishoeck, E.F., 2019, MNRAS, 485, 3097. *Simulating the atomic and molecular content of molecular clouds using probability distributions of physical parameters.*
10. **Bisbas, T. G.**, Tan, J. C., Csengeri, T., Wu, B., Lim, W., Caselli, P., Güsten, R., Ricken, O., Riquelme, D., 2018, MNRAS, 478L, 54. *The inception of star cluster formation revealed by [CII] emission around an Infrared Dark Cloud.* [\[NASA/SOFIA Press release\]](#)
9. **Bisbas, T. G.**, Tanaka, K. E. I., Tan, J. C., Wu, B., Nakamura, F., 2017b, ApJ, 850, 23. *GMC Collisions as Triggers of Star Formation. V. Observational Signatures.*
8. **Bisbas, T. G.**, van Dishoeck, E. F., Papadopoulos, P. P., Szűcs, L., Bialy, S., Zhang, Z-Y, 2017a, ApJ, 839, 90. *Cosmic-ray Induced Destruction of CO in Star-forming Galaxies.*
7. **Bisbas, T. G.**, Haworth, T. J., Williams, R. J. R., Mackey, J., Tremblin, P., Raga, A.C., Arthur, S.J., and 12 co-authors, 2015c, MNRAS, 453, 1324. *STARBENCH: the D-type expansion of an HII region.*
6. **Bisbas, T. G.**, Haworth, T. J., Barlow, M. J., Viti, S., Harries, T.J., Bell, T., Yates, J.A., 2015b, MNRAS, 454, 2828. *TORUS-3DPDR: a self-consistent code treating three-dimensional photoionization and photodissociation regions.*
5. **Bisbas, T. G.**, Papadopoulos, P. P., Viti, S. 2015a, ApJ, 803, 37. *Effective Destruction of CO by Cosmic Rays: Implications for Tracing H₂ Gas in the Universe.*
4. **Bisbas, T. G.**, Bell, T. A., Viti, S., Barlow, M.J., Yates, J.A., Vasta, M., 2014, MNRAS, 443, 111. *A photodissociation region study of NGC 4038.*
3. **Bisbas, T. G.**, Bell, T. A., Viti, S., Yates, J., Barlow, M. J. 2012, MNRAS, 427, 2100. *3D-PDR: a new three-dimensional astrochemistry code for treating photodissociation regions.*
2. **Bisbas, T. G.**, Wunsch, R., Whitworth, A. P., Hubber, D. A., Walch, S. 2011, ApJ, 736, 142. *Radiation-driven Implosion and Triggered Star Formation.*

1. **Bisbas, T. G.**, Wunsch, R., Whitworth, A. P., Hubber, D. A. 2009, A&A, 497, 649. *Smoothed particle hydrodynamics simulations of expanding HII regions. I. Numerical method and applications*

Second authored (co-first author) papers

9. Zhu, Z., **Bisbas, T. G.**, Tang, X. et al., 2026, MNRAS, 549, 1. *RAYTHEIA: a high-performance ray-tracing algorithm for three-dimensional direction-dependent equations in astronomical simulations.*
8. Topkaras, T., **Bisbas, T. G.**, Zhang, Z-Y, and Ossenkopf-Okada, V., 2025, A&A, 701, 288. *Tight correlations of star formation with [C_I] and CO lines across cosmic time.*
7. Vermariën, G., **Bisbas, T. G.**, Viti, S., Zhao, Y., et al., MLS&T, Volume 6, Issue 2, 19 pp. (id.025069). *NeuralPDR: Neural Differential Equations as surrogate models for Photodissociation Regions.*
6. Luo, G., **Bisbas, T. G.**, Padovani, M., Gaches, B.A.L., 2024, A&A, 690, 293. *A new analytics approach to infer the cosmic-ray ionization rate in hot molecular cores from HCO⁺, N₂H⁺, and CO observations.*
5. Gaches, B. A. L., **Bisbas, T. G.**, Bialy, S., A&A, 658, 151. *The Impact of Cosmic-Ray Attenuation on the Carbon Cycle Emission in Molecular Clouds.*
4. Williams, R. J. R., **Bisbas, T. G.**, Haworth, T. J., Mackey, J., 2018, MNRAS, 479, 2016. *The classical D-type expansion of spherical HII regions.*
3. Papadopoulos, P. P., **Bisbas, T. G.**, Zhang Z-Y., 2018, MNRAS, 478, 1716. *New places and phases of CO-poor/CI-rich molecular gas in the Universe.*
2. Offner, S. S. R., **Bisbas, T. G.**, Bell, T. A., Viti, S. 2014, MNRAS, 440, L81. *An alternative accurate tracer of molecular clouds: the 'XCI-factor'.*
1. Offner, S. S. R., **Bisbas, T. G.**, Viti, S., Bell, T. A. 2013, ApJ, 770, 49. *Modeling the Atomic-to-molecular Transition and Chemical Distributions of Turbulent Star-forming Clouds.*

Co-authored papers

41. Oakey, P., Yang, Y-L, Tan, J. C., **Bisbas, T. G.**, et al., 2026, ApJ, 1003, 26. *The SOMA Atomic Outflow Survey. I. An Atomic OI and Highly Ionized OIII Outflow from Massive Protostar G11.94-00.62.*
40. Xia, K., Tang, N., **Bisbas, T. G.**, Wang, C., et al., Science China (Physics, Mechanics & Astronomy) *in press. Large scale mapping of CI and the CI-to-CO transition in ρ Ophiuchus molecular cloud.*
39. Bialy, S., Chemke, A., Neufeld, D. A., ..., **Bisbas, T. G.**, et al., 2026, NatAs., *in press. Direct detection of cosmic-ray-excited H₂ in interstellar space.* (arXiv:2508.20168)
38. Neufeld, D. A., Silsbee, K, Ivlev, A. V., ..., **Bisbas, T. G.**, et al., 2026, ApJ, 998, 71. *JWST observations of cosmic-ray-excited H₂ in Barnard 68: spatial variations and constraints on cosmic-ray attenuation*
37. Ghodsi, L., Kuhn, L., Man, A. W. S., ..., **Bisbas, T. G.**, et al., 2026, ApJ, 996, 86. *Warm and cold molecular gas in the cluster center of MACS 1931-26 with JWST and ALMA.*
36. Harrington, K. C., Vishwas, A., Man, A. W. S., ..., **Bisbas, T. G.**, 2025, A&A, 701, 298, *Extended multi-phase gas reservoirs in the $z = 4.3$ protocluster SPT2349-56: non- ionisation sources?*
35. Lin, L., Zhang, Z-Y., Wang, J., ..., **Bisbas, T. G.**, et al., 2025, NatAs, 9, 406. *Inadequate turbulent support in low-metallicity molecular clouds*
34. Lin, L., Lelli, F., De Breuck, C., Man, A., Zhang, Z-Y., ..., **Bisbas, T. G.**, Huang, H-T, Lehnert, M., 2024, A&A, 693, 91. *Gas dynamics in an AGN-host galaxy at $z \simeq 2.6$: regular rotation, non-circular motions, and mass models*

33. Huang, G-T., Man, A. W. S., Lelli, F., De Breuck, C., ..., **Bisbas, T. G.**, Nsvadba, N. P. H., 2024, ApJ, 977, 251. *Molecular gas mass measurements of an active, starburst galaxy at $z \sim 2.6$ using ALMA observations of the [C_I], CO and dust emission*
32. Zhao, Y., Liu, J., Zhang, Z-Y, **Bisbas, T. G.**, 2024, ApJ, 977, 46. *Ionized Carbon in Galaxies: The [C_{II}] 158 μ m Line as a Total Molecular Gas Mass Tracer Revisited*
31. Ebagezio, S., Seifried, D., Walch, S., **Bisbas, T. G.**, 2024, A&A, 692, 58. *The origin and evolution of the [C_{II}]-deficit in H_{II} regions and star-forming molecular clouds*
30. Obolentseva, M., Ivlev, A. V., Silsbee, K., Neufeld, D. A., ..., **Bisbas, T. G.**, Lomeli, D., 2024, ApJ, 973, 142. *Re-evaluation of the Cosmic-Ray Ionization Rate in Diffuse Clouds*
29. Gan, L., Colzi, L., Liu, T., **Bisbas, T. G.**, Li, D., Sun, Y., Tang, N., 2024, A&A, 690, 372. *A new measurement of the Galactic ¹²C/¹³C gradient from sensitive HCO⁺ absorption observations*
28. Nannan, Y., Wang, L., **Bisbas, T. G.**, Quan, D., Li, D., 2024, ApJ, 973, 37. *Turbulent Diffuse Molecular Media with Nonideal Magnetohydrodynamics and Consistent Thermochemistry: Numerical Simulations and Dynamic Characteristics*
27. Ghodsi, L., Zhou, J., Andreani, P., De Breuck, C., ... **Bisbas, T. G.**, et al., 2024, A&A, 689, 67. *Molecular gas excitation in the circumgalactic medium of MACS1931-26*
26. Dasyra, K., Paraschos, G. F., Combes, F., Patapis P., Helou, G., ... **Bisbas, T. G.**, et al., 2024, ApJ, 977, 156. *A case study of gas impacted by black-hole jets with the JWST: outflows, bow shocks, and high excitation of the gas in the galaxy IC5063.*
25. Luo, G, Li, D., Zhang, Z-Y, **Bisbas, T. G.** et al., 2024, A&A, 685, 12. *The CO-dark molecular gas in the cold H_I arc.*
24. Yang, C., Omont, A., Martín, S., **Bisbas, T. G.**, et al., 2023, A&A, 680, 95. *SUNRISE: The rich molecular inventory of high-redshift dusty galaxies revealed by broadband spectral line surveys.* [\[Press release\]](#)
23. Luo, G., Zhang, Z-Y., **Bisbas, T. G.**, Li, D., Zhou, P., et al., 2023, ApJ, 946, 91. *Abundance ratios of OH/CO and HCO⁺/CO as probes of the cosmic ray ionization rate in diffuse clouds.*
22. Lelli F., Zhang, Z-Y., **Bisbas, T. G.**, Lin, L., Papadopoulos P., et al., 2023, A&A, 672, 106. *Cold gas disks in main-sequence galaxies at cosmic noon: Low turbulence, flat rotation curves, and disk-halo degeneracy.*
21. Luo, G., Zhang, Z-Y., **Bisbas, T. G.**, Li, Di, Tang, N., Wang, J., et al., 2023, ApJ, 942, 101. *Dependence of Chemical Abundance on the Cosmic Ray Ionization Rate in IC 348.*
20. Dasyra, K.M., Paraschos, G.F., **Bisbas, T.G.**, Combes F., Fernandez-Ontiveros, J.A., Nature Astronomy. DOI 10.1038/s41550-022-01725-9. *Insights into the collapse and expansion of molecular clouds in outflows from observable pressure gradients.* [\[Nature Astronomy blog, press release\]](#)
19. Gaches, B. A. L., Bialy, S., **Bisbas, T.G.**, Padovani, M., Seifried, D; Walch, S., A&A, 664, 150. *Cosmic-ray-induced H₂ line emission: Astrochemical modeling and implications for JWST observations.*
18. Lim, W., Fumitaka, N., Wu, B., **Bisbas, T.G.**, et al., 2021, PASJ, 73, 239. *Star Cluster Formation in Orion A.*
17. Seifried, D., Haid, S., Walch, S., Borchert, E. M., **Bisbas, T. G.**, 2020, MNRAS, 492, 1465. *SILCC-Zoom: H₂ and CO-dark gas in molecular clouds – The impact of feedback and magnetic fields*
16. Gaches, B. A. L., Offner, S. S. R., **Bisbas, T.G.**, 2019, ApJ, 883, 190. *The Astrochemical Impact of Cosmic Rays in Protoclusters II: C_I-to-H₂ and CO-to-H₂ conversion factors*

15. Gaches, Brandt A. L.; Offner, Stella S. R.; **Bisbas, Thomas G.**, 2019, ApJ, 878, 105. *The Astrochemical Impact of Cosmic Rays in Protoclusters. I. Molecular Cloud Chemistry*
14. Banerji, M., Jones, G. C., Wagg, J., Carilli, C. L., **Bisbas, T. G.**, Hewett, P. C., 2018, MNRAS, 479, 1154. *The Interstellar Medium Properties of Heavily Reddened Quasars & Companions at $z \sim 2.5$ with ALMA & JVLA.*
13. Haworth, T. J., Glover S. C. O., Koepferl, C. M., **Bisbas, T. G.**, Dale, J. E., 2018, New Astronomy Reviews, 82, 1. *Synthetic Observations of star formation and the interstellar medium* [[Invited review article](#)].
12. Li, Q., Tan, J. C., Christie, D., **Bisbas, T. G.**, Wu, B., 2017, PASJ, 70, 56. *The Interstellar Medium and Star Formation of Galactic Disks. I. ISM and GMC properties with Diffuse FUV and Cosmic Ray Backgrounds.*
11. Bothwell, M. S., Aguirre, J. E., Aravena, M., Bethermin, M., **Bisbas, T. G.**, et al., 2017, MNRAS, 466, 2825. *ALMA observations of atomic carbon in $z \sim 4$ dusty star-forming galaxies.*
10. Accurso, G., Saintonge, A., **Bisbas, T. G.**, Viti, S., 2017, MNRAS, 464, 3315. *Radiative transfer meets Bayesian statistics: where does a galaxy's [CII] emission come from?.*
9. Haworth, T. J., Boubert, D., Facchini, S., **Bisbas, T. G.**, Clarke, C. J., 2016, MNRAS, 463, 3616. *Photochemical-dynamical models of externally FUV irradiated protoplanetary discs.*
8. Krips, M., Martín, S., Sakamoto, K., Aalto, S., **Bisbas, T.G.**, et al., 2016, A&A, 592, L3. *ACA [CI] observations of the starburst galaxy NGC 253.*
7. Facchini, S., Clarke, C. J., **Bisbas, T. G.** 2016, MNRAS, 457, 3593. *External photoevaporation of protoplanetary discs in sparse stellar groups: the impact of dust growth.*
6. Haworth, T. J., Harries, T. J., Acreman, D. M., **Bisbas, T. G.** 2015, MNRAS, 453, 2277. *On the relative importance of different microphysics on the D-type expansion of galactic HII regions.*
5. Walch, S., Whitworth, A. P., **Bisbas, T. G.**, Hubber, D. A., Wünsch, R. 2015, MNRAS, 452, 2794. *Comparing simulations of ionization triggered star formation and observations in RCW 120.*
4. Gaches, B. A. L., Offner, S. S. R., Rosolowsky, E. W., **Bisbas, T. G.** 2015, ApJ, 799, 235. *Astrochemical Correlations in Molecular Clouds.*
3. Walch, S., Whitworth, A. P., **Bisbas, T. G.**, Wünsch, R., Hubber, D. A. 2013, MNRAS, 435, 917. *Clumps and triggered star formation in ionized molecular clouds.*
2. Walch, S. K., Whitworth, A. P., **Bisbas, T.**, Wünsch, R., Hubber, D. 2012, MNRAS, 427, 625. *Dispersal of molecular clouds by ionizing radiation.*
1. Stamatellos, D., Whitworth, A. P., **Bisbas, T.G.**, Goodwin, S. 2007, A&A, 475, 37. *Radiative transfer and the energy equation in SPH simulations of star formation.*

Books

1. **Bisbas, Thomas G.** "The Interstellar Medium, Expanding Nebulae and Triggered Star Formation. Theory and Simulations". Springer (Briefs in Astronomy Series). ISBN 978-3-319-26142-3. Total downloads: >3,000 (combined activity).

Press releases (clickable titles)

3. December 14, 2023. *Unexpected chemistry reveals cosmic star factories' secrets.*
2. July 21, 2022. *Supermassive Blackhole influences Star Formation.*
1. November 6, 2018. *Cosmic Collisions: Unraveling Mysterious Formation of Stars.*