

Publication List

Publications

Summary: >45 refereed papers, >1300 citations, h-index = 22

Top 5 peer-reviewed publications:

1. **Semenov D.**, Henning Th., Ilgner M., Helling Ch., Sedlmayr E. (2003), Opacities in protoplanetary discs, *A&A*, 410, 611 (cit. 192)
2. **Semenov D.**, Wiebe D., Henning Th. (2004), Reduction of chemical networks. II. Fractional ionisation in protostellar discs, *A&A*, 417, 93 (cit. 94)
3. **Semenov, D.**, Hersant, F., Wakelam, V., Dutrey, A., Chapillon, E., Guilloteau, St., Henning, Th., Launhardt, R., Piétu, V., Schreyer, K. (2010), Chemistry in disks. IV. Benchmarking gas-grain chemical models with surface reactions, *A&A*, 522, 42 (cit. 66)
4. **Semenov D.**, Wiebe D., Henning Th. (2006), Gas-Phase CO in Protoplanetary Disks: A Challenge for Turbulent Mixing, *ApJ*, 647, 57 (cit. 53)
5. **Semenov, D.**, Wiebe, D. (2011), Chemical evolution of turbulent protoplanetary disks and the Solar nebula, *ApJS*, 196, 25 (cit. 36)

Important peer-refereed publications (first to third author):

1. Voshchinnikov, N., **Semenov D.**, Henning Th. (1999), The temperature of non-spherical interstellar grains, *A&A*, 349, 25
2. Voshchinnikov, N., **Semenov D.** (2000), The Temperature of Non-spherical Circumstellar Dust Grains, *Astronomy Letters*, 26, 679
3. **Semenov D.**, Henning Th., Ilgner M., Helling Ch., Sedlmayr E. (2003), Opacities in protoplanetary discs, *A&A*, 410, 611
4. Wiebe D., **Semenov D.**, Henning Th. (2003), Reduction of chemical networks. I. The case of molecular clouds, *A&A*, 399, 197
5. **Semenov D.**, Wiebe D., Henning Th. (2004), Reduction of chemical networks. II. Fractional ionisation in protostellar discs, *A&A*, 417, 93
6. **Semenov D.**, Pavluchenkov, Y., Schreyer, K., Henning, Th., K. Dullemond, A. Bacmann (2005), Millimeter observations and modeling of the AB Aurigae system, *ApJ*, 621, 851
7. Schreyer, K., **Semenov, D.**, Henning, Th., Forbrich, J. (2006), A Rotating Disk around the Very Young Massive Star AFGL 490, *ApJL*, 637, 129
8. **Semenov D.**, Wiebe D., Henning Th. (2006), Gas-Phase CO in Protoplanetary Disks: A Challenge for Turbulent Mixing, *ApJ*, 647, 57

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9. Pavlyuchenkov, Ya., **Semenov, D.**, Henning, Th., Guilloteau, St., Piétu, V., Launhardt, R., Dutrey, A. (2007), Molecular Line Radiative Transfer in Protoplanetary Disks: Monte Carlo Simulations versus Approximate Methods, *ApJ*, 669, 1262
10. Vasyunin, A. I., **Semenov, D.**, Henning, Th., Wakelam, V., Herbst, E., Sobolev, A. M. (2008), Chemistry in Protoplanetary Disks: A Sensitivity Analysis, *ApJ*, 672, 629
11. **Semenov, D.**, Pavlyuchenkov, Ya., Henning, Th., Wolf, S., Launhardt, R. (2008), Chemical and Thermal Structure of Protoplanetary Disks as Observed with ALMA, *ApJL*, 673, 195
12. Beuther, H., **Semenov, D.**, Henning, Th., Linz, H. (2008), Ethynyl (C₂H) in Massive Star formation: Tracing the Initial Conditions?, *ApJL*, 675, 33
13. Wiebe, D. S., **Semenov, D. A.**, Henning, T. (2008), Molecular structure of brown-dwarf disks, *Astronomy Reports*, 52, 941
14. Schreyer, K., Guilloteau, S., **Semenov, D.**, Bacmann, A., Chapillon, E., Dutrey, A., Gueth, F., Henning, T., Hersant, F., Launhardt, R., and 2 coauthors. (2008), Chemistry in disks. II. Poor molecular content of the AB Aurigae disk, *A&A*, 491, 821
15. Vasyunin, A. I., **Semenov, D. A.**, Wiebe, D. S., Henning, Th. (2009), A Unified Monte Carlo Treatment of Gas-Grain Chemistry for Large Reaction Networks. I. Testing Validity of Rate Equations in Molecular Clouds, *ApJ*, 691, 1459
16. Garrod, R. T., Vasyunin, A. I., **Semenov, D. A.**, Wiebe, D. S., Henning, Th. (2009), A New Modified-Rate Approach For Gas-Grain Chemistry: Comparison with a Unified Large-Scale Monte Carlo Simulation, *ApJ*, 700, 43
17. Henning, Th., **Semenov, D.**, Guilloteau, St., Dutrey, A., Hersant, F., Wakelam, V., Chappillon, E., Launhardt, R., Pietu, V., and Schreyer, K. (2010), Chemistry in Disks. III. - Photochemistry and X-ray driven chemistry probed by the ethynyl radical (CCH) in DM Tau, LkCa 15, and MWC 480, *ApJ*, 714, 1511
18. **Semenov, D.**, Hersant, F., Wakelam, V., Dutrey, A., Chapillon, E., Guilloteau, St., Henning, Th., Launhardt, R., Piétu, V., Schreyer, K. (2010), Chemistry in disks. IV. Benchmarking gas-grain chemical models with surface reactions, *A&A*, 522, 42 (cit. 20)
19. **Semenov, D.**, Wiebe, D. (2011), Chemical evolution of turbulent protoplanetary disks and the Solar nebula, *ApJS*, 196, 25
20. Albertsson, T., **Semenov, D.**, Vasyunin, A., Henning, Th., Herbst, E. (2012), New extended deuterium fractionation model: assessment at dark ism conditions and sensitivity analysis, *ApJS*, 207, 27
21. Lippok, N., Launhardt, R., **Semenov, D.** et al. (2013), Gas-phase CO depletion and N₂H⁺ abundances in starless cores, *A&A*, 560, 41

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22. Gerner, T., Beuther, H., **Semenov, D.**, Linz, H., Vasyunina, T., Bihr, S., Shirley, Y. L., Henning, Th. (2014), Chemical evolution in the early phases of massive star formation. I, *A&A*, 563, 97
23. Albertsson, T., **Semenov, D.**, Henning, Th.. (2014), Chemodynamical Deuterium Fractionation in the Early Solar Nebula: The Origin of Water on Earth and in Asteroids and Comets, *ApJ*, 784, 39
24. Kazmierczak-Barthel, M.; **Semenov, D.**; van der Tak, F.; Chavarría, L.; van der Wiel, M. (2014), The HIFI spectral survey of AFGL 2591 (CHESS). III. Chemical structure of the protostellar envelope, *A&A*, 574, 71
25. Teague, R.; Semenov, D.; Guilloteau, St.; Henning, Th.; Dutrey, A.; Wakelam, V.; Chapillon, E.; Pietu, V. (2015), Chemistry in Disks. IX. Observations and modeling of HCO⁺ and DCO⁺ in DM Tau, *A&A*, 574, 137

Most important review articles (first to third author):

1. **Semenov, D.**, Chakraborty, S., and Thiemens, M. (2009), Chemical and Isotopic Evolution of the Solar Nebula and Protoplanetary Disks, in book: Protoplanetary Dust by Cambridge University Press, eds. D. Apai & D. Lauretta
2. **Semenov, D.** (2011), Chemistry in Protoplanetary Disks, in book: Encyclopedia of Astrobiology by Springer, eds. Gargaud, M., Cernicharo, J., Viso, M., Cleaves II, H.J., Pinti, D., Amils, R., Kobayashi, K., Irvine, W.M. (arXiv:1011.4770)
3. Henning, Th., **Semenov, D.** (2013), Chemistry in Protoplanetary Disks, in a special issue „Astrochemistry“ of Chem. Reviews, 113, 9016 (arXiv:1310.3151)
4. Dutrey, A., **Semenov, D.**, Chapillon, E. et al. (2013), Physical and chemical structure of planet-forming disks probed by millimeter observations and modeling, in book: Protostars & Planets VI, Edited by H. Beuther, R. Klessen, C. Dullemond, Th. Henning. Published by the University of Arizona Press (arXiv:1402.3503)

Important conference proceedings and invited papers (first to third author):

1. **Semenov, D.**, Wiebe, D., Henning, Th. (2003), Reducing and Analyzing Chemical Networks, in: Proceedings of the conference: 'The interaction of stars with their environment II.', Eötvös Loránd University, Budapest, Hungary, eds. Cs. Kiss, M. Kun, V. Könyves, p. 59-66
2. **Semenov D.**, Pavluchenkov Y., Henning Th., Herbst E., van Dishoeck, E. (2004), On the feasibility of the disk chemical modeling, in: Baltic Astronomy XIII, eds. V. Straizys, J. Eisloffel, & M. Kun, 454
3. **Semenov, D.**, Wiebe, D., Henning, T. H. (2007), Chemical evolution of turbulent protoplanetary disks, in: "Molecules in Space and Laboratory", eds. J.L. Lemaire, F. Combes

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4. Pavlyuchenkov, Ya., **Semenov, D.**, Henning, Th., Guilloteau, St., Piétu, V., Launhardt, R., Dutrey, A. (2007), Molecular line radiative transfer in protoplanetary disks, in: "Molecules in Space and Laboratory", eds. J.L. Lemaire, F. Combes
5. Vasyunin, A. I., **Semenov, D. A.**, Henning, Th., Wakelam, V., Herbst, E., Sobolev, A. M. (2007), Molecular line radiative transfer in protoplanetary disks in: "Molecules in Space and Laboratory", eds. J.L. Lemaire, F. Combes
6. **Semenov, D.** (2011), Chemical evolution of a protoplanetary disk, IAU Symposium 280 "Molecular Universe", Volume 280, p. 114-126 (arXiv:1107.4513)