

Ian Sims: Publications and Presentations (October 2022)

Publications

Refereed Journal articles¹⁻⁹³

1. A. D. Schutzer, P. R. Rivera-Ortiz, B. Lefloch, A. Gusdorf, C. Favre, D. Segura-Cox, A. Lopez-Sepulcre, R. Neri, J. Ospina-Zamudio, M. De Simone, C. Codella, S. Viti, L. Podio, J. Pineda, R. O'Donoghue, C. Ceccarelli, P. Caselli, F. Alves, R. Bachiller, N. Balucani, E. Bianchi, L. Bizzocchi, S. Bottinelli, E. Caux, A. Chacon-Tanarro, F. Dulieu, J. Enrique-Romero, F. Fontani, S. Feng, J. Holdship, I. Jimenez-Serra, A. J. Al-Edhari, C. Kahane, V. Lattanzi, Y. Oya, A. Punanova, A. Rimola, N. Sakai, S. Spezzano, I. R. Sims, V. Taquet, L. Testi, P. Theule, P. Ugliengo, C. Vastel, A. I. Vasyunin, F. Vazart, S. Yamamoto, and A. Witzel, *SOLIS XVI. Mass ejection and time variability in protostellar outflows: Cep E*, *Astron Astrophys* **662**, 13, A104 (2022). <https://doi.org/10.1051/0004-6361/202142931>
2. H. Labiad, M. Fournier, L. A. Mertens, A. Faure, D. Carty, T. Stoecklin, P. Jankowski, K. Szalewicz, S. D. Le Picard, and I. R. Sims, *Absolute measurements of state-to-state rotational energy transfer between CO and H-2 at interstellar temperatures*, *Phys. Rev. A* **105**, 6, L020802 (2022). <https://doi.org/10.1103/PhysRevA.105.L020802>
3. B. M. Hays, D. Gupta, T. Guillaume, O. A. Khedaoui, I. R. Cooke, F. Thibault, F. Lique, and I. R. Sims, *Collisional excitation of HNC by He found to be stronger than for structural isomer HCN in experiments at the low temperatures of interstellar space*, *Nature Chemistry* **14**, 811-815 (2022). <https://doi.org/10.1038/s41557-022-00936-x>
4. O. Durif, M. Capron, J. P. Messinger, A. Benidar, L. Biennier, J. Bourgalais, A. Canosa, J. Courbe, G. A. Garcia, J. F. Gil, L. Nahon, M. Okumura, L. Rutkowski, I. R. Sims, J. Thiévin, and S. D. Le Picard, *A new instrument for kinetics and branching ratio studies of gas phase collisional processes at very low temperatures*, *Rev. Sci. Instrum.* **92**, 014102 (2021). <https://doi.org/10.1063/5.0029991>
5. V. Taquet, C. Codella, M. De Simone, A. Lopez-Sepulcre, J. E. Pineda, D. Segura-Cox, C. Ceccarelli, P. Caselli, A. Gusdorf, M. V. Persson, F. Alves, E. Caux, C. Favre, F. Fontani, R. Neri, Y. Oya, N. Sakai, C. Vastel, S. Yamamoto, R. Bachiller, N. Balucani, E. Bianchi, L. Bizzocchi, A. Chacon-Tanarro, F. Dulieu, J. Enrique-Romero, S. Feng, J. Holdship, B. Lefloch, A. J. Al-Edhari, I. Jimenez-Serra, C. Kahane, V. Lattanzi, J. Ospina-Zamudio, L. Podio, A. Punanova, A. Rimola, I. R. Sims, S. Spezzano, L. Testi, P. Theule, P. Ugliengo, A. I. Vasyunin, F. Vazart, S. Viti, and A. Witzel, *Seeds of Life in Space (SOLIS) VI. Chemical evolution of sulfuretted species along the outflows driven by the low-mass protostellar binary NGC1333-IRAS4A*, *Astron Astrophys* **637**, 20, A63 (2020). <https://doi.org/10.1051/0004-6361/201937072>
6. J. Messinger, D. Gupta, I. R. Cooke, M. Okumura, and I. R. Sims, *Rate Constants of the CN + Toluene Reaction from 15 – 294 K and Interstellar Implications*, *J. Phys. Chem. A* **124**, 7950-7958 (2020). <https://doi.org/10.1021/acs.jpca.0c06900>
7. T. S. Hearne, O. Abdelkader Khedaoui, B. M. Hays, T. Guillaume, and I. R. Sims, *A novel Ka-band chirped-pulse spectrometer used in the determination of pressure broadening coefficients of astrochemical molecules*, *J. Chem. Phys.* **153**, 084201 (2020). <https://doi.org/10.1063/5.0017978>
8. B. M. Hays, T. Guillaume, T. S. Hearne, I. R. Cooke, D. Gupta, O. Abdelkader Khedaoui, S. D. Le Picard, and I. R. Sims, *Design and performance of an E-band chirped pulse spectrometer for kinetics applications: OCS – He pressure broadening*, *J. Quant. Spectrosc. Radiat. Transfer* **250**, 107001 (2020). <https://doi.org/https://doi.org/10.1016/j.jqsrt.2020.107001>
9. C. Favre, C. Vastel, I. Jimenez-Serra, D. Quenard, P. Caselli, C. Ceccarelli, A. Chacon-Tanarro, F. Fontani, J. Holdship, Y. Oya, A. Punanova, N. Sakai, S. Spezzano, S. Yamamoto, R. Neri, A. Lopez-Sepulcre, F. Alves, R. Bachiller, N. Balucani, E. Bianchi, L. Bizzocchi, C. Codella, E. Caux, M. De Simone, J. E. Romero, F. Dulieu, S. Feng, A. J. Al-Edhari, B. Lefloch, J. Ospina-Zamudio, J. Pineda, L. Podio, A. Rimola, D. Segura-Cox, I. R. Sims, V. Taquet, L. Testi, P. Theule, P. Ugliengo, A. I. Vasyunin, F. Vazart, S. Viti, and A. Witzel, *Seeds of Life in Space (SOLIS): VII. Discovery of a cold dense methanol blob toward the L1521F VeLLO system*, *Astron Astrophys* **635**, 11, A189 (2020). <https://doi.org/10.1051/0004-6361/201937297>
10. I. R. Cooke, D. Gupta, J. P. Messinger, and I. R. Sims, *Benzonitrile as a Proxy for Benzene in the Cold ISM: Low-temperature Rate Coefficients for CN + C₆H₆*, *Astrophys. J. Lett.* **891**, L41 (2020). <https://doi.org/10.3847/2041-8213/ab7a9c>
11. D. Gupta, S. Cheikh Sid Ely, I. R. Cooke, T. Guillaume, O. Abdelkader Khedaoui, T. S. Hearne, B. M. Hays, and I. R. Sims, *Low Temperature Kinetics of the Reaction Between Methanol and the CN Radical*, *J. Phys. Chem. A* **123**, 9995-10003 (2019). <https://doi.org/10.1021/acs.jpca.9b08472>
12. I. R. Cooke and I. R. Sims, *Experimental Studies of Gas-Phase Reactivity in Relation to Complex Organic Molecules in Star-Forming Regions*, *ACS Earth Space Chem.* **3**, 1109-1134 (2019). <https://doi.org/10.1021/acsearthspacechem.9b00064>
13. A. Punanova, P. Caselli, S. Feng, A. Chacón-Tanarro, C. Ceccarelli, R. Neri, F. Fontani, I. Jiménez-Serra, C. Vastel, L. Bizzocchi, A. Pon, A. I. Vasyunin, S. Spezzano, P. Hily-Blant, L. Testi, S. Viti, S. Yamamoto, F. Alves, R. Bachiller, N. Balucani, E. Bianchi, S. Bottinelli, E. Caux, R. Choudhury, C. Codella, F. Dulieu, C. Favre, J. Holdship, A. J. Al-Edhari,

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14. C. Favre, C. Ceccarelli, A. Lopez-Sepulcre, F. Fontani, R. Neri, S. Manigand, M. Kama, P. Caselli, A. J. Al-Edhari, C. Kahane, F. Alves, N. Balucani, E. Bianchi, E. Caux, C. Codella, F. Dulieu, J. E. Pineda, I. R. Sims, and P. Theule, *SOLIS IV. Hydrocarbons in the OMC-2 FIR4 Region, a Probe of Energetic Particle Irradiation of the Region*, *Astrophys. J.* **859**, 12, 136 (2018). <https://doi.org/10.3847/1538-4357/aabfd4>
 15. L. A. Mertens, H. Labiad, O. Denis-Alpizar, M. Fournier, D. Carty, S. D. Le Picard, T. Stoecklin, and I. R. Sims, *Rotational energy transfer in collisions between CO and Ar at temperatures from 293 to 30 K*, *Chem. Phys. Lett.* **683**, 521-528 (2017). <https://doi.org/10.1016/j.cplett.2017.05.052>
 16. F. Fontani, C. Ceccarelli, C. Favre, P. Caselli, R. Neri, I. R. Sims, C. Kahane, F. O. Alves, N. Balucani, E. Bianchi, E. Caux, A. J. Al-Edhari, A. Lopez-Sepulcre, J. E. Pineda, R. Bachiller, L. Bizzocchi, S. Bottinelli, A. Chacon-Tanarro, R. Choudhury, C. Codella, A. Coutens, F. Dulieu, S. Feng, A. Rimola, P. Hily-Blant, J. Holdship, I. Jimenez-Serra, J. Laas, B. Lefloch, Y. Oya, L. Podio, A. Pon, A. Punanova, D. Quenard, N. Sakai, S. Spezzano, V. Taquet, L. Testi, P. Theule, P. Ugliengo, C. Vastel, A. I. Vasyunin, S. Viti, S. Yamamoto, and L. Wiesenfeld, *Seeds of Life in Space (SOLIS) I. Carbon-chain growth in the Solar-type protocluster OMC2-FIR4*, *Astron Astrophys* **605**, 11, A57 (2017). <https://doi.org/10.1051/0004-6361/201730527>
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96. B. R. Rowe, I. R. Sims, P. Bocherel, and I. W. M. Smith, In Molecules and Grains in Space, Mont-St-Odile, France, 1993; I. Nenner, Ed. (AIP, 1994).

Edited Books and Book Sections⁹⁷⁻¹⁰²

97. I. R. Cooke and I. R. Sims, *Collisional Energy Transfer in Uniform Supersonic Flows*, in *Uniform Supersonic Flows in Chemical Physics: Chemistry Close to Absolute Zero Studied Using the CRESU Method*, A. Canosa, D. E. Heard, and B. R. Rowe, eds. (World Scientific, 2022), pp. 393-434. https://doi.org/10.1142/9781800610996_0007
98. M. Fournier, S. D. Le Picard, and I. R. Sims, *CHAPTER 1 Low-temperature Chemistry in Uniform Supersonic Flows*, in *Cold Chemistry: Molecular Scattering and Reactivity Near Absolute Zero* (The Royal Society of Chemistry, 2018), pp. 1-45. <https://doi.org/10.1039/9781782626800-00001>
99. I. R. Sims, ed., *Chemistry of the Planets*, Faraday Discuss. (RSC Publishing, Cambridge, 2010), Vol. 147, 572 pages.
100. A. Canosa, F. Goulay, I. R. Sims, and B. R. Rowe, *Gas Phase Reactive Collisions at Very Low Temperature: Recent Experimental Advances and Perspectives*, in *Low Temperatures and Cold Molecules*, I. W. M. Smith, ed. (World Scientific, Singapore, 2008), pp. 55-120. https://doi.org/10.1142/9781848162105_0002
101. I. R. Sims, ed., *Chemical Evolution in the Universe*, Faraday Discuss. (RSC Publishing, Cambridge, 2006), Vol. 133, 468 pages.
102. I. W. M. Smith, B. R. Rowe, and I. R. Sims, *Kinetics at Ultra-Low Temperatures: Non-Arrhenius Behaviour and Applications to the Chemistry of Interstellar Clouds*, in *Gas Phase Chemical Reaction Systems*, J. Wolfrum, H.-R. Volpp, R. Rannacher, and J. Warnatz, eds. (Springer-Verlag, Berlin/Heidelberg, 1996), pp. 190-200.

Invited Lectures and Seminars

Date	Event	Title of Lecture
1. 3-5 April 2023	RSC Faraday joint interest group conference 2023, Sheffield, UK (Plenary)	<i>Provisional title: Recent advances in experimental gas kinetics for astrochemistry</i>
2. 24-28 October 2022	Biennial conference of the National Program "Physics and Chemistry of the Interstellar Medium" (PCMI), École Normale Supérieure, Paris, France	<i>Experimental studies of gas phase molecular collisions for astrochemical and astrophysical applications</i>
3. 3-8 July 2022	36th Symposium on Free Radicals (FRS) at the AlbaNova University Center, Stockholm University, Stockholm, Sweden.	<i>Experimental investigation of collisional processes at low temperatures for astrochemistry</i>
4. 13-16 June 2022	Workshop on Collisional excitation of (reactive) astrophysical molecules and its applications, Saint Florent, Corsica, France	<i>Experimental measurements on collisional excitation in cold supersonic flows</i>
5. 22-26 August 2021	'Elucidating the Interstellar and Circumstellar Chemistry of Silicon' at the Fall 2021 National Meeting of the American Chemical Society, Atlanta, GA, USA. (online)	<i>Experimental determination of reaction rate constants and product branching ratios at low temperatures for astrochemistry</i>
6. June 15-18, 2021	Processus physico-chimiques d'intérêt astrophysique : Vers une chimie d'état à état, St Florent, Corsica, France	<i>Recent advances in experimental gas kinetics for astrochemistry</i>
7. 6-10 January 2020	The Molecular Underpinnings of Astrophysics – TSRC Workshop – Telluride, CO, USA	<i>Experimental studies of gas phase molecular collisions for astrochemical and astrophysical applications</i>
8. 7 November 2019	Invited seminar, Department of Physics, University of Tokyo, Tokyo, Japan	<i>Experimental studies of gas phase molecular collisions for astrochemical and astrophysical applications</i>
9. 6 November 2019	Invited seminar, RIKEN, Tokyo, Japan	<i>Experimental studies of gas phase molecular collisions for astrochemical and astrophysical applications</i>
10. 10-14 September 2018	COST Conference: Our Astro-Chemical History: Past, Present, and Future, Assen, Netherlands	<i>Experimental gas-phase reaction kinetics studies for astrochemistry: current status and future directions</i>

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| 11. July 8-13 2018 | GRC Molecular Interactions and Dynamics, Stonehill College Easton, MA, USA | <i>Low Temperature Bimolecular Collisions: Energy Transfer, Reactivity and Products</i> |
| 12. June 13-16 2018 | Second Italian Workshop on Astrochemistry, "Chemical Evolution in our Galaxy: Spectroscopy, Observations and Reactivity", Fonderia n.1, Follonica (GR, Italy) | <i>Experimental gas-phase reaction kinetics and energy transfer studies for astrochemistry</i> |
| 13. April 18-19, 2018 | Frontiers of Chemical Dynamics, Kavli Royal Society Centre, Chicheley Hall, UK | <i>Chemical reactions and energy transfer in cold supersonic flows – a meeting ground for experiment and theory?</i> |
| 14. March 18-22, 2018 | Hydride chemistry: From earth to space – TSRC Workshop – Telluride, CO, USA | <i>Experimental gas-phase reaction kinetics and energy transfer studies for astrochemistry</i> |
| 15. September 26-29, 2017 | Astrochemical conference KIDA2017, Bordeaux, France | <i>Low temperature gas-phase kinetics studies related to molecular growth in space</i> |
| 16. September 21-22, 2017 | David Williams 80th Birthday Conference, Royal Astronomical Society, London, UK | <i>Gas-phase reaction kinetics and energy transfer for astrochemistry</i> |
| 17. June 12-15, 2017 | Processus physico-chimiques d'intérêt astrophysique : Les molécules complexes, St Florent, Corsica, France | <i>Low temperature kinetics studies related to the formation of polyynes and cyanopolyynes in space</i> |
| 18. May 21-25, 2017 | 10th International Conference on Chemical Kinetics, Chicago, Illinois, USA (Plenary) | <i>Low Temperature Kinetics in Uniform Supersonic Flows: Rate Constants, Branching Ratios and Energy Transfer</i> |
| 19. May 19, 2017 | Invited Seminar, Astrophysics Laboratory, Columbia University, New York, USA | <i>Gas-phase reaction kinetics and energy transfer for astrochemistry</i> |
| 20. April 11-13, 2017 | Faraday Joint Interest Group Conference 2017, University of Warwick, UK | <i>Synthesis of organic molecules in space – chemical reactions at low temperatures</i> |
| 21. March 20-24, 2017 | IAU Symposium 332: Astrochemistry VII – Through the Cosmos from Galaxies to Planets, Puerto Varas, Chile | <i>Gas-phase reaction kinetics and energy transfer for astrochemistry</i> |
| 22. August 21-25, 2016 | Physical Chemistry Meets AMO Symposium, 252nd National ACS Meeting, Philadelphia, Pennsylvania, USA | <i>Supersonic flows meet lasers in the service of astrochemistry</i> |
| 23. June 24, 2016 | Plenary Lecture at Doctoral Students Meeting, Ecole Doctorale Matières, Molécules, Matériaux en Pays de la Loire, Ecole des Mines, Nantes | <i>Laboratory Astrochemistry</i> |
| 24. March 13-17, 2016 | Cold And Controlled Molecules and Ions, Weizmann Institute, Rehovot, Israel | <i>Chemical reactions and energy transfer in cold supersonic flows</i> |
| 25. October 11-15, 2015 | iCOMET 2015, Chengdu, China | <i>Energy transfer and reactivity at low temperatures: astrophysical applications</i> |
| 26. October 1-2, 2015 | Laboratory Astrophysics Workshop 2015, Max-Planck Institute for Nuclear Physics, Heidelberg, Germany | <i>Radical reactivity at low temperatures: Astrophysical applications</i> |
| 27. July 12-17, 2015 | Dynamics of Molecular Collisions XXV, Celebrating 50 Years of Chemical Reaction Dynamics, Asilomar, California, USA | <i>Molecular collisions in cold supersonic flows: kinetics meets dynamics in the service of astrochemistry</i> |
| 28. June 15-18, 2015 | Processus physico-chimiques d'intérêt astrophysique : La chimie des hydrures, St Florent, Corsica, France | <i>Gas-phase reaction kinetics and energy transfer for astrochemistry</i> |
| 29. April 26-30, 2015 | Anharmonicity in medium-sized molecules and clusters, AMOC 2015, Madrid, Spain | <i>Low temperature reaction kinetics and astrochemistry</i> |
| 30. April 8, 2015 | Invited departmental Seminar, School of Chemistry, University of Basel, Switzerland | <i>Radical reactivity at low temperatures: Astrophysical and atmospheric applications</i> |
| 31. August 24-29, 2014 | 20th European Conference on Molecular Dynamics, MOLEC 2014, Gothenburg, Sweden | <i>Radical reactivity at very low temperatures</i> |
| 32. June 16-20, 2014 | Mini-symposium on Spectroscopy in Kinetics and Dynamics, International Symposium on Molecular Spectroscopy 69th Meeting, Champaign-Urbana, Illinois USA (co-chair) | <i>Radically different kinetics at low temperatures</i> |
| 33. May 21, 2014 | Invited Departmental Seminar, Institute for Ion Physics and Applied Physics, Innsbruck University, Austria. | <i>Radical reactivity at low temperatures: Astrophysical and atmospheric applications</i> |

34. September 18, 2013 Invited physical chemistry seminar, Department of Chemistry, Wayne State University, Detroit, Michigan, USA *Radical reactivity at low temperatures*
35. September 8-12, 2013 246th ACS National Meeting and Exposition, Indianapolis, Indiana, USA *Low temperature reaction kinetics and organic synthesis in space: Organonitrogen chemistry*
36. September 4, 2013 Invited departmental seminar, Department of Chemistry, West Virginia University, Morgantown, West Virginia, USA *Radical reactivity at low temperatures*
37. July 21-26, 2013 32nd International Symposium on Free Radicals, Potsdam, Berlin, Germany *Radical reactivity at low temperatures*
38. March 26-27, 2013 Evolution de la matiere organique dans les milieux interplanetaire et interstellaire, CNES (French National Space Agency) Workshop, Paris, France *Reaction kinetics and the synthesis of organic molecules in space*
39. July 15-20, 2012 Gordon Research Conference on Atomic and Molecular Interactions, Stonehill College, Easton, MA, USA *Experimental investigations of radical-molecule reactions using low temperature supersonic flows*
40. March 12-14, 2012 6th Annual Titan Chemistry Workshop, Miami, FL, USA *Reaction kinetics and the formation of organic molecules in space*
41. November 24-25, 2011 Atelier Astrochimie, IPAG, Grenoble, France *Gas-phase astrochemical networks*
42. September 26-30, 2011 First European Conference on Laboratory Astrophysics, Paris, France *Experimental measurements on low temperature molecular collisions for astrophysical applications*
43. September 11-16, 2011 COMET 2011 International Conference on Molecular Energy Transfer, University of Oxford, UK *Experimental investigations of radical-molecule reactions using low temperature supersonic flows and applications to atmospheric and astrophysical chemistry*
44. July 10-14, 2011 7th International Conference on Chemical Kinetics, MIT, Cambridge, MA, USA *Experimental investigations of radical-molecule reactions using low temperature supersonic flows*
45. April 11-14, 2011 Fifth NSF Workshop on 'Titan Chemistry – Observations, Experiments, Computations, and Modeling', Poipu Koloa, Kauai, Hawaii *Experimental investigations of radical-molecule reactions using low temperature supersonic flows*
46. February 2-5, 2011 Workshop on Cold and Controlled Molecular Collisions, Ringberg Castle near Lake Tegernsee, Germany *Experimental investigations of radical-molecule reactions using low temperature supersonic flows*
47. October 6-8, 2010 COST Action - The Chemical Cosmos, First Annual Meeting, Grenoble, France *Experimental investigations of radical-neutral reactions using supersonic flows.*
48. March 21-25, 2010 Recent Advances in Observational and Experimental Astrochemistry, Symposium at the Spring 2010 Meeting of the American Chemical Society, San Francisco, California, USA *Neutral-neutral reactions in astrochemistry : Measurements on atom – H₂ reactions at very low temperature.*
49. January 6, 2009 Computational AstroChemistry - a New Era? Astrophysical Chemistry Group Meeting, University College London, UK *Laboratory measurements of reaction rate coefficients for astrochemistry.*
50. June 17, 2008 Invited Lecture in Series on Molecular Physics, Department of Physics, University of Stockholm, Sweden. *Experimental Studies of Low Temperature Reactive and Inelastic Collisions: Astrochemical Applications.*
51. May 14, 2008 Invited Departmental Seminar, Department of Chemistry, University of Durham, UK. *Experimental Studies of Low Temperature Reactive and Inelastic Collisions: Astrochemical Applications.*
52. March 24-26, 2008 Second Workshop on 'Titan – Observations, Experiments, Computations, and Modeling', Miami, Florida *Experimental measurements of elementary processes relevant to the growth of carbon-containing molecules and particles Titan's atmosphere.*
53. May 14-18, 2007 International Astrophysics and Astrochemistry Conference 'Molecules in Space and Laboratory', Observatoire de Paris, France. *Experimental Studies of Low Temperature Reactive Collisions: Astrochemical Applications.*
54. April 25, 2007 Invited Seminar on Astrochemistry, Department of Chemistry, University of Illinois at Urbana-Champaign, IL, USA *Experimental Studies of Low Temperature Reactive and Inelastic Collisions: Astrochemical Applications.*

55. March 21, 2007 'Chemistry From the Earth's Atmosphere to the Milky Way', symposium organised by the RSC Faraday Division, University of Leeds, UK. *Experimental Measurement of Rate Constants under Extreme Conditions for Interstellar Chemistry.*
56. February 5-7, 2007 First Workshop on Titan: Observations, Experiments, Computations, and Modeling, Honolulu, HI, USA *Experimental measurements of rate constants of neutral-neutral reactions of relevance to Titan's atmospheric chemistry.*
57. September 10-14, 2006 'Chemistry in Extreme Environments' symposium at the 232nd ACS National Meeting, San Francisco, CA, USA *Chemistry at very low temperatures.*
58. June 10-15, 2006 Nobel Symposium on Cosmic Chemistry and Molecular Astrophysics, Stockholm, Sweden *Kinetics and dynamics of low temperature reactions.*
59. May 10-11, 2006 Réunion commune du Groupe Français de Cinétique et Photochimie et du Groupement Français de Combustion, Nancy, France *Low Temperature Gas-Phase Kinetics and Dynamics: Obtaining Data for Astrochemistry.*
60. December 15-20, 2005 'Astrochemistry - From Laboratory Studies to Astronomical Observations' at Pacificchem 2005 in Honolulu, Hawaii, USA *Experimental investigation of gas-phase molecular collisions at low temperatures - implications for astrochemistry.*
61. Aug 29-Sep 2, 2005 IAU Symposium 231, Astrochemistry throughout the Universe: Recent Successes and Current Challenges, Asilomar, California, USA *Experimental investigation of neutral-neutral reactions and energy transfer at low temperatures.*
62. June 5-9, 2005 Interstellar Reactions: from Gas phase to Solids, FGLA Symposium, Dresden, Germany *Experimental investigation of neutral-neutral reactions and energy transfer at low temperatures.*
63. May 15-20, 2005 XXI International Symposium on Molecular Beams, Hersonissos, Crete. *Experimental studies of gas phase reaction kinetics and energy transfer at very low temperatures.*
64. February 7-10, 2005 ESF Exploratory Workshop on Ultra-cold Chemistry, Mulhouse, France *Experimental studies of gas phase reaction kinetics and energy transfer at very low temperatures: Obtaining data for astrochemistry*
65. August 7-12, 2004 18th International Symposium on Gas Kinetics, University of Bristol, UK *Gas-phase kinetics and dynamics at very low temperatures: Obtaining data for astrochemistry.*
66. July 6-10, 2004 8th European Conference on Atomic and Molecular Physics (ECAMP), Rennes, France *Gas-phase kinetics and dynamics at very low temperatures: Obtaining data for astrochemistry.*
67. March 25-26, 2004 Workshop on 'Chemistry of Cold Molecules', Kyoto, Japan *Experimental studies of gas phase reaction kinetics and energy transfer at very low temperatures*
68. January 3-5, 2003 Annual Meeting of The Association for Science Education, University of Birmingham, UK *Frontier Science Lecture on Astrochemistry*
69. September 16-18, 2002 The Kinetics and Dynamics of Elementary Gas-Phase Reactions – A Meeting to Honour Professor Ian WM Smith FRS, The University of Birmingham, UK *Low Temperature Molecular Collisions*
70. August 31-September 6, 2002 14th European Conference on Molecular Dynamics, MOLEC2002, Koç University, Istanbul, Turkey *Low Temperature Molecular Collisions: The CRESU Technique and Applications to Astrochemistry*
71. April 8-12, 2002 National Astronomy Meeting 2002, Symposium 'The Chemistry of Star Formation: what can astronomy learn from chemistry?', University of Bristol, UK *Gas Phase Chemistry in Star Formation: Laboratory Measurements on Chemical Processes of Astrophysical Importance*
72. December 18, 2001 Joint RSC Gas Kinetics Discussion Group/High Resolution Spectroscopy Group Meeting, University of Birmingham, UK *Gas Kinetics at Very Low Temperatures: An Introduction*
73. January 8, 1998 RSC Gas Kinetics Discussion Group Meeting on Experiment and Application in Gas Phase Kinetics, University of Cambridge, UK *Reaction Kinetics and Energy Transfer at Extremely Low Temperatures*
74. June 28, 1997 RSC Lecture, Heriot-Watt University, Edinburgh, UK *Chemical Reactions and Energy Transfer at Extremely Low Temperatures*
75. May 28-30, 1996 European Workshop on Reactive Processes at Subthermal Energies, St Jacut de la Mer, France *Measurement of Reaction Rates at Extremely Low Temperatures*
76. June, 1994 Laser Support Facility Users Group Meeting, Rutherford Appleton Laboratories, Didcot, UK *Astrochemistry and the Demise of the Arrhenius Equation*

77. September, 1993: RSC Gas Kinetics Discussion Group Autumn Meeting, University of Nottingham, UK *Natural (State-) Selection: Gas Kinetics at Ultra-low Temperatures*

Other oral presentations (personally delivered)

Co-authors, when present, are indicated after the title of the contribution (from 2012 onwards).

- September 26 – October 1, 2021 Contributed presentation European Conference on Laboratory Astrophysics ECLA 2020, Linking dust, ice and gas in space, Anacapri, Capri Island, Italy (postponed from 2020) *Chirped pulse mm-wave and pulsed laser studies of gas phase molecular collisions for astrochemical applications*
Brian M. Hays, Théo Guillaume, Thomas S. Hearne, Omar Abdelkader Khedaoui, Ilsa R. Cooke, Divita Gupta, Sébastien D. Le Picard and [Ian R. Sims](#)
- April 5-12 2021 (postponed from March 22-26, 2020) Contributed presentation Astrochemical Complexity in Planetary Systems Symposium, ACS Spring National Meeting, Online (originally Philadelphia PA, USA, postponed due to COVID) *Experimental determination of reaction product branching ratios at low temperatures for astrochemistry*
Théo Guillaume, Brian M. Hays, Divita Gupta, Ilsa R. Cooke, Omar Abdelkader Khedaoui, Thomas S. Hearne, Myriam Drissi and [Ian R. Sims](#)
- March 31, 2020 Seminar Tuesday UVA / NRAO Astronomy (TUNA) Lunch Talk, Charlottesville, Virginia, USA (moved online) *Chirped pulse mm-wave and pulsed laser studies of gas phase molecular collisions for astrochemical applications*
[Ian R. Sims](#)
- July 7–12, 2019 Hot topic presentation XXVII Dynamics of Molecular Collisions Conference, Big Sky, Montana, USA *Experimental determination of reaction product branching ratios at low temperatures for astrochemistry*
Brian M. Hays, Thomas S. Hearne, Ilsa R. Cooke, Théo Guillaume, Omar Abdelkader Khedaoui, Divita Gupta, Robert Georges, Sébastien D. Le Picard and [Ian R. Sims](#)
- 14–19 April, 2019 Contributed lecture International Astronomical Union Symposium 350 - Laboratory Astrophysics: from Observations to Interpretation, Jesus College, Cambridge, UK *Experimental determination of reaction product branching ratios at low temperatures for astrochemistry*
Ian R. Sims, Brian M. Hays, Théo Guillaume, Thomas S. Hearne, Ilsa R. Cooke, Omar Abdelkader Khedaoui, Divita Gupta and the CRESUCHIRP team
- 12-13 November 2018 Discussion group introduction First QUADMARTS International Research Network Workshop, Keck Institute for Space Studies, Caltech, Pasadena CA USA *Discussion group 3: Chirped pulse microwave/mm-wave spectroscopy*
- 19-23 August 2018 Contributed lecture New Spectroscopic Techniques for Astrochemistry Symposium, 256th ACS National Meeting & Exposition, Boston MA, USA *Formation of HC₅N in space environments*
Martin Fournier, Baptiste Joalland, Sidaty Cheikh Sid Ely, Jean-Claude Guillemin, Stephen J. Klippenstein and [Ian R. Sims](#)
- 9-10 November 2017 Contributed lecture QUADMARTS International Research Network Inaugural Meeting, Rennes, France *Low temperature gas-phase kinetics studies for astrochemistry*
- 8-10 February 2017 Contributed lecture SOLIS network meeting, Université de Cergy-Pontoise, Paris, France *Cyanopolynes: gas-phase reactions*
- 29 August-9 September 2016 Lecture series (5 lectures) Summer school Astrochemistry: From Space to Earth, Grenoble, France *Introduction to astrochemical processes; Laboratory experiments for astrochemistry, overview; Gas phase kinetics, dynamics and photodissociation I, II, III*
- 9 July 2015 Seminar Informal seminar, A.A. Noyes Laboratory, Caltech, Pasadena, California, USA *Radical reactivity at low temperatures Astrophysical and atmospheric applications*
- February 3-4, 2015 Contributed lecture ANR project HYDRIDES Second Annual Meeting Grenoble, France. *Chirped Pulse Fourier Transform Microwave Spectroscopy in Pulsed Uniform Supersonic Flows – Preliminary Results*

13.	20-25 July 2014	Contributed lecture	23rd International Symposium on Gas Kinetics, Szeged, Hungary.	With the groups of Robert W. Field (MIT) and Arthur G. Suits (Wayne State University) <i>Low temperature reaction kinetics and organic synthesis in space</i> Ian R. Sims, Martin Fournier, Sidaty Cheikh Sid Ely, Stephen J. Klippenstein and Jean-Claude Guillemin
14.	June 12, 2014	Seminar	Chemical Dynamics Group Seminar, Chemistry Division, Argonne National Laboratory, Argonne, Illinois, USA.	<i>Radical reactivity at low temperatures Astrophysical and atmospheric applications</i>
15.	February 4-5, 2014	Contributed lecture	ANR project HYDRIDES First Annual Meeting Grenoble, France.	<i>The rate of the F + H₂ reaction at very low temperatures</i> Ian R. Sims, Meryem Tizniti, Sébastien D. Le Picard, François Lique, Coralie Berteloite, André Canosa and Millard H. Alexander
16.	May 29-30, 2013	Contributed lecture	Atelier KIDA, Laboratoire d'Astrophysique de Bordeaux, France.	<i>Rate coefficients for reactions of CN, C₂H and C₃N radicals of astrochemical interest</i> Ian R. Sims, Sidaty Cheikh Sid Ely, Martin Fournier, Sébastien Morales, Jean-Claude Guillemin
17.	January 22-23, 2013	Lecture	Kick-off meeting for ANR project HYDRIDES Grenoble, France.	<i>Experimental measurements of rotational state-to-state collisional energy transfer in the CRESU</i>
18.	July 8, 2011	Seminar	Arthurs Suits Group Seminar, Department of Chemistry, Wayne State University, Detroit, MI, USA.	<i>Experimental investigations of radical-molecule reactions using low temperature supersonic flows</i>
19.	July 18-23, 2010	Contributed lecture	21st International Symposium on Gas Kinetics, Leuven, Belgium.	<i>Atom – H₂ reactions at very low temperatures</i>
20.	March 21-25, 2010	Contributed lecture	Dynamics in Clusters and Floppy Systems: Theory And Experiment, Symposium at the Spring 2010 Meeting of the American Chemical Society, San Francisco, California, USA	<i>Direct measurement of the binding energy of the weakly bound HO₃ radical cluster</i>
21.	2–7 August 2009	Contributed lecture	Astrochemistry Symposium, 42nd IUPAC Congress, Glasgow UK	<i>Chemical reactivity at extremely low temperatures: rate coefficients for S(¹D) + H₂ down to 5.8 K</i>
22.	September 4, 2008	Solicited lecture	Molecular Universe Final Network Meeting, Boppard, Germany	<i>Low temperature neutral-neutral reaction kinetics and energy transfer</i>
23.	July 20-25, 2008	Contributed lecture	20th International Symposium on Gas Kinetics, University of Manchester, UK.	<i>Pushing the frontiers of low temperature reaction kinetics</i>
24.	January 7-8, 2008	Contributed lecture	High Temperature Astrochemistry, Annual meeting of the Astrophysical Chemistry Group, Centre for Astronomy, National University of Ireland, Galway	<i>Nucleation of carbon nanoparticles from molecular precursors</i>
25.	June 3-7, 2007	Contributed lecture	COMET XX International Conference on Molecular Energy Transfer, Arcachon, France.	<i>Understanding reactivity at very low temperatures: The reactions of oxygen atoms with alkenes</i>
26.	April 23, 2007	Seminar	Chemical Kinetics Group, Argonne National Laboratory, Argonne, Illinois, USA.	<i>Experimental Studies of Low Temperature Reactive and Inelastic Collisions: Astrochemical Applications</i>
27.	March 19-21, 2007	Contributed lecture	Molecular Universe FP6 RTN Mid-Term Review Meeting, Perugia, Italy.	<i>Chemistry in Space: the Laboratory Perspective</i>
28.	March 13, 2007	Contributed lecture	Groupe de réflexion sur les bases de données chimiques pour le milieu interstellaire, Bordeaux, France.	<i>Extrapolation pour les réactions neutres-neutres non mesurées</i>
29.	December 6-8, 2006	Contributed lecture	Molecular databases for Herschel, ALMA and SOFIA, Lorentz Center, Leiden, The Netherlands.	<i>Neutral-neutral reactions: Rationalising low temperature reactivity</i>
30.	October 26, 2006	Contributed lecture	Réactions Neutre-Neutre en Astrochimie : Etat des Lieux – Atelier dans le cadre du Colloque général du Programme National de Physique et Chimie du Milieu Interstellaire, Grenoble, France.	<i>Rationalising low temperature reactivity: reactivity of O(³P) with alkenes down to 23 K</i>
31.	October 17, 2006	Public Lecture	De l'Atome à l'Objet, dans le cadre du Festival des Sciences, Espace des Sciences, Rennes, France	<i>Atomes et Molécules: Créer des molécules dans l'espace</i>

32. August 28- September 1, 2006 Lecture series (6 hrs) Molecular Universe FP6 RTN Summer School on "Molecular Astrophysics" *Laboratory Astrochemistry*
33. December 9, 2005 Contributed lecture 2nd Annual Meeting of the Molecular Universe Research and Training Network, Lorentz Center, Leiden, The Netherlands. *Experimental astrochemistry at Rennes*
34. May 11, 2005 Departmental seminar Department of Chemistry, University of Basel, Switzerland. *Astrochemistry - Laboratory studies of molecular processes of relevance to astronomy.*
35. March 9, 2005 Public Lecture Dans le cadre de l'Année Mondiale de la Physique 2005, (avec le Dr. André Canosa) une conférence grand public, amphithéâtre Donzelot, 6, rue Kléber à Rennes, France *Les Molécules dans l'espace : comment survivre dans des conditions extrêmes ?*
36. April 18-19, 2005 Contributed lecture New Astronomical Challenges in Surface Science, University College London, UK *Low temperature molecular collisions - implications for astrochemistry.*
37. December 15-17, 2004 Contributed lecture Herschel Preparatory Science Workshop, Leiden, The Netherlands *Reaction and relaxation of neutral species at low temperatures.*
38. February 11, 2004 Departmental seminar School of Chemistry & Physics, Keele University, UK *Astrochemistry: Laboratory studies of molecular processes of relevance to astronomy*
39. December 17, 2003 Contributed lecture Annual meeting of the Astrophysical Chemistry Group, University of Nottingham, UK *Rotational energy transfer in collisions of CO with He and H₂ at very low temperatures.*
40. March 23-27, 2003 Contributed lecture Symposium on 'VUV Probes of Dynamics and Spectroscopy' at the 225th national ACS meeting in New Orleans, USA *Gas-phase kinetics and dynamics at extremely low temperatures: obtaining data for astrochemistry using VUV techniques*
41. January 28-30, 2003 Contributed lecture The Gas-Phase Formation and Destruction of Carbon-Based Nanoparticles, St Jacut, France *Reactivity of Atomic Carbon and Carbon-Containing Radicals at Low Temperatures*
42. December 4, 2002 Departmental seminar School of Chemistry, University of Nottingham, UK *Low Temperature Molecular Collisions: Obtaining Data for Astrochemistry Using Supersonic Flows and Lasers*
43. July 19, 2002 Departmental seminar Seminar as Professeur Invité, PALMS, Université de Rennes 1, France *Cinétique et Dynamique de Processus Collisionnels en Phase Gazeuse à Basses Energies*
44. June 2-7, 2002 Contributed lecture XXV Informal Conference On Photochemistry, University of Miami, USA *Relaxation of Highly Vibrationally Excited H₂O(104[>]) in Collisions with H₂O, Ar, H₂, N₂ and O₂*
45. February 8, 2002 Departmental seminar Department of Chemistry, University of Warwick *Kinetics and dynamics of low temperature molecular collisions*
46. July 23-27, 2000 Contributed lecture 16th International Symposium on Gas Kinetics, University of Cambridge, UK *The Reactivity of Atomic Carbon at Extremely Low Temperatures*
47. March 24, 1999 Departmental Seminar Department of Chemistry, University College London, UK *Chemical Synthesis in Interstellar Space: Experimental studies of reaction kinetics at extremely low temperatures*
48. December 9, 1998 Departmental Seminar Department of Chemistry, University of Manchester, UK *Chemical synthesis in interstellar space: rate coefficients for reactions of C₂H radicals and C-atoms down to 15 K*
49. October 2-3, 1998 Contributed lecture Gas-Phase and Surface Dynamics: The Inaugural Meeting of the University of Birmingham Centre for Chemical Physics, School of Physics, University of Birmingham, UK *Chemical synthesis in interstellar space: rate coefficients for reactions of C₂H radicals and C-atoms down to 15 K*
50. May 10-15, 1998 Contributed lecture XXIII Informal Conference on Photochemistry, Pasadena, California, USA *Chemical Synthesis in Interstellar Space: Rate Coefficients for Reactions of C₂H Radicals and C-Atoms Down to 15 K*
51. April 15-17, 1998 Discussion Contribution Faraday Discussion No. 109, Chemistry and Physics of Molecules and Grains in Space, University of Nottingham, UK *Neutral-Neutral Reactions at the Temperature of Interstellar Clouds: Carbon Atom Reactions – Preliminary Results on C + C₂H₂, C + C₂H₄ and C + O₂ Down to 27 K*
52. December 8, 1997 Departmental Seminar School of Chemistry, University of Leeds *Reaction Kinetics and Energy Transfer at Extremely Low Temperatures*
53. July 15, 1997 Contributed lecture European Commission DGXII, Brussels *Astrophysical Chemistry: Experimental, theoretical and modelling studies of reactions at extremely low temperatures*

			<i>with emphasis on their astrophysical consequences</i>
54. July 8, 1997	Contributed lecture	RSC Molecular Beams and Dynamics Group Meeting, University of Nottingham	<i>Total and State-to-State Rate Coefficients for Rotational and Vibrational Energy Transfer in NO($X^2\Sigma^-$) at Temperatures down to 7 K</i>
55. July 3, 1997	Departmental Seminar	Department of Chemistry, University of Southampton	<i>Reaction Kinetics and Energy Transfer at Extremely Low Temperatures</i>
56. June 16-21, 1996	Contributed lecture	XXII Informal Conference on Photochemistry, University of Minneapolis, USA	<i>Chemistry Approaches the Zero Temperature Limit</i>
57. October 25, 1996	Departmental Seminar	School of Molecular Sciences, University of Sussex	<i>Reaction Kinetics and Energy Transfer at Extremely Low Temperatures</i>
58. September 7-12, 1996	Contributed lecture	14th International Symposium on Gas Kinetics, University of Leeds, UK	<i>Coefficients for state-to-state rovibronic relaxation in collisions between NO($X^2\Sigma^-$, $\Omega = 1/2, \nu = 3, J$) and He at temperatures down to 27 K</i>
59. April 25, 1995	Departmental Seminar	University of Leeds, Department of Chemistry	<i>Chemistry at Extremely Low Temperatures</i>
60. September 11-16, 1994	Contributed lecture	13th International Symposium on Gas Kinetics, University College, Dublin	<i>Rate Constants for Elementary Gas-Phase Reactions at Ultra-Low Temperatures</i>
61. October 27, 1993	Departmental seminar	School of Chemistry, University of Birmingham, UK	<i>Ultra-Low Temperature Chemistry: The Demise of the Arrhenius Equation?</i>
62. April 8, 1993	Departmental seminar	Université de Toulouse 3, Toulouse, France	<i>Ultra-Low Temperature Kinetics of Neutral-Neutral Reactions: Laser photolysis - LIF measurements on CN radical reactions down to 13 K</i>
63. December 16-18, 1992	Contributed lecture / Discussion contribution	RSC Faraday Symposium 28: Chemistry in the Interstellar Medium, University of Birmingham, UK	<i>Rate Coefficients for Interstellar Gas-Phase Chemistry</i>
64. December 16, 1992	Contributed lecture	RSC Gas Kinetics Discussion Group One Day Meeting, University of Birmingham, UK	<i>Chemistry in the Zero Temperature Limit</i>
65. July 6-10, 1992	Contributed lecture	European Meeting on Photons, Beams and Chemical Dynamics, Université de Paris XI, Orsay, France	<i>Ultra-Low Temperature Kinetics of Neutral-Neutral Reactions</i>