

## IAN SIMS: PUBLICATIONS AND PRESENTATIONS

### Publications

1. 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. (2017), in press. <https://doi.org/10.1016/j.cplett.2017.05.052>.
2. V. Wakelam, et al., *The 2014 KIDA Network for Interstellar Chemistry*, Astrophys J Suppl Ser 217 (2015), 20.
3. J. F. Lockyear, M. Fournier, I. R. Sims, J.-C. Guillemin, C. A. Taatjes, D. L. Osborn, and S. R. Leone, *Formation of fulvene in the reaction of C<sub>2</sub>H with 1,3-butadiene*, Int. J. Mass Spectrom. 378 (2015), 232-245.
4. C. Abeysekera, B. Joalland, N. Ariyasingha, L. N. Zack, I. R. Sims, R. W. Field, and A. G. Suits, *Product Branching in the Low Temperature Reaction of CN with Propyne by Chirped-Pulse Microwave Spectroscopy in a Uniform Supersonic Flow*, J. Phys. Chem. Lett. 6 (2015), 1599-1604.
5. M. Tizniti, S. D. Le Picard, F. Lique, C. Berteloite, A. Canosa, M. H. Alexander, and I. R. Sims, *Measurement of the rate of the F + H<sub>2</sub> reaction at very low temperatures* Nature Chemistry 6 (2014), 141-145.
6. J. M. Oldham, C. Abeysekera, B. Joalland, L. N. Zack, K. Prozument, I. R. Sims, G. B. Park, R. W. Field, and A. G. Suits, *A chirped-pulse Fourier-transform microwave/pulsed uniform flow spectrometer. I. The low-temperature flow system*, J. Chem. Phys. 141 (2014), 7, 154202.
7. C. Abeysekera, et al., *A chirped-pulse Fourier-transform microwave/pulsed uniform flow spectrometer. II. Performance and applications for reaction dynamics*, The Journal of Chemical Physics 141 (2014), 214203.
8. I. R. Sims, *Tunnelling in space*, Nature Chemistry 5 (2013), 734-736.
9. S. Cheikh Sid Ely, S. B. Morales, J. C. Guillemin, S. J. Klippenstein, and I. R. Sims, *Low Temperature Rate Coefficients for the Reaction CN + HC<sub>3</sub>N*, J. Phys. Chem. A 117 (2013), 12155-12164.
10. J. Bouwman, M. Fournier, I. R. Sims, S. R. Leone, and K. R. Wilson, *Reaction Rate and Isomer-Specific Product Branching Ratios of C<sub>2</sub>H + C<sub>4</sub>H<sub>8</sub>: 1-Butene, cis-2-Butene, trans-2-Butene, and Isobutene at 79 K*, J. Phys. Chem. A 117 (2013), 5093-5105.
11. V. Wakelam, et al., *A Kinetic Database for Astrochemistry (KIDA)*, Astrophys J Suppl Ser 199 (2012).
12. I. R. Sims, *Arranging Reactive Meetings of Cold Radicals*, Science 334 (2011), 1506-1507.
13. S. B. Morales, et al., *A Crossed Molecular Beam, Low Temperature Kinetics, and Theoretical Investigation of the Reaction of the Cyano Radical (CN) with 1,3-Butadiene (C<sub>4</sub>H<sub>6</sub>) - A Route to Complex Nitrogen-Bearing Molecules in Low Temperature Extraterrestrial Environments*, Astrophys. J. 742 (2011), 26.
14. L. Biennier, H. Sabbah, S. J. Klippenstein, V. Chandrasekaran, I. R. Sims, and B. R. Rowe, *Insights into the condensation of PAHs in the envelope of IRC +10216*, EAS Publications Series 46 (2011), 191-199.
15. L. Biennier, H. Sabbah, V. Chandrasekaran, S. J. Klippenstein, I. R. Sims, and B. R. Rowe, *Insights into the role of polycyclic aromatic hydrocarbon condensation in haze formation in Jupiter's atmosphere*, Astron. Astrophys. 532 (2011), A40.
16. C. Berteloite, S. D. Le Picard, I. R. Sims, M. Rosi, F. Leonori, R. Petrucci, N. Balucani, X. G. Wang, and P. Casavecchia, *Low temperature kinetics, crossed beam dynamics and theoretical studies of the reaction S(<sup>1</sup>D) + CH<sub>4</sub> and low temperature kinetics of S(<sup>1</sup>D) + C<sub>2</sub>H<sub>2</sub>*, Phys. Chem. Chem. Phys. 13 (2011), 8485-8501.
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24. C. Berteloite, et al., *Kinetics and Dynamics of the  $S(^1D_2) + H_2 \rightarrow SH + H$  Reaction at Very Low Temperatures and Collision Energies*, Phys. Rev. Lett. 105 (2010), 203201.
25. C. J. Bennett, et al., *A Chemical Dynamics, Kinetics, and Theoretical Study on the Reaction of the Cyano Radical (CN;  $X^2\Sigma^+$ ) with Phenylacetylene ( $C_6H_5CCH$ ;  $X^1A_1$ )*, Phys. Chem. Chem. Phys. 12 (2010), 8737-8749.
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36. A. Páramo, A. Canosa, S. D. Le Picard, and I. R. Sims, *An experimental study of the intersystem crossing and reactions of  $C_2(X^1\Sigma_g^+)$  and  $C_2(a^3\Pi_u)$  with  $O_2$  and  $NO$  at very low temperature (24-300K)*, J. Phys. Chem. A 110 (2006), 3121-3127.
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### **Invited Lectures and Seminars**

<b>Date</b>	<b>Event</b>	<b>Title of Lecture</b>
1. 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>
2. 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>
3. May 19, 2017	Invited Seminar, Astrophysics Laboratory, Columbia University, New York, USA	<i>Gas-phase reaction kinetics and energy transfer for astrochemistry</i>
4. 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>
5. 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>
6. August 21-25,	Physical Chemistry Meets AMO Symposium, 252nd National ACS	<i>Supersonic flows meet lasers in the service</i>

- 2016 Meeting, Philadelphia, Pennsylvania, USA *of astrochemistry*
7. June 24, 2016 Plenary Lecture at Doctoral Students Meeting, Ecole Doctorale Matières, Molécules, Matériaux en Pays de la Loire, Ecole des Mines, Nantes *Laboratory Astrochemistry*
8. March 13-17, 2016 Cold And Controlled Molecules and Ions, Weizmann Institute, Rehovot, Israel *Chemical reactions and energy transfer in cold supersonic flows*
9. October 11-15, 2015 iCOMET 2015, Chengdu, China *Energy transfer and reactivity at low temperatures: astrophysical applications*
10. October 1-2, 2015 Laboratory Astrophysics Workshop 2015, Max-Planck Institute for Nuclear Physics, Heidelberg, Germany *Radical reactivity at low temperatures: Astrophysical applications*
11. July 12-17, 2015 Dynamics of Molecular Collisions XXV, Celebrating 50 Years of Chemical Reaction Dynamics, Asilomar, California, USA *Molecular collisions in cold supersonic flows: kinetics meets dynamics in the service of astrochemistry*
12. June 15-18, 2015 Processus physico-chimiques d'intérêt astrophysique : La chimie des hydrures, St Florent, Corsica, France *Gas-phase reaction kinetics and energy transfer for astrochemistry*
13. April 26-30, 2015 Anharmonicity in medium-sized molecules and clusters, AMOC 2015, Madrid, Spain *Low temperature reaction kinetics and astrochemistry*
14. April 8, 2015 Invited departmental Seminar, School of Chemistry, University of Basel, Switzerland *Radical reactivity at low temperatures: Astrophysical and atmospheric applications*
15. August 24-29, 2014 20th European Conference on Molecular Dynamics, MOLEC 2014, Gothenburg, Sweden *Radical reactivity at very low temperatures*
16. 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) *Radically different kinetics at low temperatures*
17. May 21, 2014 Invited Departmental Seminar, Institute for Ion Physics and Applied Physics, Innsbruck University, Austria. *Radical reactivity at low temperatures: Astrophysical and atmospheric applications*
18. September 18, 2013 Invited physical chemistry seminar, Department of Chemistry, Wayne State University, Detroit, Michigan, USA *Radical reactivity at low temperatures*
19. September 8-12, 2013 246th ACS National Meeting and Exposition, Indianapolis, Indiana, USA *Low temperature reaction kinetics and organic synthesis in space: Organonitrogen chemistry*
20. September 4, 2013 Invited departmental seminar, Department of Chemistry, West Virginia University, Morgantown, West Virginia, USA *Radical reactivity at low temperatures*
21. July 21-26, 2013 32nd International Symposium on Free Radicals, Potsdam, Berlin, Germany *Radical reactivity at low temperatures*
22. March 26-27, 2013 Evolution de la matière organique dans les milieux interplanétaire et interstellaire, CNES (French National Space Agency) Workshop, Paris, France *Reaction kinetics and the synthesis of organic molecules in space*
23. 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*
24. March 12-14, 2012 6th Annual Titan Chemistry Workshop, Miami, FL, USA *Reaction kinetics and the formation of organic molecules in space*
25. November 24-25, 2011 Atelier Astrochimie, IPAG, Grenoble, France *Gas-phase astrochemical networks*
26. September 26-30, 2011 First European Conference on Laboratory Astrophysics, Paris, France *Experimental measurements on low temperature molecular collisions for astrophysical applications*
27. 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*
28. 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*
29. April 11-14, 2011 Fifth NSF Workshop on 'Titan Chemistry – Observations, Experiments, Computations, and Modeling', Poipu Koloa, Kauai, *Experimental investigations of radical-molecule reactions using low temperature*

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|                           | Hawaii  | <i>supersonic flows</i>  |
| 30. February 2-5, 2011    | Workshop on Cold and Controlled Molecular Collisions, Ringberg Castle near Lake Tegernsee, Germany  | <i>Experimental investigations of radical-molecule reactions using low temperature supersonic flows</i>  |
| 31. October 6-8, 2010     | COST Action - The Chemical Cosmos, First Annual Meeting, Grenoble, France   | <i>Experimental investigations of radical-neutral reactions using supersonic flows.</i>  |
| 32. 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 | <i>Neutral-neutral reactions in astrochemistry : Measurements on atom – H<sub>2</sub> reactions at very low temperature.</i>                     |
| 33. January 6, 2009       | Computational AstroChemistry - a New Era? Astrophysical Chemistry Group Meeting, University College London, UK  | <i>Laboratory measurements of reaction rate coefficients for astrochemistry.</i>   |
| 34. June 17, 2008         | Invited Lecture in Series on Molecular Physics, Department of Physics, University of Stockholm, Sweden.   | <i>Experimental Studies of Low Temperature Reactive and Inelastic Collisions: Astrochemical Applications.</i>                                    |
| 35. May 14, 2008          | Invited Departmental Seminar, Department of Chemistry, University of Durham, UK.  | <i>Experimental Studies of Low Temperature Reactive and Inelastic Collisions: Astrochemical Applications.</i>                                    |
| 36. March 24-26, 2008     | Second Workshop on 'Titan – Observations, Experiments, Computations, and Modeling', Miami, Florida  | <i>Experimental measurements of elementary processes relevant to the growth of carbon-containing molecules and particles Titan's atmosphere.</i> |
| 37. May 14-18, 2007       | International Astrophysics and Astrochemistry Conference 'Molecules in Space and Laboratory', Observatoire de Paris, France.  | <i>Experimental Studies of Low Temperature Reactive Collisions: Astrochemical Applications.</i>  |
| 38. April 25, 2007        | Invited Seminar on Astrochemistry, Department of Chemistry, University of Illinois at Urbana-Champaign, IL, USA   | <i>Experimental Studies of Low Temperature Reactive and Inelastic Collisions: Astrochemical Applications.</i>                                    |
| 39. March 21, 2007        | 'Chemistry From the Earth's Atmosphere to the Milky Way', symposium organised by the RSC Faraday Division, University of Leeds, UK.                                     | <i>Experimental Measurement of Rate Constants under Extreme Conditions for Interstellar Chemistry.</i>   |
| 40. February 5-7, 2007    | First Workshop on Titan: Observations, Experiments, Computations, and Modeling, Honolulu, HI, USA   | <i>Experimental measurements of rate constants of neutral-neutral reactions of relevance to Titan's atmospheric chemistry.</i>                   |
| 41. September 10-14, 2006 | 'Chemistry in Extreme Environments' symposium at the 232 <sup>nd</sup> ACS National Meeting, San Francisco, CA, USA   | <i>Chemistry at very low temperatures.</i>   |
| 42. June 10-15, 2006      | Nobel Symposium on Cosmic Chemistry and Molecular Astrophysics, Stockholm, Sweden   | <i>Kinetics and dynamics of low temperature reactions.</i>   |
| 43. May 10-11, 2006       | Réunion commune du Groupe Français de Cinétique et Photochimie et du Groupement Français de Combustion, Nancy, France   | <i>Low Temperature Gas-Phase Kinetics and Dynamics: Obtaining Data for Astrochemistry.</i>   |
| 44. December 15-20, 2005  | 'Astrochemistry - From Laboratory Studies to Astronomical Observations' at Pacifichem 2005 in Honolulu, Hawaii, USA   | <i>Experimental investigation of gas-phase molecular collisions at low temperatures - implications for astrochemistry.</i>                       |
| 45. Aug 29-Sep 2, 2005    | IAU Symposium 231, Astrochemistry throughout the Universe: Recent Successes and Current Challenges, Asilomar, California, USA   | <i>Experimental investigation of neutral-neutral reactions and energy transfer at low temperatures.</i>  |
| 46. June 5-9, 2005        | Interstellar Reactions: from Gas phase to Solids, FGLA Symposium, Dresden, Germany  | <i>Experimental investigation of neutral-neutral reactions and energy transfer at low temperatures.</i>  |
| 47. May 15-20, 2005       | XXI International Symposium on Molecular Beams, Hersonissos, Crete.   | <i>Experimental studies of gas phase reaction kinetics and energy transfer at very low temperatures.</i>   |
| 48. February 7-10, 2005   | ESF Exploratory Workshop on Ultra-cold Chemistry, Mulhouse, France  | <i>Experimental studies of gas phase reaction kinetics and energy transfer at very low temperatures: Obtaining data for astrochemistry</i>       |
| 49. August 7-12, 2004     | 18th International Symposium on Gas Kinetics, University of Bristol, UK   | <i>Gas-phase kinetics and dynamics at very low temperatures: Obtaining data for</i>  |

			<i>astrochemistry.</i>
50. July 6-10, 2004	8th European Conference on Atomic and Molecular Physics (ECAMP), Rennes, France		<i>Gas-phase kinetics and dynamics at very low temperatures: Obtaining data for astrochemistry.</i>
51. March 25-26, 2004	Workshop on 'Chemistry of Cold Molecules', Kyoto, Japan		<i>Experimental studies of gas phase reaction kinetics and energy transfer at very low temperatures</i>
52. January 3-5, 2003	Annual Meeting of The Association for Science Education, University of Birmingham, UK		<i>Frontier Science Lecture on Astrochemistry</i>
53. 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		<i>Low Temperature Molecular Collisions</i>
54. August 31-September 6, 2002	14 <sup>th</sup> European Conference on Molecular Dynamics, MOLEC2002, Koç University, Istanbul, Turkey		<i>Low Temperature Molecular Collisions: The CRESU Technique and Applications to Astrochemistry</i>
55. April 8-12, 2002	National Astronomy Meeting 2002, Symposium 'The Chemistry of Star Formation: what can astronomy learn from chemistry?', University of Bristol, UK		<i>Gas Phase Chemistry in Star Formation: Laboratory Measurements on Chemical Processes of Astrophysical Importance</i>
56. December 18, 2001	Joint RSC Gas Kinetics Discussion Group/High Resolution Spectroscopy Group Meeting, University of Birmingham, UK		<i>Gas Kinetics at Very Low Temperatures: An Introduction</i>
57. January 8, 1998	RSC Gas Kinetics Discussion Group Meeting on Experiment and Application in Gas Phase Kinetics, University of Cambridge, UK		<i>Reaction Kinetics and Energy Transfer at Extremely Low Temperatures</i>
58. June 28, 1997	RSC Lecture, Heriot-Watt University, Edinburgh, UK		<i>Chemical Reactions and Energy Transfer at Extremely Low Temperatures</i>
59. May 28-30, 1996	European Workshop on Reactive Processes at Subthermal Energies, St Jacut de la Mer, France		<i>Measurement of Reaction Rates at Extremely Low Temperatures</i>
60. June, 1994	Laser Support Facility Users Group Meeting, Rutherford Appleton Laboratories, Didcot, UK		<i>Astrochemistry and the Demise of the Arrhenius Equation</i>
61. September, 1993:	RSC Gas Kinetics Discussion Group Autumn Meeting, University of Nottingham, UK		<i>Natural (State-) Selection: Gas Kinetics at Ultra-low Temperatures</i>

### **Other oral presentations**

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

<b>Date</b>	<b>Type</b>	<b>Event</b>	<b>Title of Lecture</b>
1. 8-10 February 2017	Contributed lecture	SOLIS network meeting, Université de Cergy-Pontoise, Paris, France	<i>Cyanopolynes: gas -phase reactions</i>
2. 9 July 2015	Seminar	Informal seminar, A.A. Noyes Laboratory, Caltech, Pasadena, California, USA	<i>Radical reactivity at low temperatures Astrophysical and atmospheric applications</i>
3. February 3-4, 2015	Contributed lecture	ANR project HYDRIDES Second Annual Meeting Grenoble, France.	<i>Chirped Pulse Fourier Transform Microwave Spectroscopy in Pulsed Uniform Supersonic Flows – Preliminary Results</i> With the groups of Robert W. Field (MIT) and Arthur G. Suits (Wayne State University)
4. 20-25 July 2014	Contributed lecture	23rd International Symposium on Gas Kinetics, Szeged, Hungary.	<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
5. 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>
6. February 4-5, 2014	Contributed lecture	ANR project HYDRIDES First Annual Meeting Grenoble, France.	<i>The rate of the F + H<sub>2</sub> 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
7. May 29-30, 2013	Contributed lecture	Atelier KIDA, Laboratoire d'Astrophysique de Bordeaux, France.	<i>Rate coefficients for reactions of CN, C<sub>2</sub>H and C<sub>3</sub>N radicals of astrochemical interest</i>

Ian R. Sims, Sidaty Cheikh Sid Ely, Martin Fournier, Sébastien Morales, Jean-Claude Guillemin

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| 8. 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>                         |
| 9. 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>                        |
| 10. July 18-23, 2010            | Contributed lecture    | 21st International Symposium on Gas Kinetics, Leuven, Belgium.  | <i>Atom – H<sub>2</sub> reactions at very low temperatures</i>   |
| 11. 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 HO<sub>3</sub> radical cluster</i>                             |
| 12. 2—7 August 2009             | Contributed lecture    | Astrochemistry Symposium, 42nd IUPAC Congress, Glasgow UK   | <i>Chemical reactivity at extremely low temperatures: rate coefficients for S(<sup>1</sup>D) + H<sub>2</sub> down to 5.8 K</i> |
| 13. September 4, 2008           | Solicited lecture      | Molecular Universe Final Network Meeting, Boppard, Germany  | <i>Low temperature neutral-neutral reaction kinetics and energy transfer</i>   |
| 14. 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>  |
| 15. 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>  |
| 16. 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>                           |
| 17. 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>                   |
| 18. March 19-21, 2007           | Contributed lecture    | Molecular Universe FP6 RTN Mid-Term Review Meeting, Perugia, Italy.   | <i>Chemistry in Space: the Laboratory Perspective</i>  |
| 19. 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>   |
| 20. 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>   |
| 21. 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(<sup>3</sup>P) with alkenes down to 23 K</i>                      |
| 22. 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>  |
| 23. August 28-September 1, 2006 | Lecture series (6 hrs) | Molecular Universe FP6 RTN Summer School on "Molecular Astrophysics"  | <i>Laboratory Astrochemistry</i>   |
| 24. December 7-9, 2005          | Contributed lecture    | 2 <sup>nd</sup> Annual Meeting of the Molecular Universe Research and Training Network, Lorentz Center, Leiden, The Netherlands.  | <i>Experimental astrochemistry at Rennes</i>   |
| 25. May 11, 2005                | Departmental seminar   | Department of Chemistry, University of Basel, Switzerland.  | <i>Astrochemistry - Laboratory studies of molecular processes of relevance to astronomy.</i>                                   |
| 26. 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                        | <i>Les Molécules dans l'espace : comment survivre dans des conditions extrêmes ?</i>   |
| 27. April 18-19, 2005           | Contributed lecture    | New Astronomical Challenges in Surface Science, University College London, UK   | <i>Low temperature molecular collisions - implications for astrochemistry.</i>   |
| 28. December 15-17, 2004        | Contributed lecture    | Herschel Preparatory Science Workshop, Leiden, The Netherlands  | <i>Reaction and relaxation of neutral species at low temperatures.</i>   |
| 29. February 11, 2004           | Departmental seminar   | School of Chemistry & Physics, Keele University, UK   | <i>Astrochemistry: Laboratory studies of molecular processes of relevance to astronomy</i>                                     |



30. December 17, 2003	Contributed lecture	Annual meeting of the Astrophysical Chemistry Group, University of Nottingham, UK	<i>Rotational energy transfer in collisions of CO with He and H<sub>2</sub> at very low temperatures.</i>
31. March 23-27, 2003	Contributed lecture	Symposium on 'VUV Probes of Dynamics and Spectroscopy' at the 225th national ACS meeting in New Orleans, USA	<i>Gas-phase kinetics and dynamics at extremely low temperatures: obtaining data for astrochemistry using VUV techniques</i>
32. January 28-30, 2003	Contributed lecture	The Gas-Phase Formation and Destruction of Carbon-Based Nanoparticles, St Jacut, France	<i>Reactivity of Atomic Carbon and Carbon-Containing Radicals at Low Temperatures</i>
33. December 4, 2002	Departmental seminar	School of Chemistry, University of Nottingham, UK	<i>Low Temperature Molecular Collisions: Obtaining Data for Astrochemistry Using Supersonic Flows and Lasers</i>
34. July 19, 2002	Departmental seminar	Seminar as Professeur Invité, PALMS, Université de Rennes 1, France	<i>Cinétique et Dynamique de Processus Collisionnels en Phase Gazeuse à Basses Energies</i>
35. June 2-7, 2002	Contributed lecture	XXV Informal Conference On Photochemistry, University of Miami, USA	<i>Relaxation of Highly Vibrationally Excited H<sub>2</sub>O(104<sup>&gt;</sup>) in Collisions with H<sub>2</sub>O, Ar, H<sub>2</sub>, N<sub>2</sub> and O<sub>2</sub></i>
36. February 8, 2002	Departmental seminar	Department of Chemistry, University of Warwick	<i>Kinetics and dynamics of low temperature molecular collisions</i>
37. July 23-27, 2000	Contributed lecture	16th International Symposium on Gas Kinetics, University of Cambridge, UK	<i>The Reactivity of Atomic Carbon at Extremely Low Temperatures</i>
38. March 24, 1999	Departmental Seminar	Department of Chemistry, University College London, UK	<i>Chemical Synthesis in Interstellar Space: Experimental studies of reaction kinetics at extremely low temperatures</i>
39. December 9, 1998	Departmental Seminar	Department of Chemistry, University of Manchester, UK	<i>Chemical synthesis in interstellar space: rate coefficients for reactions of C<sub>2</sub>H radicals and C-atoms down to 15 K</i>
40. 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	<i>Chemical synthesis in interstellar space: rate coefficients for reactions of C<sub>2</sub>H radicals and C-atoms down to 15 K</i>
41. May 10-15, 1998	Contributed lecture	XXIII Informal Conference on Photochemistry, Pasadena, California, USA	<i>Chemical Synthesis in Interstellar Space: Rate Coefficients for Reactions of C<sub>2</sub>H Radicals and C-Atoms Down to 15 K</i>
42. April 15-17, 1998	Discussion Contribution	Faraday Discussion No. 109, Chemistry and Physics of Molecules and Grains in Space, University of Nottingham, UK	<i>Neutral-Neutral Reactions at the Temperature of Interstellar Clouds: Carbon Atom Reactions – Preliminary Results on C + C<sub>2</sub>H<sub>2</sub>, C + C<sub>2</sub>H<sub>4</sub> and C + O<sub>2</sub> Down to 27 K</i>
43. December 8, 1997	Departmental Seminar	School of Chemistry, University of Leeds	<i>Reaction Kinetics and Energy Transfer at Extremely Low Temperatures</i>
44. July 15, 1997	Contributed lecture	European Commission DGXII, Brussels	<i>Astrophysical Chemistry: Experimental, theoretical and modelling studies of reactions at extremely low temperatures with emphasis on their astrophysical consequences</i>
45. 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<sup>2</sup>Π) at Temperatures down to 7 K</i>
46. July 3, 1997	Departmental Seminar	Department of Chemistry, University of Southampton	<i>Reaction Kinetics and Energy Transfer at Extremely Low Temperatures</i>
47. June 16-21, 1996	Contributed lecture	XXII Informal Conference on Photochemistry, University of Minneapolis, USA	<i>Chemistry Approaches the Zero Temperature Limit</i>
48. October 25, 1996	Departmental Seminar	School of Molecular Sciences, University of Sussex	<i>Reaction Kinetics and Energy Transfer at Extremely Low Temperatures</i>
49. 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<sup>2</sup>Π, Ω = 1/2, v = 3, J) and He at temperatures down to 27 K</i>
50. April 25, 1995	Departmental Seminar	University of Leeds, Department of Chemistry	<i>Chemistry at Extremely Low Temperatures</i>
51. 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>
52. October 27,	Departmental	School of Chemistry, University of Birmingham, UK	<i>Ultra-Low Temperature Chemistry: The</i>

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| 1993                     | seminar                                       |   | <i>Demise of the Arrhenius Equation?</i>   |
| 53. 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> |
| 54. 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>  |
| 55. 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>   |
| 56. 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>   |