Publications


22. C. Berteloite, S. D. Le Picard, N. Balucani, A. Canosa, and I. R. Sims, *Low Temperature Rate Coefficients for Reactions of the Butadiynyl Radical, C\textsubscript{4}H\textsubscript{2} with Various Hydrocarbons. Part I: Reactions with Alkanes (CH\textsubscript{4}, C\textsubscript{2}H\textsubscript{6}, C\textsubscript{3}H\textsubscript{8}, C\textsubscript{2}H\textsubscript{4}H\textsubscript{2})*, Phys. Chem. Chem. Phys. 12 (2010), 3666-3676.


60. P. L. James, I. R. Sims, and I. W. M. Smith, *Total and state-to-state rate coefficients for rotational energy transfer in collisions between NO(X(²Π) and He at temperatures down to 15 K,* Chem. Phys. Lett. 272 (1997), 412-418.


**Invited Lectures and Seminars**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Title of Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 12-15,2017</td>
<td>Processus physico-chimiques d'intérêt astrophysique : Les molécules complexes, St Florent, Corsica, France</td>
<td>Low temperature kinetics studies related to the formation of polyynes and cyanopopolyynes in space</td>
</tr>
<tr>
<td>May 21-25,2017</td>
<td>10th International Conference on Chemical Kinetics, Chicago, Illinois, USA (Plenary)</td>
<td>Low Temperature Kinetics in Uniform Supersonic Flows: Rate Constants, Branching Ratios and Energy Transfer</td>
</tr>
<tr>
<td>May 19,2017</td>
<td>Invited Seminar, Astrophysics Laboratory, Columbia University, New York, USA</td>
<td>Gas-phase reaction kinetics and energy transfer for astrochemistry</td>
</tr>
<tr>
<td>April 11-13,2017</td>
<td>Faraday Joint Interest Group Conference 2017, University of Warwick, UK</td>
<td>Synthesis of organic molecules in space – chemical reactions at low temperatures</td>
</tr>
<tr>
<td>March 20-24,2017</td>
<td>IAU Symposium 332: Astrochemistry VII – Through the Cosmos from Galaxies to Planets, Puerto Varas, Chile</td>
<td>Gas-phase reaction kinetics and energy transfer for astrochemistry</td>
</tr>
<tr>
<td>August 21-25,2017</td>
<td>Physical Chemistry Meets AMO Symposium, 252nd National ACS</td>
<td>Supersonic flows meet lasers in the service of astronomy</td>
</tr>
</tbody>
</table>
2016  Meeting, Philadelphia, Pennsylvania, USA  Laboratory 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  Chemical reactions and energy transfer in cold supersonic flows
8. March 13-17, 2016  Cold And Controlled Molecules and Ions, Weizmann Institute, Rehovot, Israel  Energy transfer and reactivity at low temperatures: astrophysical applications
9. October 11-15, 2015  iCOMET 2015, Chengdu, China  Radical reactivity at low temperatures: Astrophysical applications
10. October 1-2, 2015  Laboratory Astrophysics Workshop 2015, Max-Planck Institute for Nuclear Physics, Heidelberg, Germany  Molecular collisions in cold supersonic flows: kinetics meets dynamics in the service of astrochemistry
11. July 12-17, 2015  Dynamics of Molecular Collisions XXV, Celebrating 50 Years of Chemical Reaction Dynamics, Asilomar, California, USA  Gas-phase reaction kinetics and energy transfer for astrochemistry
12. June 15-18, 2015  Processus physico-chimiques d'intérêt astrophysique : La chimie des hydrures, St Florent, Corsica, France  Low temperature reaction kinetics and astrochemistry
14. April 8, 2015  Invited departmental Seminar, School of Chemistry, University of Basel, Switzerland  Radical reactivity at very low temperatures
15. August 24-29, 2014  20th European Conference on Molecular Dynamics, MOLEC 2014, Gothenburg, Sweden  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  Experimental investigations of radical-molecule reactions using low temperature supersonic flows
20. September 4, 2013  Invited departmental seminar, Department of Chemistry, West Virginia University, Morgantown, West Virginia, USA  Experimental investigations of radical-molecule reactions using low temperature supersonic flows
23. July 15-20, 2012  Gordon Research Conference on Atomic and Molecular Interactions, Stonehill College, Easton, MA, USA  Experimental measurements on low temperature molecular collisions for astrophysical applications
24. March 12-14, 2012  6th Annual Titan Chemistry Workshop, Miami, FL, USA  Experimental investigations of radical-molecule reactions using low temperature supersonic flows and applications to atmospheric and astrophysical chemistry
25. November 24-25, 2011  Atelier Astrochimie, IPAG, Grenoble, France  Experimental investigations of radical-molecule reactions using low temperature supersonic flows
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
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
30. February 2-5, 2011 Workshop on Cold and Controlled Molecular Collisions, Ringberg Castle near Lake Tegernsee, Germany

31. October 6-8, 2010 COST Action - The Chemical Cosmos, First Annual Meeting, Grenoble, France

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


34. June 17, 2008 Invited Lecture in Series on Molecular Physics, Department of Physics, University of Stockholm, Sweden.

35. May 14, 2008 Invited Departmental Seminar, Department of Chemistry, University of Durham, UK.


38. April 25, 2007 Invited Seminar on Astrochemistry, Department of Chemistry, University of Illinois at Urbana-Champaign, IL, USA


40. February 5-7, 2007 First Workshop on Titan: Observations, Experiments, Computations, and Modeling, Honolulu, HI, USA

41. September 10-14, 2006 ‘Chemistry in Extreme Environments’ symposium at the 232nd ACS National Meeting, San Francisco, CA, USA

42. June 10-15, 2006 Nobel Symposium on Cosmic Chemistry and Molecular Astrophysics, Stockholm, Sweden

43. May 10-11, 2006 Réunion commune du Groupe Français de Cinétique et Photochimie et du Groupement Français de Combustion, Nancy, France

44. December 15-20, 2005 ‘Astrochemistry - From Laboratory Studies to Astronomical Observations’ at Pacificchem 2005 in Honolulu, Hawaii, USA

45. Aug 29-Sep 2, 2005 IAU Symposium 231, Astrochemistry throughout the Universe: Recent Successes and Current Challenges, Asilomar, California, USA

46. June 5-9, 2005 Interstellar Reactions: from Gas phase to Solids, FGLA Symposium, Dresden, Germany


48. February 7-10, 2005 ESF Exploratory Workshop on Ultra-cold Chemistry, Mulhouse, France

49. August 7-12, 2004 18th International Symposium on Gas Kinetics, University of Bristol, UK

supersonic flows

Experimental investigations of radical-molecule reactions using low temperature supersonic flows

Experimental investigations of radical-neutral reactions using supersonic flows.

Neutral-neutral reactions in astrochemistry: Measurements on atom – H2 reactions at very low temperature.

Laboratory measurements of reaction rate coefficients for astrochemistry.

Experimental Studies of Low Temperature Reactive and Inelastic Collisions: Astrochemical Applications.

Experimental Studies of Low Temperature Reactive and Inelastic Collisions: Astrochemical Applications.

Experimental measurements of elementary processes relevant to the growth of carbon-containing molecules and particles Titan’s atmosphere.

Experimental Studies of Low Temperature Reactive Collisions: Astrochemical Applications.

Experimental Measurements of Rate Constants under Extreme Conditions for Interstellar Chemistry.

Experimental measurements of rate constants of neutral-neutral reactions of relevance to Titan’s atmospheric chemistry.

Chemistry at very low temperatures. Kinetics and dynamics of low temperature reactions.

Low Temperature Gas-Phase Kinetics and Dynamics: Obtaining Data for Astrochemistry.

Experimental investigation of gas-phase molecular collisions at low temperatures - implications for astrochemistry.

Experimental investigation of neutral-neutral reactions and energy transfer at low temperatures.

Experimental investigation of neutral-neutral reactions and energy transfer at low temperatures.

Experimental studies of gas phase reaction kinetics and energy transfer at very low temperatures.

Experimental studies of gas phase reaction kinetics and energy transfer at very low temperatures: Obtaining data for astrochemistry.

Gas-phase kinetics and dynamics at very low temperatures: Obtaining data for
50. July 6-10, 2004 8th European Conference on Atomic and Molecular Physics (ECAMP), Rennes, France

51. March 25-26, 2004 Workshop on ‘Chemistry of Cold Molecules’, Kyoto, Japan

52. January 3-5, 2003 Annual Meeting of The Association for Science Education, University of Birmingham, UK

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

54. August 31-September 6, 2002 14th European Conference on Molecular Dynamics, MOLEC2002, Koç University, Istanbul, Turkey

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

56. December 18, 2001 Joint RSC Gas Kinetics Discussion Group/High Resolution Spectroscopy Group Meeting, University of Birmingham, UK

57. January 8, 1998 RSC Gas Kinetics Discussion Group Meeting on Experiment and Application in Gas Phase Kinetics, University of Cambridge, UK

58. June 28, 1997 RSC Lecture, Heriot-Watt University, Edinburgh, UK

59. May 28-30, 1996 European Workshop on Reactive Processes at Subthermal Energies, St Jacut de la Mer, France

60. June, 1994 Laser Support Facility Users Group Meeting, Rutherford Appleton Laboratories, Didcot, UK

61. September, 1993 RSC Gas Kinetics Discussion Group Autumn Meeting, University of Nottingham, UK

**Other oral presentations**

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

<table>
<thead>
<tr>
<th>Date</th>
<th>Type</th>
<th>Event</th>
<th>Title of Lecture</th>
</tr>
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<tbody>
<tr>
<td>1. 8-10 February 2017</td>
<td>Contributed lecture</td>
<td>SOLIS network meeting, Université de Cergy-Pontoise, Paris, France</td>
<td>Cyanopolyynes: gas-phase reactions</td>
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<td>2. 9 July 2015</td>
<td>Seminar</td>
<td>Informal seminar, A.A. Noyes Laboratory, Caltech, Pasadena, California, USA</td>
<td>Radical reactivity at low temperatures: Astrophysical and atmospheric applications</td>
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<tr>
<td>5. June 12, 2014</td>
<td>Seminar</td>
<td>Chemical Dynamics Group Seminar, Chemistry Division, Argonne National Laboratory, Argonne, Illinois, USA.</td>
<td>Radical reactivity at low temperatures: Astrophysical and atmospheric applications</td>
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<tr>
<td>6. February 4-5, 2014</td>
<td>Contributed lecture</td>
<td>ANR project HYDRIDES First Annual Meeting Grenoble, France.</td>
<td>The rate of the $F + H_2$ reaction at very low temperatures</td>
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<tr>
<td>7. May 29-30, 2013</td>
<td>Contributed lecture</td>
<td>Atelier KIDA, Laboratoire d'Astrophysique de Bordeaux, France.</td>
<td>Rate coefficients for reactions of CN, C$_2$H and C$_2$N radicals of astrochemical interest</td>
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2004 Februa
17, 2004 December 15
2005 April 18
March 9, 2005
March 13,
2007 March 19
April 23, 2007
March 19-21, 2007
March 13,
2007
December 6-8,
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October 26,
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October 17,
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August 28-
September 1,
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December 7-9,
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May 11,
2005
March 9,
2005
April 18-19,
2005
December 15-
17, 2004
February 11,
2004
9. July 8, 2011 Seminar Arthurs Suits Group Seminar, Department of Chemistry, Wayne State University, Detroit, MI, USA.
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
12. 2—7 August 2009 Contributed lecture Astrochemistry Symposium, 42nd IUPAC Congress, Glasgow UK
13. September 4, 2008 Solicited lecture Molecular Universe Final Network Meeting, Boppard, Germany
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
17. April 23, 2007 Seminar Chemical Kinetics Group, Argonne National Laboratory, Argonne, Illinois, USA.
18. March 19-21, 2007 Contributed lecture Molecular Universe FP6 RTN Mid-Term Review Meeting, Perugia, Italy.
22. October 17, 2006 Public Lecture De l’Atome à l’Objet, dans le cadre du Festival des Sciences, Espace des Sciences, Rennes, France
23. August 28-September 1, 2006 Lecture series (6 hrs) Molecular Universe FP6 RTN Summer School on "Molecular Astrophysics"
25. May 11, 2005 Departmental seminar Department of Chemistry, University of Basel, Switzerland.
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
27. April 18-19, 2005 Contributed lecture New Astronomical Challenges in Surface Science, University College London, UK
29. February 11, 2004 Departmental seminar School of Chemistry & Physics, Keele University, UK

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

Experimental measurements of rotational state-to-state collisional energy transfer in the CRESU
Experimental investigations of radical-molecule reactions using low temperature supersonic flows
Atom – \( H_2 \) reactions at very low temperatures
Direct measurement of the binding energy of the weakly bound \( \text{HO}_2 \) radical cluster
Chemical reactivity at extremely low temperatures: rate coefficients for \( S(D) + H_2 \) down to 5.8 K
Low temperature neutral-neutral reaction kinetics and energy transfer
Pushing the frontiers of low temperature reaction kinetics
Nucleation of carbon nanoparticles from molecular precursors
Understanding reactivity at very low temperatures: The reactions of oxygen atoms with alkenes
Experimental Studies of Low Temperature Reactive and Inelastic Collisions: Astrochemical Applications
Extrapolation pour les réactions neutre-neutres non mesurées
Neutral-neutral reactions: Rationalising low temperature reactivity
Rationalising low temperature reactivity: reactivity of \( O(P) \) with alkenes down to 23 K
Atomes et Molécules: Créer des molécules dans l’espace
Experimental astrochemistry at Rennes

Astrochemistry - Laboratory studies of molecular processes of relevance to astronomy.

Les Molécules dans l’espace : comment survivre dans des conditions extrêmes ?

Low temperature molecular collisions - implications for astrochemistry.

Reaction and relaxation of neutral species at low temperatures.

Astrochemistry: Laboratory studies of molecular processes of relevance to astronomy.
30. 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.

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

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

33. 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

34. 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

35. 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

36. February 8, 2002
Departmental seminar
Department of Chemistry, University of Warwick
Kinetics and dynamics of low temperature molecular collisions

Contributed lecture
16th International Symposium on Gas Kinetics, University of Cambridge, UK
The Reactivity of Atomic Carbon at Extremely Low Temperatures

38. 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

39. 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

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
Chemical synthesis in interstellar space: rate coefficients for reactions of C₂H radicals and C-atoms down to 15 K

41. 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

42. 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

43. December 8, 1997
Departmental Seminar
School of Chemistry, University of Leeds
Astrophysical Chemistry: Experimental, theoretical and modelling studies of reactions at extremely low temperatures with emphasis on their astrophysical consequences

44. July 15, 1997
Contributed lecture
European Commission DGXII, Brussels
Reaction Kinetics and Energy Transfer at Extremely Low Temperatures

45. July 8, 1997
Contributed lecture
RSC Molecular Beams and Dynamics Group Meeting, University of Nottingham
Total and State-to-State Rate Coefficients for Rotational and Vibrational Energy Transfer in NO(X²Π) at Temperatures down to 7 K

46. July 3, 1997
Departmental Seminar
Department of Chemistry, University of Southampton
Reaction Kinetics and Energy Transfer at Extremely Low Temperatures

47. June 16-21, 1996
Contributed lecture
XXII Informal Conference on Photochemistry, University of Minnesota, USA
Chemistry Approaches the Zero Temperature Limit

48. October 25, 1996
Departmental Seminar
School of Molecular Sciences, University of Sussex
Reaction Kinetics and Energy Transfer at Extremely Low Temperatures

49. September 7-12, 1996
Contributed lecture
14th International Symposium on Gas Kinetics, University of Leeds, UK
Coefficients for state-to-state rovibronic relaxation in collisions between NO(X²Π, Ω = 1/2, ν = 3, J) and He at temperatures down to 27 K

50. April 25, 1995
Departmental Seminar
University of Leeds, Department of Chemistry
Chemistry at Extremely Low Temperatures

51. September 11-16, 1994
Contributed lecture
13th International Symposium on Gas Kinetics, University College, Dublin
Rate Constants for Elementary Gas-Phase Reactions at Ultra-Low Temperatures

52. October 27, 1993
Departmental School of Chemistry, University of Birmingham, UK
Ultra-Low Temperature Chemistry: The
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Type</th>
<th>Location</th>
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<tbody>
<tr>
<td>1993</td>
<td>seminar</td>
<td>Université de Toulouse 3, Toulouse, France</td>
<td>Demise of the Arrhenius Equation?</td>
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<tr>
<td>53. April 8, 1993</td>
<td>Departmental seminar</td>
<td></td>
<td>Ultra-Low Temperature Kinetics of Neutral-Neutral Reactions: Laser photolysis - LIF measurements on CN radical reactions down to 13 K</td>
</tr>
<tr>
<td>55. December 16, 1992</td>
<td>Contributed lecture</td>
<td>RSC Gas Kinetics Discussion Group One Day Meeting, University of Birmingham, UK</td>
<td>Chemistry in the Zero Temperature Limit</td>
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<tr>
<td>56. July 6-10, 1992</td>
<td>Contributed lecture</td>
<td>European Meeting on Photons, Beams and Chemical Dynamics, Université de Paris XI, Orsay, France</td>
<td>Ultra-Low Temperature Kinetics of Neutral-Neutral Reactions</td>
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