

# Programme

**Faraday Discussion 142: Cold and Ultracold Molecules**  
**15 – 17 April 2009**  
**Durham University, UK**

**Wednesday 15 April 2009**

11:00	<b>Registration</b> (Collingwood College Reception)
12 noon	<b>Lunch</b> (Collingwood College Dining Room)
13:15	<b>Welcome and Introductions</b> (Applebey Lecture Theatre, Geography Department, West Building)
<b>Session 1</b>	Session Chair: Edward A Hinds, <i>Imperial College London, UK</i>
13:30 <b>Paper 1</b>	<b>Introductory Lecture</b> Dudley Herschbach <i>Harvard University, USA</i>
14:30 <b>Paper 2</b>	<b>Collision experiments with Stark decelerated beams</b> Sebastiaan Y T van de Meerakker* and Gerard Meijer <i>Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, Germany</i>
<b>Paper 3</b>	<b>Dynamics of OH(<sup>2</sup>Π)-He collisions in combined electric and magnetic fields</b> Timur V Tscherbul, Gerrit C Groenenboom*, Roman V Krems and Alexander Dalgarno <i>Radboud University Nijmegen, The Netherlands</i>
15:30	<b>Afternoon Tea</b> (Applebey Foyer)
16:00 <b>Paper 4</b>	<b>Production of cold ND<sub>3</sub> by kinematic cooling</b> Jeffrey J Kay, Sebastiaan Y T van de Meerakker, Kevin E Strecker, and David W Chandler* <i>Sandia National Laboratory, USA</i>
<b>Paper 5</b>	<b>Sympathetic cooling by collisions with ultra cold rare gas atoms and recent progress in optical Stark deceleration</b> P F Barker*, S M Purcell, P Douglas, P Barletta, N Cappendale, C Maher-McWilliams and J Tennyson <i>University College London, UK</i>
<b>Paper 6</b>	<b>Prospects for sympathetic cooling of polar molecules: NH with alkali-metal and alkaline-earth atoms - a new hope</b> Pavel Soldán*, Piotr S Żuchowski and Jeremy M Hutson <i>Charles University in Prague, Czech Republic</i>
17:30	<b>Close of Session</b>
19:00	<b>Dinner</b> (Collingwood Dining Room, by pre-booked ticket only)
20:00	<b>Poster Session and Wine Reception</b> (Collingwood JCR and bar area)

Thursday 16 April 2009

<b>Session 2</b>	Session Chair: Gerard Meijer, <i>Fritz-Haber-Institute, Germany</i>
09:00 <b>Paper 7</b>	<b>Testing the time-invariance of fundamental constants using microwave spectroscopy on cold diatomic radicals</b> Hendrick L Bethlem* and Wim Ubachs <i>Vrije Universiteit, Amsterdam, The Netherlands</i>
<b>Paper 8</b>	<b>Prospects for measuring the electric dipole moment of the electron using electrically trapped polar molecules</b> M R Tarbutt*, J J Hudson, B E Sauer and E A Hinds <i>Imperial College London, UK</i>
<b>Paper 9</b>	<b>Manipulating the motion of large neutral molecules</b> Jochen Küpper*, Frank Filsinger and Gerard Meijer <i>Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, Germany</i>
10:30	<b>Morning Coffee</b>
11:00 <b>Paper 10</b>	<b>Buffer gas cooling of polyatomic ions in rf multi-electrode traps</b> Dieter Gerlich* and G Borodi <i>Technische Universität Chemnitz, Germany</i>
<b>Paper 11</b>	<b>Rotational spectroscopy of single carbonyl sulphide molecules embedded in superfluid helium nanodroplets</b> Rudolf Lehnig, Paul L Raston and Wolfgang Jäger* <i>University of Alberta, Canada</i>
<b>Paper 12</b>	<b>Ion-molecule chemistry at very low temperatures: cold chemical reactions between Coulomb crystallized ions and velocity-selected neutral molecules</b> Martin T Bell, Alexander D Gingell, James Oldham, Timothy P Softley and Stefan Willitsch* <i>Universität Basel, Switzerland</i>
12:30	<b>Close of Session and Lunch/Posters</b> (Collingwood College JCR)

Thursday 16 April 2009 cont.

<b>Session 3</b>	Session Chair: William C Stwalley, <i>University of Connecticut, USA</i>
14:00 <b>Paper 13</b>	<b>Broadband lasers to detect and cool the vibration of cold molecules</b> Matthieu Viteau, Amodsen Chotia, Dimitris Sofikitis, Maria Allegrini, Nadia Bouloufa, Olivier Dulieu, Daniel Comparat and Pierre Pillet* <i>CNRS, Univ Paris-Sud, France</i>
<b>Paper 14</b>	<b>Continuous guided beams of slow and internally cold polar molecules</b> Christian Sommer, Laurens D van Buuren, Michael Motsch, Sebastian Pohle, Josef Bayerl, Pepijn W H Pinkse and Gerhard Rempe* <i>Max-Planck-Institute Garching, Germany</i>
<b>Paper 15</b>	<b>Self-organisation and cooling of a large ensemble of particles in optical cavities</b> Yongkai Zhao, Weiping Lu*, P F Barker and Guangjiong Dong <i>Heriot-Watt University, Edinburgh, UK</i>
15:30	<b>Afternoon Tea</b>
16:00 <b>Paper 16</b>	<b>Dark state experiments with ultracold, deeply-bound triplet molecules</b> Florian Lang, Christoph Strauss, Klaus Winkler, Tetsu Takekoshi, Rudolf Grimm and Johannes Hecker Denschlag* <i>Universität Innsbruck, Austria</i>
<b>Paper 17</b>	<b>Precision molecular spectroscopy for ground state transfer of molecular quantum gases</b> Johann G Danzl, Manfred J Mark, Elmar Haller, Mattias Gustavsson, Nadia Bouloufa, Olivier Dulieu, Helmut Ritsch, Russell Hart and Hanns-Christoph Nägerl* <i>Universität Innsbruck, Austria</i>
17:30	<b>Close of Session</b>
19:30	<b>Pre-Dinner Drinks</b> (Tunstall Gallery, Durham Castle)
20:00	<b>Conference Dinner</b> (Great Hall, Durham Castle)

Friday 17 April 2009

<b>Session 4</b>	Session Chair: Rudolf Grimm, <i>University of Innsbruck, Austria</i>
09:00 <b>Paper 18</b>	<b>Formation of ultracold dipolar molecules in the lowest vibrational levels by photoassociation</b> J Deiglmayr, M Repp, A Grochola, K Mörtlbauer, C Glück, O Dulieu, J Lange, R Wester and M Weidemüller* <i>Albert-Ludwigs-Universität Freiburg, Germany</i>
<b>Paper 19</b>	<b>Ultracold polar molecules near quantum degeneracy</b> S Ospelkaus, K-K Ni, M H G de Miranda, B Neyenhuis, D Wang, S Kotochigova, P S Julienne, D S Jin, and Jun Ye* <i>University of Colorado, USA</i>
<b>Paper 20</b>	<b>Ultracold molecules from ultracold atoms: a case study with the KRb molecule</b> Paul Julienne* <i>National Institute of Standards and Technology, Gaithersburg, USA</i>
10:30	<b>Morning Coffee</b>
11:00 <b>Paper 21</b>	<b>Two-photon coherent control of femtosecond photoassociation</b> Christine P Koch*, Mamadou Ndong and Ronnie Kosloff <i>Freie Universität Berlin, Germany</i>
<b>Paper 22</b>	<b>A pump-probe study of the photoassociation of cold rubidium molecules</b> Jovana Petrovic*, David McCabe, Duncan England, Hugo Martay, Melissa Friedman, Alexander Dicks, Emiliya Dimova and Ian Walmsley <i>University of Oxford, UK</i>
<b>Paper 23</b>	<b>Fano profiles in two-photon photoassociation spectra</b> Maximilien Portier*, Michèle Leduc and Claude Cohen-Tannoudji <i>Université Pierre et Marie Curie and IFRAF, Paris, France</i>
12:30 <b>Paper 24</b>	<b>Concluding Remarks</b> Franco Gianturco <i>Università di Roma, Italy</i>
13:00	<b>Acknowledgements</b>
13:15	<b>Close of Meeting</b>