

**27th International Symposium on Gas Kinetics & Related Phenomena**

**Sunday 14 – Thursday 18 July 2024**

**University of Leeds, UK**

**PROGRAMME**

(subject to amendments)

**Sunday 14th July 2024**

Reception and registration at the Parkinson Building, University of Leeds, 17:00 to 18:30.

## Monday 15th July 2024

08:00-09:00	<i>Registration</i>	
09:00-09:20	<i>Welcome and introduction</i> <i>RSC Gas Kinetics Interest Group and GK2024 organising committee</i>	
	<b>Astrochemistry &amp; Planetary Chemistry I</b>	
09:20-10:00	Gas-phase radical-molecule reactions relevant for prebiotic chemistry in star-forming regions	Prof. Elena Jiménez Universidad de Castilla-La Mancha, Spain
10:00-10:20	VUV photoionization of radicals of astrochemical interest	Dr Myriam Drissi Synchrotron SOLEIL, France
10:20-10:40	First steps in nucleation: conformer specific reaction kinetics of heterodimer formation at low temperatures	Prof. Ian R. Sims Université de Rennes, France
10:40-11:20	<i>Refreshments</i>	
	<b>Astrochemistry &amp; Planetary Chemistry II</b>	
11:20-11:40	Laboratory investigation of the O(3P,1D) + small aromatics reactions: the role of oxygen atoms in space organic chemistry	Dr Giacomo Pannacci University of Perugia, Italy
11:40-12:00	Kinetic modelling of the C/H/O/N/S chemistry of exoplanets with ab initio calculations validated on experimental data	Roméo Veillet Université Paris Cité and Univ Paris Est Créteil, France
12:00-12:20	Carbon on Mars: Photolytic isotope effect shows CO is the building block of organic synthesis	Prof. Matthew Johnson University of Copenhagen, Denmark
12:20-12:40	New insights into catalytic chlorine oxidation of CO in the Venus mesosphere	Dr Frank Winiberg Jet Propulsion Laboratory, California Institute of Technology, USA
12:40-14:00	<i>Lunch</i>	
	<b>Theoretical Kinetics I</b>	
14:00-14:40	Predicting Pressure Dependent Rate Constants	Dr Ahren Jasper Argonne National Laboratory, USA
14:40-15:00	The effects of quantum tunneling on pressure-dependent reaction rate coefficients	Dr Thanh Lam Nguyen University of Florida, USA
15:00-15:20	Modelling Post-Reaction Energy Distributions: The Key to Unlocking Coupled Reaction Systems	Dr Robin Shannon University of Leeds, UK
15:20-16:00	<i>Refreshments</i>	
	<b>Theoretical Kinetics II</b>	
16:00-16:20	The Role of the Pre-reaction Complex in the Dynamics of the $\text{CH}_3 + \text{HBr} \rightarrow \text{CH}_4 + \text{Br}$ Reaction	Prof. György Lendvay Research Centre for Natural Sciences, Hungary
16:20-16:40	Elucidating the Atmospheric Reactivity of $\text{HO}_2 + \text{NO}$ : Reaction Kinetics, Roaming, and Branching Ratios	Nadjib Rais Scuola Normale Superiore, Italy
16:40-17:00	Theoretical study of the influence of O-atoms in heterocycles on the H-abstractions by alkoxy radicals	Gabriel Batalha-de-Souza Université de Lorraine, France
17:00-17:30	<i>Flash presentations</i>	
17:30-19:30	<i>Poster session I and drinks reception</i>	

## Tuesday 16th July

	<b>Combustion Chemistry I</b>	
09:00-09:40	Workflows for Gas-Phase and Gas-Surface Reaction Kinetics	Dr Judit Zádor Sandia National Laboratories, USA
09:40-10:00	Role of ring-opening reactions in low-temperature oxidation of cis- and trans-2,3-dimethyloxiranyl radicals	Nicholas Dewey University of Georgia, USA
10:00-10:20	Understanding High-Pressure Chemistry in Acetylene Oxidation: Experimental Insights from Jet-Stirred Reactor and Pressure Effects	Dr Qian-Peng Wang Chinese Academy of Sciences, China
10:20-10:40	Unimolecular dynamics of the hydroperoxyalkyl intermediate ( $\bullet$ QOOH) in cyclohexane oxidation	Prof. Marsha Lester University of Pennsylvania, USA
10:40-11:20	<i>Refreshments</i>	
	<b>Chemistry with Laser and Shock Tubes – Tribute to Horst Hippler</b>	
11:20-11:30	Tribute to Professor Horst Hippler	
11:30-11:50	On the multichannel dissociation of styrene and PAH growth	Dr Robert Tranter Argonne National Laboratory, USA
11:50-12:10	Pyrolysis Reactions of Phosphine: Shock Tube Studies and Kinetic Modeling	Dr Johannes Wenz Karlsruhe Institute of Technology (KIT), Germany
12:10-12:30	Shock tube TOF-MS study of the decomposition of trimethylsilanol and hexamethyldisiloxane	Dr Rachel Schwind University of Edinburgh, UK
12:30-14:00	<i>Lunch</i>	
	<b>Heterogeneous Kinetics</b>	
14:00-14:40	Predicting Multiphase Kinetics in Aerosols and Microdroplets	Dr Kevin Wilson Lawrence Berkeley National Laboratory, USA
14:40-15:00	Dehydrogenation processes of Liquid Organic Hydrogen Carriers (LOHC)	Dr Franziska Dahlmann KTH Royal Institute of Technology, Sweden
15:00-15:20	Condensed Phase Redox Chemistry induces Mass Loss during Photochemical Aging of Atmospheric Aerosols	Dr Thomas Schaefer Leibniz Institute for Tropospheric Research (TROPOS), Germany
15:20-16:00	<i>Refreshments</i>	
	<b>Combustion Chemistry II</b>	
16:00-16:20	Reactions of the OH Radical with Conjugated Cyclic Ketones	Dr Fabien Goulay West Virginia University, USA
16:20-16:40	Experimental and modelling high-pressure study of ammonia/diethyl-ether oxidation in a flow reactor	Prof. Maria Alzueta University of Zaragoza, Spain
16:40-17:00	Insights into Hydrocarbon Oxidation from Time-Resolved Speciation Measurements and Theory-Based Modeling	Dr Leonid Sheps Sandia National Laboratories, USA
17:00-17:30	<i>Flash presentations</i>	
17:30-19:30	<i>Poster session II and drinks reception</i>	

## Wednesday 17th July

	<b>Atmospheric Chemistry I</b>	
09:00-09:40	Towards an improved understanding of tropospheric oxidation processes by comparison of field observations of radical species with Master Chemical Mechanism box model predictions	Dr Lisa Whalley University of Leeds, UK
09:40-10:00	Kinetics, products, and mechanisms for the OH radical initiated oxidation of piperitone	Prof. John Wenger University College Cork, Ireland
10:00-10:20	Investigation of the temperature-dependent kinetics of Criegee intermediate (CH <sub>2</sub> OO) with 2-butanone and 2-pentanone under tropospherically relevant conditions	Prof Balla Rajakumar Indian Institute of Technology Madras, India
10:20-10:40	Direct Kinetic Measurements of the Cyclic and DiethylSubstituted Criegee Intermediates: <i>c</i> -(CH <sub>2</sub> ) <sub>5</sub> COO and (CH <sub>3</sub> CH <sub>2</sub> ) <sub>2</sub> COO	Dr Jari Peltola University of Helsinki, Finland
10:40-11:20	<i>Refreshments</i>	
	<b>Atmospheric Chemistry II</b>	
11:20-12:00	From volatile to non-volatile in sub second timescales	Prof. Matti Rissanen Tampere University and University of Helsinki, Finland
12:00-12:20	Gas-phase Kinetics of Criegee Intermediates: Expanding the Reactivity Database using a Novel Relative Rate Technique	Pengcheng Wang ICARE-CNRS, France
12:20-12:40	Gas-Phase Oxidation of Atmospherically Relevant Unsaturated Hydrocarbons by Acyl Peroxy Radicals	Dominika Pasik University of Helsinki and Institute for Atmospheric and Earth System Research, Finland
12:40-12:50	<i>Excursion details</i>	
12:50	<i>End of sessions – please collect your lunch boxes and go directly to the area outside the Parkinson Building for the excursion</i>	
13:30	<i>Coaches depart from outside the Parkinson Building for the excursion to Fountains Abbey</i>	
17:30	<i>Coaches depart from Fountains Abbey for the return to Leeds</i>	

## Thursday 18th July

	<b>Novel Techniques and Elementary Processes I</b>	
09:00-09:40	Quantitative MIR Laser Spectroscopies for Time-Resolved Gas Phase and Interface Studies	Prof. Gernot Friedrichs Christian-Albrechts-University Kiel, Germany
09:40-10:00	Frequency Comb Spectroscopy for Gas Phase Phenomena	Dr Julia Lehman University of Birmingham, UK
10:00-10:20	How the Atmospheric Ozonolysis Mechanism can Contribute to Low-Temperature Combustion Chemistry?	Prof. Frédérique Battin-Leclerc Université de Lorraine, France
10:20-10:40	Kinetic Measurements and Calculations on the Controversial Reaction of NH <sub>2</sub> with CH <sub>2</sub> O	Prof. Paul Marshall University of North Texas, USA
10:40-11:20	<i>Refreshments</i>	
	<b>Novel Techniques and Elementary Processes II</b>	
11:20-11:40	OH + Formic Acid – Kinetics and Branching Ratios	Dr Mark Blitz University of Leeds, UK
11:40-12:00	Influence of Pressure, Temperature, and Water Vapor on OH+NO+M Rate Coefficients	Prof. Carl Percival Jet Propulsion Laboratory, USA
12:00-12:20	Kinetic Studies of the OH + HO <sub>2</sub> Reaction via Direct Measurement of Precursor and Radical Concentrations with Mid-Infrared Time-Resolved Dual-Comb Spectroscopy	Dr Pei-Ling Luo Academia Sinica, Taiwan
12:20-12:40	Kinetics of the HO <sub>2</sub> + OH Reaction Using Infrared Kinetic Spectroscopy	Dr Charles Markus Jet Propulsion Laboratory, USA
12:40-13:40	<i>Lunch</i>	
	<b>Chemistry of Atmospheres – Tribute to Professor Richard Wayne</b>	
13:40-13:50	Tribute to Professor Richard Wayne	
13:50-14:10	Using the Mesospheric Lithium Layer to Monitor the Ablation of Space Debris	Prof. John Plane University of Leeds, UK
14:10-14:30	Pulsed Laser Photolysis-Pulsed Laser Induced Fluorescence Studies of the Spectroscopy, Kinetics and Mechanism of HgBr	Prof. Anthony Hynes Rosenstiel School of Marine, Earth and Atmospheric Sciences, USA
14:30-14:50	Evidence of Criegee intermediate oligomerization reactions in the Amazonian troposphere	Dr Rebecca Caravan Argonne National Laboratory, Sandia National Laboratories, and Jet Propulsion Laboratory, USA
14:50-15:00	<i>Closing remarks</i>	
15:00	<i>End of sessions – please be on time for the conference photo and transport to the Royal Armouries for the Polanyi lecture and conference dinner</i>	
15:50	<i>Conference photo outside the Parkinson Building</i>	
16:15	<i>Coaches depart from outside the Parkinson Building for the Polanyi lecture and conference dinner at the Royal Armouries</i>	
17:00-17:15	Award of the 2024 Polanyi medal to Dr Timothy Wallington	GK Committee Chair, Terry Dillon, and GK2024 Chair, Daniel Stone
17:15-18:00	Polanyi Lecture	Dr Timothy Wallington
18:00-19:30	<i>Reception at the Royal Armouries</i>	
19:30	<i>Conference dinner at the Royal Armouries</i>	
22:30	<i>Coaches depart from the Royal Armouries for the return to University of Leeds</i>	