

# Astrochemistry at high resolution

31 May – 2 June 2023  
Baltimore, USA and online



## Faraday Discussions

**Wednesday 31 May 2023 (times shown are EST)**

11:00	Registration and refreshments
12:00	Lunch
12:45	<b>Welcome and introductions</b> Martin R. S. McCoustra, <i>Chair of Scientific Committee</i>
12:55	<b>Outline of Discussion format</b> Sam Howell and Samuel Oldknow, <i>Royal Society of Chemistry Publishing Editors</i>
13:00	<b>Introductory Lecture</b> (Session chair: ) Cecilia Ceccarelli <i>IPAG Université, France</i>
	<b>Session 1: Observational Astrochemistry in the Age of ALMA, NOEMA, JWST and Beyond!</b> (Session chair: )
14:00	<b>The diverse chemistry of protoplanetary disks as revealed by JWST</b> Ewine van Dishoeck <i>Leiden Observatory, Netherlands</i>
14:05	<b>Chemical Conditions on Hycean Worlds</b> Nikku Madhusudhan <i>University of Cambridge, UK</i>
14:10	<b>The Chemical Inventory of the Inner Regions of Planet-forming Disks – The JWST/MINDS Program</b> Inga Kamp <i>University of Groningen, Netherlands</i>
14:15	Discussion
15:30	Refreshments
16:00	<b>New Interstellar Laboratories in the Molecular Ring</b> Olivia Wilkins <i>NASA Goddard Space Flight Center, USA</i>
16:05	<b>Astrochemistry reveals accretion shocks in the streamers feeding the SVS13A protobinary system</b> Elenora Bianchi <i>ORIGINS Excellence Cluster, Germany</i>
16:10	<b>Tracing the chemical footprint of shocks in the extragalactic environments with ALMA multi-line molecular studies</b> Ko-Yun Huang <i>Leiden Observatory, Netherland</i>
16:15	Discussion
17:30	Lightning presentations (by invitation of the Scientific Committee)
18:00	Poster session and wine reception
19:30	Close of sessions



Thursday 1 June 2023 (times shown are EST)

	<b>Session 2: Laboratory Astrochemistry of the Gas Phase</b> (Session chair: )
09:00	<b>Fingerprinting fragments of fragile interstellar molecules: Dissociation chemistry of pyridine and benzonitrile revealed by infrared spectroscopy and theory</b> Sandra Brunken <i>Radboud University and FELIX, Netherlands</i>
09:05	<b>Kinetics of CN(v=1) reactions with butadiene isomers at low temperature by cw-Cavity Ringdown in a pulsed Laval flow with theoretical modelling of rates and entrance channel branching</b> Arthur Suits <i>University of Missouri, Columbia, USA</i>
09:10	<b>Experimental, theoretical and modelling investigation of the gas-phase reaction between the amidogen radical (NH<sub>2</sub>) and acetaldehyde (CH<sub>3</sub>CHO) at low temperatures</b> Kevin Douglas <i>University of Leeds, UK</i>
09:15	<b>Searches for bridged bicyclic molecules in Space – norbornadiene and its cyano derivatives</b> Ugo Jacovella <i>Université Paris-Saclay / CNRS / ISMO, France</i>
09:20	Discussion
11:00	Refreshments
11:30	<b>High-resolution spectroscopy of hydrocarbon ions relevant to astrochemistry</b> Divita Gupta <i>University of Cologne, Germany</i>
11:35	<b>Rotational spectra of reactive molecules produced by pyrolysis</b> Cristina Puzzarini <i>University of Bologna, Italy</i>
11:40	<b>An experimental and theoretical investigation of the N(2D) + C<sub>6</sub>H<sub>6</sub> (benzene) reaction with implications for the photochemical models of Titan</b> Nadia Balucani <i>Università degli Studi di Perugia – DCBB, Italy</i>
11:45	Discussion
13:00	Lunch
14:00	<b>Experimental radiative cooling rates of a Polycyclic Aromatic Hydrocarbon cation</b> Mark Stockett <i>Stockholm University Department of Physics, Sweden</i>
14:05	<b>Direct Frequency Comb Spectroscopy of HCN to Evaluate Line Lists</b> Adam Fleisher <i>National Institute of Standards and Technology, USA</i>
14:10	<b>Size distribution of polycyclic aromatic hydrocarbons in space: an old new light on the 11.2/3.3 μm intensity ratio</b> Sander Lemmens <i>Radboud University, Netherlands</i>
14:15	Discussion
15:30	Refreshments

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	<b>Session 3: Laboratory Astrochemistry of and on Dust and Ices</b> (Session chair: )
16:00	<b>Infrared photodesorption of CO from astrophysically relevant ices studied with a free-electron laser</b> Wendy Brown <i>University of Sussex, UK</i>
16:05	<b>Thermal Behavior of Astrophysical Amorphous Molecular Ices</b> Murthy Gudipati <i>NASA JPL, USA</i>
16:10	<b>Vacuum UV photodesorption of organics in interstellar the medium: an experimental study of formic acid HCOOH and methyl formate HCOOCH<sub>3</sub>-containing ices</b> Mathieu Bertin <i>LERMA - Sorbonne Université, France</i>
16:15	<b>A systematic mechanistic survey on the reactions between OH radical and CH<sub>3</sub>OH on ices</b> W.M.C Sameera <i>Hokkaido University, Japan</i>
16:20	Discussion
18:00	Close of sessions
18:30	Pre-dinner drinks
19:00	Conference dinner



**Friday 2 June 2023 (times shown are EST)**

	<b>Session 4: Computational Astrochemistry</b> (Session chair: )
09:00	<b>Preferential destruction of NH<sub>2</sub>-bearing complex interstellar molecules via gas-phase proton-transfer reactions</b> Robin Garrod <i>University of Virginia, USA</i>
09:05	<b>A statistical and machine learning approach to the study of astrochemistry</b> Serena Viti <i>Leiden Observatory, Netherlands</i>
09:10	Discussion
10:00	Refreshments
10:30	<b>Disentangling physics and chemistry in AGB outflows: adding complexity to reveal degeneracies</b> Marie Van De Sande <i>University of Leeds, UK</i>
10:35	<b>A guide to finding nanosilicate dust with JWST based on accurate IR spectra from computational chemistry</b> Stefan Bromley <i>University of Barcelona / ICREA, Spain</i>
10:40	Discussion
11:30	<b>Concluding Remarks Lecture</b> (Session chair: ) Tom Millar <i>Queen's University Belfast, UK</i>
12:15	<b>Acknowledgements</b>
12:30	<b>Close of meeting and lunch</b>

Presenting authors are indicated in the programme by an underline. The affiliation is for the presenting author. If the presenting author of your paper has changed since abstract selection please email [events@rsc.org](mailto:events@rsc.org). Please note that this is a draft programme and timings may change.