17th International conference on materials chemistry (MC17)
7 - 10 July 2025, Edinburgh, UK

OVERVIEW PROGRAMME

Monday 7 July 2025

11:00	Registration, refreshments and lunch							
12:45	Lennox 3 **Welcome & Introductions from the Co-chairs** Paul Attfield and Rachel Evans *University of Edinburgh, UK and University of Cambridge, UK* **Welcome from Materials Chemistry Community President** Neil Robertson *University of Edinburgh, UK*							
	Session chair: Rachel Evans							
13:00	Lennox 3 **PL01: The Role of Organic Photovoltaics in Transition to Renewable Energy** Thuc-Quyen Nguyen *University of California, USA*							
14:00	Time for delegates to move between theatres							
	Lowther Functional inorganic materials		Lennox 3 Materials for energy and sustainability		Lammermuir Suite Nano and porous materials		Menteith Soft matter and biomaterials	
	Session chair: Paul Attfield		Session chair: TBC		Session chair: Svetlana Mintova		Session chair: Neil Roberston	
14:10	K01	**Interdisciplinary Prize winner: Practical Functional Oxide Thin Films for Electronic Devices** Judith Driscoll *University of Cambridge, UK*	K02	**Light-Responsive Materials for a Sustainable Future: Exploring Optically-Controlled Functional Organic Systems** Grace Han *Brandeis University, USA*	K03	**Peter Day Prize winner: Probing Physical Properties and Functionality in Metal-Organic Frameworks by Diffraction Across Length Scales** Ross Forgan *University of Glasgow, UK*	K04	**Centenary Prize winner: Hybrid Materials for Biomedical Applications** Luisa de Cola *University of Milan, Italy*
14:40	F01	**Operando XRDCT experiments using magnetic induction heating for CO2 conversion** Lucy Costley-Wood *University College London, UK*	E01	**Fluorescent protein chemical modification for bio-hybrid light-emitting diodes** David Gutiérrez-Armayor *TUM, Germany*	N01	**Nanoscale Flexing Mechanisms of Metal-Organic Framework Ga-MIL 53 Revealed by Atomic Force Microscopy** Martin Attfield *University of Manchester, UK*	S01	**Locomotion driven by actin polymerization-powered motors** Miguel A Ramos Docampo *Aarhus University, Denmark*
15:00	F02	**Hybrid Solvothermal-Molten Salt mediated synthesis of M-N-H materials: A novel approach towards Lithium Nanostructurisation** Fatima Abi Ghaida *Univeristy of Birmingham, UK*	E02		N02	**Probing porous molecular materials with 3D electron diffraction** Gavin Craig *University of Strathclyde, UK*	S02	**Designing of vaterite CaCO3-based drug delivery vectors** Mariam Mammen *Nottingham Trent University, UK*
15:20	F03	**New photocatalytic building material additives based on layered double hydroxides to combat nitrogen oxides air pollution under visible light** Antonio Manuel Ruz-Luna *University of Cordoba, Spain*	E03	**Chiral Organic Semiconductors - Lending a Hand in Water Splitting** Aisha Mumtaz *University College London, UK*	N03	**Crystal structure prediction of porous isoreticular non-metal organic frameworks** Joe Glover *University of Southampton, UK*	S03	**Mapping variation in strontium incorporation in coccolithophore biominerals using nanofocus synchrotron X-ray techniques** Jessica Walker *Diamond Light Source, UK*
15:40	Lennox 1&2 Refreshments							
	Session chair: TBC		Session chair: Thuc-Quyen Nguyen		Session chair: TBC		Session chair: TBC	
16:20	F04	**Supported Ternary Ni-Cu-Ga Nanoalloy as Selective and Durable Heterogeneous Catalyst for CO2 Utilisation** Irene Collina *BasCat - UniCat BASF JointLab, TU Berlin, Germany*	K05	**KEYNOTE: Machine Learning Accelerated Materials Discovery for Energy Conversion and Storage** Karsten Reuter *Fritz-Haber-Institut der MPG, Germany*	N04	**Scaling up the manufacture of MOFs to industrial scale** Ed Lester *The University of Nottingham, UK*	S04	**Polymerisation mechanism of dopamine resolved: A story of strong pi-stacking** Sophie Crouch *Monash University, Australia*
16:40	F05	**High pressure synthesis as a reliable route to novel Rh based magnetic and quantum materials** Sean Injac *University of Edinburgh, UK*	E05 (16:50)	**Templated synthesis of single-site electrocatalysts with microporous materials** Jesus Barrio *Imperial College London, UK*	N05	**2.5-dimensional covalent organic frameworks: their structure and superior properties for CO2 capture** Yoichi Murakami *Institute of Science Tokyo, Japan*	S05	**Direct laser writing for 4D micro-actuators integrated with pH-responsive sensor** Yekaterina Tskhe *Trinity College Dublin, Ireland*
17:00	F06	**Controlling metal morphology through application-specific materials design with density functional theory** Cara-Lena Nies *Tyndall National Institute, Ireland*	E06 (17:10)	**Structural investigation of novel Fe/MgAl2O4 catalysts for turquoise hydrogen production via CH4 pyrolysis** Antonia Diana Bobitan *University College London, UK*	N06	**Emerging synthesis methods and applications of porous photocatalytic conjugated polymer nanoparticles** Calum Ferguson *University of Birmingham, UK*	S06	**Self-assembly of 2D Layered Materials with Controllable Dimensionality and Conductivity** Tetsuhiko Teshima *Technical University of Munich, Germany*
17:20	F07	**Structural regulation and dynamic responsiveness in single-molecule magnets and spin crossover materials** Mengmeng Wang *Université catholique de Louvain, Belgium*	E07 (17:30)		N07	**Raman Hydration Shell Spectroscopy Can Be Applied to Study Solvation Shells of Nanomaterials** Taritra Mukherjee *Max Planck Institute for Sustainable Materials, Germany*	S07	
17:40	Lammermuir Suite **ECR session - Making chemistry accessible for everyone: disability-inclusive laboratories**							
18:30	**Sponsored by American Chemical Society** Poster session							
20:00	Close							

Tuesday 8 July 2025

	Session chair: Andy Beale							
09:00	Lennox 3 **PL02 - From biological to heterogeneous catalysis: Spectroscopic studies of ammonia synthesis and decomposition** Serena DeBeer *Max Planck Institute for Chemical Energy Conversion, Germany*							
10:00	Time for delegates to move between theatres							
	Lowther Functional inorganic materials		Lennox 3 Materials for energy and sustainability		Lammermuir Suite Nano and porous materials		Menteith Soft matter and biomaterials	
	Session chair: TBC		Session chair: Federico Bella		Session chair: TBC		Session chair: Rachel Evans	
10:10	K06	**Tuning high energy density cathodes for electrochemical energy storage** Serena Cussen *University College Dublin, Ireland*	K07	**Metal Nitride Functional Materials: from Synthesis to Applications** Minghui Yang *Dalian University of Technology, China*	K08	**Harrison-Meldola Prize winner: Charge and thermal transport in printed films of two-dimensional materials** Felice Torrisi *Imperial College London, UK*	K09	**Corday-Morgan Prize winner: Biomaterials to bank, store and deliver frozen biologics** Matthew Gibson *University of Manchester, UK*
10:40	F08	**Understanding the Phase Transitions in Fluoride Perovskites** Catriona Crawford *University of Warwick, UK*	E08	**Mechanochemical Innovations for Sustainable Synthesis of Franwork Materials and Industrial ScaleUp** Franziska Emmerling *Federal Institute for Materials Research and Testing, Germany*	N08	**2D Siloxene and Silane-Functionalised Graphene Oxide Nanosheets to Reduce Fouling in Biomedical Membrane Ultrafiltration** Benjamin Moore *University of Manchester, UK*	S08	**Polymers for Ratiometric and Selective Detection of Oxidative Stress** Andrea Carlini *University of California Santa Barbara, USA*
11:00	F09	**Structural studies on cation-disordered LiNiO2 Li-ion battery electrodes** Javier Castells-Gil *Universtiy of Birmingham, UK*	E09	**Tunable Porous Framework Materials for Energy and Environmental Applications** Dinesh Shetty *Khalifa University, United Arab Emirates*	N09	**Structure of Water and Ice Under Nanoconfinement in Periodic Mesoporous Organosilicas (PMOs)** Michael Froeba *University of Hamburg, Germany*	S09	**Responsive all aqueous multi-phase systems** Bernhard V K J Schmidt *University of Glasgow, UK*
11:20	Lennox 1&2 Refreshments							
	Session chair: Xiaoming Wang		Session chair: Tao Zhang		Session chair: TBC		Session chair: TBC	
12:00	F10	**The symmetry of structural distortions as control parameter for the optimized design of multiferroic and Mott materials: the case of quadruple perovskites** Andrea Gauzzi *Sorbonne University, France*	K10	**KEYNOTE: Nitrogen species electroreduction for sustainable ammonia production: a materials perspective** Federico Bella *Politecnico di Torino, Italy*	N10	**Hierarchical pore formation in iron nitride foils investigated at nano-scale by phase-contrast tomography** Sandra Benter *European Synchrotron Radiation Facility, France*	S10	**Engineering viscoelastic hydrogels for bone marrow models and cancer therapy screening** Rebecca Ginesi *University of Glasgow, UK*
12:20	F11	**Urchin-like TiO_2 nanostructure with controlled crystalline phase obtained using Cellulose nanocrystals as bio-template for Oxygen Evolution Reaction** Dongmin Wu *Paris-Saclay University, France*	E11 (12:30)	**Advanced Plasmonic Catalysis Utilizing Superlattice-Based Designs and Functional Three-Phase Interfaces for Efficient Nitrogen-to-Ammonia Photofixation** Hiang Kwee Lee *Nanyang Technological University, Singapore*	N11	**Layered gadolinium/terbium hydroxide theranostic probes for in vivo CT imaging** Margarita Strimaite *University College London, UK*	S11	**Highly entangled hydrogels by controlled/'living' radical photopolymerisation** Maciek Kopec *University of Bath, UK*
12:40	F12	**Redox Chemistry of Transition Metal Nitrides at High-Pressures** Simon Kloss *LMU Munich, Germany*	E12 (12:50)	**Surface-Functionalized Nanomaterials to Produce Solar Fuels and Chemical Feedstocks** Xavier Sala *Autonomous University of Barcelona, Spain*	N12	**Fabrication and Performance Evaluation of Silver Nanoparticle SERS Substrates Using Soft Polymer-Transferred Encoded Structures** Shih-Hsien Yeh *Department of Materials Engineering, Ming Chi University of Technology, Chinese Taipei*	S12	
13:00	Lennox 1&2 Lunch							
	13:40 - Lammermuir Suite **ECR session - Careers from chemistry**							
	Session chair: Andrea Gauzzi		Session chair: Matthew Rosseinsky		Session chair: Jun Huang		Session chair: Sebastien Leccomandoux	
14:30	K11	**Multi-dimensional Modelling of Functional Oxides: Answering Industry Relevant Research Questions.** Pooja Goddard *Loughborough University, UK*	K12	**Materials Chemistry Early Career Prize winner:** **From UV to Near-Infrared light detection: next generation photodetectors for imaging and biometric applications** Nicola Gasparini *Imperial College London, UK*	K13	**Tailoring Zeolites and Metal Organic Frameworks for Applications in Carbon Capture** Paul Wright *University of St Andrews, UK*	K14	**Vinyl Polymer Engineering for the Development of New Materials for Biomedical Applications** Julien Nicolas *CNRS, France*
15:00	F13	**Structural insights into high entropy oxide formation via hydrothermal-assisted synthesis** Adrian Sanz Arjona *University of Copenhagen, Denmark*	E13	**Evaporable Fullerene Derivatives and Single-walled Carbon Nanotube Transparent Electrodes for Organic and Perovskite Solar Cells** Yutaka Matsuo *Nagoya University, Japan*	N13	**Computational Exploration of Zeolite Properties Using Neural Networks Potentials** Indranil Saha *Charles University, Czech Republic*	S13	**Exploring Polysarcosine-Based Telodendrimer Micelles: A Novel Platform for Advanced Drug Delivery** Jessica Yu *AstraZeneca, UK*
15:20	F14	**New Approaches to the Synthesis of Low-valent Early Transition Metal Oxides and Oxyfluorides: Structure and Properties** Arnold Guloy *University of Houston, USA*	E14	**Effect of Host Oxygen Permeability on the Efficiency of Solid-State Photon Upconverters for Photovoltaics** Georgina Burgoyne Morris *University of Cambridge, UK*	N14	**Sustainable synthesis of zeolites through Na-Cs tandem templating** Lubomira Tosheva *Manchester Metropolitan University, UK*	S14	**Supramolecular Benzophenone-Based Photoinitiator for Spatially-Resolved Polymerization** Alex Loch *University of Glasgow, UK*
15:40	F15	**Metal Halide Perovskites: Compositional and Morphological Engineering for Enhanced Gas Sensing Applications** Konstantinos Brintakis *Institute of Electronic Structure and Laser (IESL) / Foundation for Research & Technology - Hellas (FORTH), Greece*	E15		N15	**Dynamic separation of CO2 from N2 in humid streams using nanosized zeolites** Sajjad Ghojavand *LCS/CNRS, France*	S15	**Design of Hierarchical Block-Copolymer Brushes for siRNA Delivery** Carlos Neri *Queen Mary University of London, UK*
16:00	F16	**Mixed-Phase MoS_2 Nanostructures for Wastewater Treatment and Disinfection Applications** Rupal Kaushik *IIT kharagpur, India*	E16	**Advancing Intercalation Strategies in Layered Hybrid Perovskites by Bringing Together Synthesis and Simulations** Julia Payne *University of St Andrews, UK*	N16	**New ultra-flexible boron oxide frameworks and boron-based zeolites** Neil Allan *University of Bristol, UK*	S16	**Memristive properties of nanometric layers of ordered polymethacrylate brushes grafted from surfaces** Michał Szuwarzyński *AGH University of Krakow, Poland*
16:20	Lennox 1&2 Refreshments							
	Session chair: TBC							
17:00	Lennox 3 **PL03 - Tailoring Crystal Size and Defects for Enhanced Zeolite Performance** Svetlana Mintova *CNRS, ENSICAEN, Normandy University, France*							
18:00	**Sponsored by American Chemical Society** Poster session							
19:30	Close							

Wednesday 9 July 2025

	Session chair: Nora de Leeuw							
09:00	Lennox 3 **PL04 - Single-atom catalysts: A new frontier material in heterogeneous catalysis** Tao Zhang *Chinese Academy of Sciences, China*							
10:00	Time for delegates to move between theatres							
	Lowther Functional inorganic materials		Lennox 3 Materials for energy and sustainability		Lammermuir Suite Nano and porous materials		Menteith Soft matter and biomaterials	
	Session chair: TBC		Session chair: Minghui Yang		Session chair: Paul Wright		Session chair: Matthew Gibson	
10:10	K15	**Roll-model materials: first-principles driven design of multifunctional hybrid nanotubes from 2-D material precursors** Krishna Muralidharan *The University of Arizona, USA*	K16		K17	**Heterogeneity in MOFs for Sustainable Catalytic Transformation** Jun Huang *University of Sydney, Australia*	K18	**Title TBC** Kalpana Katti *North Dakota State University, USA*
10:40	F17	**Charge Trapping in a-Si3N4: Hydrogen as Savior and Saboteur** Lukas Hückmann *Leiden University, Netherlands*	E17	**Near-frictionless ion transport within triazine framework membranes** Chunchun Ye *The University of Edinburgh, UK*	N17		S17	**Growing Sustainability: Mycelium-Driven Innovations in Biocomposites and Advanced Materials** Amparo Jimenez Quero *Chalmers University of Technology, Sweden*
11:00	F18	**Mapping the controlled hydrothermal synthesis of materials with Principal Component Analysis** Peter Dunne *Trinity College Dublin, Ireland*	E18		N18	**Permeating Porous Nanoarchitectures: Insights from Surface Analysis** Mark Isaacs *University College London, UK*	S18	**3D printable inorganic/organic hybrids for cartilage and bone regeneration** Julian Jones *Imperial College London, UK*
11:20	Lennox 1&2 Refreshments							
	Session chair: Krishna Muralidharan		Session chair: TBC		Session chair: Katherine Villa		Session chair: Claus Feldmann	
12:00	F19	**Local Order Hidden in Structural Disorder of Solid Ionics Uncovered through Multiscale Structure Solution** Xiaojun Kuang *Guilin University of Technology, China*	E19	Offered to Venkataraman Thangadurai 16.06.25 - no response	N19	**Exploring Novel Approaches to Acetone Gas Sensing with Innovative Metal Oxide-Based Composite Materials** Eleonora Pargoletti *University of Milan, Italy*	S19	**Use of various Bioglass 3D macroporous scaffolds in the production of biodegradable composites for tissue engineering** Marie-Hélène Thibault *Université de Moncton, Canada*
12:20	F20	**Systematic exploration of magnetism in compositionally complex and high entropy perovskite oxides** Augustė Stanionytė *University of Amsterdam, Netherlands*	E20	**The development of organic ionic plastic crystals for clean energy applications** Jenny Pringle *Deakin University, Australia*	N20	**Porous ZnO-wood hybrids obtained by ALD with piezoelectric and photoconductive properties** Maximilian Ritter *ETH Zurich, Switzerland*	S20	
12:40	F21	**Solid-state nuclear clocks containing the thorium-229 isotope** Harry Morgan *University of Manchester, UK*	E21	**The Development of Electrode Materials from Bio-Precipitates** Isolde Marsland *University of Edinburgh, UK*	N21	**Thermally Stable Binary Hybrid Organic-Inorganic Perovskite Glasses** Arad Lang *University of Cambridge, UK*	S21	**Multifunctional Smart Gel Based on Biopolymers: Psyllium and Alginate with Cerium oxide Nanoparticles** Burcu Orhan *Istanbul Technical University, Turkey*
13:00	Lennox 1&2 Lunch 13:40 - Lammermuir Suite **ECR session - Making science greener: sustainable laboratories**							
	Session chair: Yuichi Shimakawa		Session chair: TBC		Session chair: Emily Pentzer		Session chair: Julien Gautrot	
14:30	K19	**Advancements in High-Pressure/High-Temperature Chemistry and Luminescent Properties of Oxonitridoborates** Hubert Huppertz *University of Innsbruck, Austria*	K20	**Metallic transition metal dichalcogenides for energy storage and conversion** Manish Chhowalla *University of Cambridge, UK*	K21	**Design of functional nanostructures for energy and biomedical applications** Ashok Kumar Ganguli *IISER Berhampur, India*	K22	**Compartmentalized and dynamic polymersomes: from smart therapeutics to artificial cells** Sebastien Leccomandoux *University of Bordeaux, France*
15:00	F22	**Alternative route for the preparation of Al2O3, AlON and AlN NPs for optical applications** Maria Alejandra Rojas Ruiz *Queen Mary University of London, UK*	E22	**Imaging micro- to macroscopic phases and interfaces in eutectic salt-hydrate thermal energy storage media** Gylen Odling *Sunamp Ltd, UK*	N22	**Artificial Intelligence-Controlled Microfluidic Synthesis of Nanoparticles** Dale Huber *Sandia National Laboratories, USA*	S22	
15:20	F23	**Exploratory Synthesis of Novel (Oxy)nitride Phosphors** Xiaoming Wang *Shaanxi Normal University, China*	E23	**In situ quantitative single-molecule study of site-specific photocatalytic activity and dynamics on ultrathin g-C3N4 nanosheets** Zhengyang Zhang *Nanyang Technological University, Singapore*	N23		S23	
15:40	F24	**Extended phase diagram of compositional complexity in BaInxM1-xO3- (#M 1 to 4)** Giuditta Perversi *Maastricht University, Netherlands*	E24	**Lignin-Based Photonic Glasses with Tunable Colors and High Yields** Unnimaya Thalakkale Veettil *Stockholm University, Sweden*	N24		S24	**Optimising gene delivery using dual pH and redox responsive carriers** Georgina Such *The University of Melbourne, Australia*
16:00	F25	**New in situ / operando magnetometry cell for the study of redox reactions by magnetic properties in M-ion battery materials** Maria Jauregui *CIC energiGUNE (ESG01241876), Spain*	E25	**Exploring multicomponent crystals of amino acids as potential piezo-materials** Suman Bhattacharya *University of Limerick, Ireland*	N25		S25	**Drug-Cocktail Nanocarriers Combining Lipophilic and Hydrophilic Drugs with High Payload** Claus Feldmann *Karlsruhe Institute of Technology (KIT), Germany*
16:20	Lennox 1&2 Refreshments							
	Session chair: Matt Gibson							
17:00	Lennox 3 **PL05 - Multifunctional and dynamic hydrogels for biological applications** Kristi Anseth *University of Colorado Boulder, USA*							
18:00	Poster prize winners annouced							
18:15	Close							
19:15	**Sponsored by Henry Royce Institute** Conference banquet *Dynamic Earth* *Drinks within the Earthscape Galleries and dinner on the Stratosphere*							

Thursday 10 July 2025

	Lowther Functional inorganic materials		Lennox 3 Materials for energy and sustainability		Lammermuir Suite Nano and porous materials		Menteith Soft matter and biomaterials	
	Session chair: Hubert Huppertz		Session chair: Manish Chhowalla		Session chair:		Session chair: Kristi Anseth	
09:00	K23	**Unusual charge transitions in transition metal oxides lead to novel functional properties** Yuichi Shimakawa *Kyoto University, Japan*	K24	**Understanding Defect Chemistry in Photocatalysts** Ludmilla Steier *University of Oxford, UK*	K25	**Light-Driven Micromotors: From Material Design to Programmable Self-Assembly** Katherine Villa *Institute of Chemical Research of Catalonia (ICIQ), Spain*	K26	**Soft But Tough! Engineering of Protein Nanosheets for the Design of Organo-Hydrogels for Stem Cell Technologies** Julien Gautrot *Queen Mary, University of London, UK*
09:30	F26	**Integrating machine learning and artificial intelligence with classical simulations for automating materials discovery.** Chris Collins *University of Liverpool, UK*	E26		N26		S26	**Rational Design of Multifunctional Hydrogels from Fundamentals to Applications** Jie Zheng *University of Akron, USA*
09:50	Time for delegates to move between theatres							
10:00	Lammermuir Suite **ECR session - Publishing with impact: tips and tricks from the editors**							
11:00	Lennox 1&2 Refreshments							
	Session chair: Nora de Leeuw		Session chair:		Session chair: Andrew Beale		*Session chair: Julien Jones*	
11:40	F27	**Surface and Photocatalytic Properties of Self-Cleaning Spin-Coated Ag/TiO2 Films** Samah Al Sidran *Cardiff University, UK*	E27	**Chemical Recycling of Mixed Poly(ethylene terephthalate) and Poly(vinyl chloride) via Dual Lewis Acid/Base Catalysis** Yuya Watanabe *University of Birmingham, U K*	K27	**KEYNOTE:** **Leveraging Polymer Chemistry and Pickering Emulsions for Energy Applications** Emily Pentzer *Texas A&M University, USA*	S27	**Electroactive hyaluronic acid-based click-hydrogels for skin wound healing** Maria M. Pérez-Madrigal *Universitat Politècnica de Catalunya, Spain*
12:00	F28	**Radiation effects in metal-cyanide frameworks** Hanna Boström *Stockholm University, Sweden*	E28	**Removing carbon dioxide from the air using a humidity-driven membrane** Greg A. Mutch *Newcastle University, UK*	N28 (12:10)	**Investigating the interactions between a poloxamer and TEMPO-oxidised cellulose nanocrystals** Alessandra Lavoratti *University of Bristol, UK*	S28	
12:20	F29	**Chemical doping-triggered property alteration in Mn2-xCoxScSbO6** Kunlang Ji *Kyoto University, Japan*	E29	**Active, Selective, *and* Stable COPROX + WGS Catalysts Based on Ceria Aerogel–Supports** Austin Herzog *U.S. Naval Research Laboratory, USA*	N29 (12:30)		S29	**Unraveling Transition Metal-Driven Self-Assembly in Hydrogels: A Molecular and Macroscopic Investigation of Fe^{3+}–Cellulose Interactions** Valeria Gabrielli *INSA, France*
12:40	Time for delegates to move between theatres							
	Session chair: Paul Attfield							
12:50	Lennox 3 **PL06 - Discovery synthesis of inorganic functional materials in the digital age** Matthew Rosseinsky *University of Liverpool, UK*							
13:50	Chairs' summary							
14:00	Close of conference Lunch							