

Electrochemical, Materials and Analytical Chemistry Symposium 2025 (EMACS25)

20-21 November 2025, Griffith University, Nathan, Brisbane, QLD

Plenary	Keynote	Invited	Oral	
Time Day 1: Thursday 20th Nov 2025				
07:50 – 08:30	Registration (Venue: N76_1.05, Griffith University, Nathan campus)			
08:35 – 08:50	Welcome Speech and Opening Remarks (Chairs and Griffith University ProVost) (Venue: Central Theatres (N18); N18 Theatre 1)			
08:50 – 09:25	Plenary Talk 1: Professor Nam-Trung Nguyen (Griffith Univ) (Venue: Central Theatres (N18); N18 Theatre 1) <i>Micro Elastofluidics: Elasticity and Flexibility for Efficient Microscale Liquid Handling</i>			Chair: Dr. Sina Jamali (Griffith University)
09:25 – 10:00	Plenary Talk 2: Professor Martina Stenzel (UNSW) (Venue: Central Theatres (N18); N18 Theatre 1) <i>Ultrasmall Polymer Nanoparticles for Better Nanomedicine</i>			
10:00 – 10:30	Morning Tea/Coffee Break & Poster Setup (Venue: N76_1.05)			
Morning Session				
Venue	N16_0.03	N16_0.06	N16_0.08	N16_0.10
Chair	Dr. Peter Sherrell (RMIT)	Dr. Kaiwen Sun (UNSW)	Dr. Alexander Corletto (Univ of Melbourne)	Dr. Xianjue Chen (Univ of Newcastle)
10:30 – 10:50	Prof. Yijiao Jiang (Macquarie Univ) <i>Molecular engineering of cobalt phthalocyanine for enhanced CO₂ electroreduction</i>	Prof. Guohua Jia (Curtin Univ) <i>Deciphering surface ligand density of colloidal semiconductor nanocrystals: Shape matters</i>	Prof. Aijun Du (Queensland Univ of Technology) <i>Computational catalysis: Engineering catalyst microenvironment via electronic functionality modulation</i>	Prof. Chengzhong (Michael) Yu (Univ of Queensland) <i>Electrocatalysis: Molecular-level design of catalysts and system integration</i>
10:50 – 11:10	Prof. Deepak Dubal (Queensland Univ of Technology) <i>Swift and efficient manufacturing of battery materials with reduced carbon footprints</i>	Prof. Sumeet Walia (RMIT) <i>Ultra-thin materials for next-generation electronics and optoelectronics technologies</i>	Dr. Priyank Kumar (UNSW) <i>Revealing electronic structure-chemisorption relationships for accelerated discovery of aqueous zinc battery additives through machine learning</i>	Prof. Luke Henderson (Deakin Univ) <i>Using surface chemistry to install functionality into carbon fibre composites</i>
11:10 – 11:30	Dr. Wenxian Li (UNSW) <i>Minimizing energy loss in electrocatalysts: Advancing water splitting toward industrial efficiency</i>	Prof. Jingwei Hou (Univ of Queensland) <i>Engineering functional MOF glass photocatalysts for artificial photosynthesis via liquid-phase modulation and hybrid interfaces</i>	Dr. Marco Fronzi (Univ of Sydney) <i>From black-box AI to transparent discovery: Interpretable machine learning for materials innovation</i>	Zhenguo Huang (University of Technology Sydney) <i>Hydrogen-rich bond (N-H, O-H, and B-H) for energy storage and transfer</i>
11:30 – 11:50	Prof. Tushar Kumeria (UNSW) <i>Photonically enhanced fluorescence of carbon dots for ultrasensitive environmental sensing</i>	Dr. Mahesh P. Suryawanshi (UNSW) <i>Beyond hydrogen: Catalytic pathways for a circular chemical economy</i>	Prof. Liangzhi Kou (Queensland Univ of Technology) <i>Ferroelectric catalysis: Novel chemical reactions driven by physics</i>	Prof. Anthony O'Mullane (Queensland Univ of Technology) <i>Liquid metal electrochemistry – from nanomaterial synthesis to electrocatalysis</i>
11:50 – 12:05	Dr. Liang Wang (Griffith Univ) <i>Structural engineering of 2D Bi-based nanomaterials for clean energy and catalytic applications</i>	Dr. Lucy Gloag (Australian National Univ) <i>Building hierarchical nanostructures for nanoscale electrodes</i>	Dr. Tu Le (RMIT) <i>Machine learning for functional materials</i>	Dr. Jiaye Ye (Queensland Univ of Technology) <i>Advanced hybrid membrane for vanadium redox flow battery</i>
12:15 – 13:15	Lunch & Poster (Venue: N76_1.05)			
13:15 – 13:50	Plenary Talk 3: Professor Justin Gooding (UNSW) (Venue: Central Theatres (N18); N18 Theatre 1) <i>Nanoparticles that Mimic the Three-Dimensional Architecture of Enzymes: The Role of Nanoconfinement in Enhancing Activity and Selectivity</i>			Chair: Prof. Yu Lin Zhong (Griffith University)
Afternoon Session 1				
Venue	N16_0.03	N16_0.06	N16_0.08	N16_0.10
Chair	Prof. Todd Houston (Griffith Univ)	Dr. Marco Fronzi (Univ of Sydney)	Dr. Tu Le (RMIT)	Dr. Liang Wang (Griffith Univ)
14:00 – 14:20	Dr. Esther Levy (Wiley-VCH) <i>Advancing Materials Science Publishing: From Nanoscience to AI</i>	Prof. Ziqi Sun (Queensland Univ of Technology) <i>Rational design of 2D nanocatalysts for electrocatalysis</i>	Prof. Damia Mawad (UNSW) <i>Self-acid doped PEDOT: Electroactive materials for soft bioelectronics</i>	Prof. Dewei Chu (UNSW) <i>Atmospheric water sorption-desorption as a pathway for green energy generation</i>

14:20 – 14:40	Dr. Bing Sun (Univ of Technology Sydney)	Dr. Peng Chen (Univ of Queensland)	Prof. Hang Ta (Griffith Univ)	Dr. Xianjue Chen (Univ of Newcastle)
	<i>Developing high-energy electrode materials for metal–air batteries</i>	<i>2D/3D heterostructured tin halide perovskite solar cells</i>	<i>Metal–metal oxide hybrid nanomaterials for integrated diagnosis and therapy of diseases</i>	<i>C60/Graphene hybrid materials</i>
14:40 – 15:00	Dr. Nasim Amiralian (Univ of Queensland)	Dr. Kaiwen Sun (UNSW)	Dr. Run Zhang (Univ of Queensland)	Dr. Lei Bao (RMIT)
	<i>Beyond the sustainable development goals: Transforming challenges into opportunities</i>	<i>Harnessing kesterite (Cu₂ZnSnS₄) photocathodes for solar-driven fuel and chemical production</i>	<i>Responsive probes for background-free luminescence biosensing and imaging</i>	<i>Oriental assembly of carbon nanodots for electrochemical devices</i>
15:00 – 15:15	Dr. Ming Zhou (Griffith Univ)	Dr. Doudou Zhang (Macquarie Univ)	Dr. Mostafa Kamal Masud (Univ of Queensland)	Dr. Siqi Huo (Univ of Southern Queensland)
	<i>Membrane-based conductometric ammonia sensing system (MCAS) for real-time coastal monitoring</i>	<i>Magnetron-sputtered Ni-based catalysts for electrochemical and photoelectrochemical hydrogen production</i>	<i>Mesoporous gold in next-generation biosensing platform</i>	<i>Strong self-healing close-loop recyclable vitrimers via complementary dynamic covalent/non-covalent bonding</i>
15:15 – 15:27	Dr. Asep Sugih Nugraha (Univ of Queensland)	Dr. James D. Randall (Deakin Univ)	Manal Alwahsh (Univ of Sydney)	Sohaib Umer (UNSW)
	<i>Micelle-encapsulation approach to smart anti-corrosion nanocontainers</i>	<i>Engineering carbon fibre interfaces for high-performance structural batteries</i>	<i>Enhancing the reduction potential of fluorescent hypoxia sensors</i>	<i>Investigating the role of hydrogen coverage on low index Ru facets for plastic waste hydrogenolysis: A DFT Study</i>
15:30 – 16:00	Afternoon Tea/Coffee Break (Venue: N76_1.05)			
Afternoon Session 2				
Venue	N16_0.03	N16_0.06	N16_0.08	N16_0.10
Chair	Dr. Peng Chen (Univ of Queensland)	Prof. James Bullock (Univ of Melbourne)	Prof. Jingwei Hou (Univ of Queensland)	Dr. Lei Bao (RMIT)
16:00 – 16:20	Prof. Qin Li (Griffith Univ)	Prof. Mats Andersson (Flinders Univ)	Prof. Justin Chalker (Flinders Univ)	Prof. Zhanying Zhang (Queensland Univ of Technology)
	<i>Carbon dots at the bio-nano interface</i>	<i>Materials for stable polymer solar cells and platinum single-atom electrocatalysts for hydrogen evolution</i>	<i>Making and un-making poly(trisulfides) for sustainable applications</i>	<i>Biorefining of agricultural biomass into sustainable functional materials</i>
16:20 – 16:40	Prof. Toan Dinh (Univ of Southern Queensland)	Dr. Miaoqiang Lyu (Univ of Queensland)	Prof. Todd Houston (Griffith Univ)	Prof. Zhiliang Wang (Univ of Queensland)
	<i>Semiconductor-based heterojunction approach for sensing in extreme environments</i>	<i>Rational design of low-toxicity metal halide perovskites for optoelectronic applications</i>	<i>Simple heterocyclic boronic acid displays significant, stereospecific fluorescent response to certain monosaccharide stereodispositions</i>	<i>Green energy driven methane conversion</i>
16:40 – 17:00	Dr. Haoran Ren (Monash Univ)	Dr. Meng Zhang (UNSW)	Dr. Fernando Maya (Univ of Tasmania)	Dr. Peter Sherrell (RMIT)
	<i>Multifunctional light–matter interfaces via optical metamaterials</i>	<i>Intermediate and interface engineering for perovskite photovoltaics</i>	<i>Applications of magnetic metal-organic frameworks for micro/nanoplastics separation and analysis</i>	<i>Electromechanical polarisation and charge – towards green (electro-) chemical energy</i>
17:00 – 17:15	Dr. Alexander Corletto (Univ of Melbourne)	Dr. Yang Yang (Queensland Univ of Technology)	Dr. Chao Xing (Univ of Queensland)	Dr. Fangli Zhang (RMIT)
	<i>Scalable fabrication of black phosphorous films for infrared photodetector arrays</i>	<i>Efficient self-charging monolithic photocapacitors based on perovskite solar cells and quasi-solid-state supercapacitors</i>	<i>Modification strategies of interfaces and electrolytes in metal batteries</i>	<i>Electrolyte engineering for high-performance Li-CO₂ Batteries</i>
17:15 – 17:27	Jack Hogan (Univ of Newcastle)	Dr. Ryusuke Mizuochi (Univ of Queensland)	Ni Made Sri Suliartini (Univ of Queensland)	Dr. Bhagya Dharmasiri (Deakin Univ)
	<i>Large-area transfer of nanometre-thin C₆₀ films</i>	<i>Fluorine coordination enhancing oxygen evolution in a layered perovskite oxyfluoride electrocatalyst</i>	<i>Sustainable ammonia production via nitrate electroreduction: A screening of metal-modified electrodes</i>	<i>Multifunctional structural Zn battery composites</i>
17:30 – 21:00	EMACS25 Banquet (Venue: Griffith Uni Bar Nathan (N71))			

Plenary	Keynote	Invited	Oral	
Day 2: Friday 21st Nov 2025				
Time				
09:00 – 09:35	Plenary Talk 4: Professor Huijun Zhao (Griffith Univ) (Venue: Central Theatres (N18); N18 Theatre 1) <i>Electrocatalytic Conversion of Earth-Abundant Simple Molecules into Valuable Chemicals and Fuels</i>			Chair: Dr. Sarah Walden (Griffith University)
09:35 – 10:10	Plenary Talk 5: Professor Xiaojing Hao (UNSW) (Venue: Central Theatres (N18); N18 Theatre 1) <i>The Steady Rise of Kesterite Photovoltaics and beyond: A Decade of Insights into Defect Formation and Management</i>			
10:15 – 10:45	Morning Tea/Coffee Break (Venue: N76_1.05)			
Morning Session				
Venue	N16_0.03	N16_0.06	N16_0.08	N16_0.10
Chair	Dr. Fernando Maya (Univ of Tasmania)	Prof. Paul Shaw (Univ of Queensland)	Dr. Jun Zhang (Griffith Univ)	Prof. Drew Evans (Univ of South Australia)
10:45 – 11:05	Prof. Jun Ma (Univ of South Australia) <i>Advanced flame-retardant strategies for thermosets</i>	Prof. Antonio Tricoli (Univ of Sydney) <i>Electro-manufacturing of porous materials for nano-scale sensors</i>	Prof. Fariba Dehghani (Univ of Sydney) <i>Transforming medical devices and diagnostics through biomaterial innovation</i>	Prof. Hongqi Sun (Univ of Western Australia) <i>Light-matter interactions: electrons, heat, and reactions</i>
11:05 – 11:25	Prof. Zhongfan Jia (Flinders Univ) <i>Structure design of nitroxide radicals for electrochemical applications</i>	Prof. James Bullock (Univ of Melbourne) <i>Black phosphorus for mid-wave infrared photodetection</i>	Prof. Kang Liang (UNSW) <i>Advancing biocatalysis: From enzyme immobilization to nanozyme engineering</i>	Prof. Dawei Su (RMIT) <i>Unveiling the material's photo/electrochemical properties correlated with its electronic structures</i>
11:25 – 11:45	Prof. Cheng Zhang (Univ of Queensland) <i>Functional materials for PFAS remediation</i>	Dr. Long Hu (UNSW) <i>Highly ordered quantum dot emitters</i>	Prof. Ruirui Qiao (Univ of Queensland) <i>Materials design and fabrication for bioinspired 4D-printed soft robotic systems</i>	Prof. Jingrun Ran (Adelaide Univ) <i>Atomic-level regulation on photocatalyst for energy-related reaction</i>
11:45 – 12:00	Dr. Haijiao Lu (Univ of Queensland) <i>Photocatalyst engineering for solar-driven carbon conversion and clean fuel technologies</i>	Dr. Jincheol Kim (Macquarie Univ) <i>Nanoscale pathways to high-efficiency perovskite solar cells</i>	Dr. Syamak Farajikhah (Univ of Sydney) <i>Low-cost biosensors for rapid biomarker detection: Pathways to non-invasive point-of-care diagnostics</i>	Dr. Martina Lessio (UNSW) <i>Designing UiO-66 metal-organic frameworks for water harvesting: Insights from molecular simulations</i>
12:00 – 12:12	Chengyi Liu (Univ of Newcastle) <i>Structural transformation of C60 and C60/Calix[8]arene complex under 1–20 GPa</i>	Ayesha Siddique (Univ of Queensland) <i>Copper sulfide electrodeposited on copper foam as a high areal capacity anode for aqueous zinc-ion batteries</i>	W.A. Manesha Bernadette Fernando (Deakin Univ) <i>Spray-based thermal surface functionalization for recycled carbon fiber</i>	Tushar Singh Verma (RMIT) <i>Extra-framework cations encapsulated transition metal SACs in faujasite zeolite for CO₂ Catalysis</i>
12:15 – 13:15	Lunch & Poster (Venue: N76_1.05)			
13:15 – 13:50	Plenary Talk 6: Professor Shizhang Qiao (Adelaide Univ) (Venue: Central Theatres (N18); N18 Theatre 1) <i>Materials Innovation for Energy Storage and Conversion</i>			Chair: Dr. Munkhbayar Batmunkh (Griffith University)
Afternoon Session 1				
Venue	N16_0.03	N16_0.06	N16_0.08	N16_0.10
Chair	Thomas O'dea (Adelaide Univ)	Prof. Dawei Su (RMIT)	Dr. Navid Kashaninejad (Griffith Univ)	Dr. Sarantuya Lkhagvajav (MAC)
14:00 – 14:20	Prof. Drew Evans (Univ of South Australia) <i>Bridging synthesis with application of conducting polymers</i>	Prof. Paul Shaw (Univ of Queensland) <i>Fluorescence-based sensing of nerve agents</i>	Prof. Muhammad J. A. Shiddiky (Charles Sturt Univ) <i>Portable molecular diagnostics for affordable and accessible healthcare</i>	Dr. Xiaodan Huang (Univ of Queensland) <i>Ion-dipole interaction driven alumina-coated polyethylene separator with enhanced wettability for high-performance rechargeable aluminium batteries</i>
14:20 – 14:40	Dr. Shuhua Peng (UNSW) <i>Wearable strain and pressure sensors based on soft nanocomposites</i>	Dr. Tao Li (Adelaide Univ) <i>Porous liquids: A new materials platform for green catalysis</i>	Dr. Jun Zhang (Griffith Univ) <i>Leveraging dielectrophoresis in inertial flow for versatile manipulation of micro and nanoparticles</i>	Dr. Dan Yang (Univ of Western Australia) <i>Engineering liquid metals for sustainable electrocatalysis</i>

14:40 – 14:55	Dr. Batjargal Sainbileg (National Taiwan Univ)	Dr. Qianqian Shi (Univ of Newcastle)	Dr. Cheryl Suwen Law (Adelaide Univ)	Dr. Jinqiang Zhang (University of Technology Sydney)
	<i>Spin effect in oxygen reactions on 2D MOF</i>	<i>Artificial leaves from flexible 2D gold nanocrystal assemblies</i>	<i>Nanoporous alumina nanofluidic diodes: Structural optimization for sensing</i>	<i>Refining structures of electrochemical catalysts for energy storage and conversion</i>
14:55 – 15:10	Dr. Thomas P Nicholls (Flinders Univ)	Dr. Chung Nguyen (Univ of Sydney)	Dr. Kevin M. Koo (Univ of Queensland)	Dr. Sarantuya Lkhagvajav (Mongolian Academy of Sciences)
	<i>Electrochemical synthesis of poly(trisulfides)</i>	<i>Supercooling, sensing, and photocatalysis: Multifunctional applications of liquid metal surface oxides</i>	<i>Using magnetic nanomaterial to refine the electrode-biomolecule-electrolyte interfaces for enhanced analytical biosensing</i>	<i>Sustainable recovery of nickel-based materials from spent NiMH batteries</i>
15:10 – 15:22	Kwang Keat Leong (Univ of Queensland)	Nilupuli Rathnayaka (Deakin Univ)	Pasangi Mahoshada Premadasa (Swinburne Univ)	Muhammad Aqeel (Deakin Univ)
	<i>Solvent assisted linker exchange in ZIF-8 for anticorrosion coating</i>	<i>Scalable spray-coated aligned MXene composites with high EMI shielding efficiency</i>	<i>Electrochemical applications of manganese dioxide nanomaterials in lactose oxidation</i>	<i>Influence of surface chemistry on carbon fibre structural battery anodes</i>
15:30 – 16:00	Afternoon Tea/Coffee Break (Venue: N76_1.05)			
Afternoon Session 2				
Venue	N16_0.03	N16_0.06		N16_0.10
Chair	Dr. Syamak Farajikhah (Univ of Sydney)	Dr. Dan Yang (Univ of Western Australia)		Dr. Jun Zhang (Griffith University)
16:00 – 16:20	Prof. Hoang-Phuong Phan (UNSW)	Prof. Sarangerel Davaasambu (Nat Univ of Mongolia)	16:00 – 16:20	Dr. Navid Kashaninejad (Griffith Univ)
	<i>Semiconductor nanomembranes for biomedical applications</i>	<i>Unveiling the degradation of methylammonium lead iodide perovskite</i>		<i>Surface microfluidics: A new paradigm for liquid handling and biological microenvironments</i>
16:20 – 16:40	Prof. Hongjie An (Griffith Univ)	Thomas O'dea (Adelaide Univ)	16:20 – 16:40	Prof. Ge Shi (Guangxi Univ)
	<i>Spurious apparent line tension estimates from droplet contact angles</i>	<i>MOF-templated synthesis of homogeneously doped SrTiO₃:La/Rh</i>		<i>3D direct ink writing printing biomass polymer nanocomposites to manipulate the microstructures</i>
16:40 – 16:55	Dr. Dechao Chen (Griffith Univ)	Dr. Minh Tam Hoang (Queensland Univ of Technology)	16:40 – 16:52	Gunani Jayamaha (Univ of Sydney)
	<i>Colloidal synthesis of photocatalytic quantum dots heterostructure</i>	<i>Enhancing efficiency and stability of water-processed perovskite solar cells via lead (II) fluoride additive engineering</i>		<i>Optical and electrochemical observation of hydrogen bubble formation in confined electrochemical systems</i>
17:00 – 17:30	Closing Remarks (Venue: Central Theatres (N18); N18_Theatre 1)			