11th INTERNATIONAL CONFERENCE ON ADVANCED MATERIALS & NANOTECHNOLOGY

9-13 FEBRUARY 2025
ŌTAUTAHI CHRISTCHURCH, NEW ZEALAND

Te Mana Tangata Whakawhanake
MacDiarmid Institute
Advanced Materials & Nanotechnology

AMN11 Provisional Programme as at 21.11.24

Te Pae Christchurch Convention Centre

SUNDAY 9 FEBRUARY 2025	
15.00-19.30	Registration Open
16.00	Mihi Whakatau (Welcome Ceremony) and Conference Opening
16.30	**Plenary 1**: TBC *Moungi Bawendi*
17.30-19.30	**Icebreaker Reception**

MONDAY 10 FEBRUARY 2025					
08.00-18.00	Registration Open				
08.30	**Plenary 2:** A Catalyst Life and its Circumstances *Beatriz Roldan Cuenya*				
09.30	Transition to concurrent sessions				
09.40	**Keynote 1:** Soft Materials to Understand Cell-Material Interactions and to Pattern Magnetic Clusters *Jenny Malmstrom*	**Keynote 2:** Ionic Materials for Next Generation Energy Technologies *Doug Macfarlane*	**Keynote 3:** Simulating Josephson junctions one atom at a time *Jared Cole*		
10.15	**Morning Tea**				
	1A: Perovskites and optoelectronics	**1B: Hydrogen production and ultisation**	**1C: Porous materials**	**1D: Spectroscopy and applications**	**1E: Innovative imaging**
10.45	Conjugated polyelectrolytes: Their diverse applications in perovskite optoelectronic devices *Han Young Woo*	Hydrogen generation with sustainable resources using a combined molecular, computational and engineering approach *Keith Gordon*	Tailored nanoporous materials for carbon capture and conversion *Gurwinder Singh*	Photophysics and charge-transfer states in organic semiconductors *JaeHong Park*	Super Resolution Scanning Electrochemical Cell Microscopy *Kim McKelvey*
11.10	Highly luminescent, ligand-free perovskite quantum dots in metal organic frameworks *Marcus Jones*	Improvement of Photocatalytic Water Splitting activity by Facet-Selective Loading of Ultrafine Rhodium–Chromium Mixed-Oxide Cocatalyst *Yuichi Negishi*	Spatially resolved gas selectivity profiles in porous adsorbents *Lujia (Luke) Liu*	Advanced Ultrafast Photoluminescence Spectroscopy for Investigating Optoelectronic Materials *Kai Chen*	Method for quantifying slow-flow with photoacoustic imaging *Jami Shepherd*

11.35	Realization of blue-emisive perovskite nanocrystals through in-situ synthesis and post-treatement *Chang-lyoul Lee*	NiFe Catalyst Coated Membranes via Direct Membrane Deposition for High Performance Anion Exchange Membrane Water Electrolysers *Laura Titheridge*	An upper bound visualization of design trade-offs in adsorbent materials for gas separations *Matthew Cowan*	Estimation of nanoparticle cluster size using fluorescence correlation spectroscopy towards the development of an adaptable biosensor for multi-analyte detection *Sneha Mathew*	Image analysis optimization for nanowire-based optical detection of molecules *Rubina Davtyan*
11.50	Stabilising the active perovskite phase in a hybrid glass composite *Celia Chen*	Utilization of Industrial Waste for the production of clean hydrogen from methane *Wasim Ullah Khan*	Effect of extra-framework cations on gas sorption behaviour in chabazite zeolites *Huan Doan*	Enhanced Size Determination of Dielectric Microspheres Using Whispering Gallery Modes and Fluorescence Spectroscopy *Azizeh Alidoust Ghatar*	Characterisation of Materials for Nanomedicine by Cryo-electron microscopy – Technical Considerations *Jacinta White*
12.05	Lead-free Organic-Inorganic Hybrid Copper Halides for Optoelectronic Applications *Jonathan Halpert*	Utilisation of waste precipitated iron residues from non-ferrous hydrometallurgy in hydrogen-based ironmaking *Josh McArdle*	Development of novel Hybrid Ultramicroporous Materials for Selective Gas Purification *Brooke Matthews*	High Performance Ultrafast Photoluminescence Spectroscopy Enabled by a Transient Grating Optical Gate and Multiple-plate Continuum Light Source *Bo-Han Chen*	Metamaterial negative refractive index lens: experimental results and future pathways towards sub-wavelength resolution microwave imaging *Eva Anton*
12.20	Novel Donor-Acceptor Inverted S-T Gap Emitters for OLED Applications *Przemyslaw Data*	Comparative Analysis of NZ Titanomagnetite and Pilbara Hematite Reduction: Influence of Preoxidation and Bed Mass on Kinetics and Morphology *Bavinesh Maisuria*	A 5D Gas Visualizer for Mapping Gas Distribution in Metal Organic Framework *Wenwen Liu*	Unveiling Photophysical Dynamics with a Transient Absorption System Covering the Visible to the Near-infrared *Bo-Han Chen*	
12.35	Electro-absorption switching of nanoplatelets *Kyla Rutherford*		Highly Selective MOF Fillers in Mixed Matrix Membrane for Efficient CO2 Separation *Ben Yin*		
12.50	**Lunch**				
13.50	**Keynote 4:** Electrode and electrolyte design for high-performance aqueous zinc-ion batteries *Zaiping Guo*		**Keynote 5:** Atomically precise synthesis of metal nanoparticles for catalysis *Richard Tilley*		
14.25	Transition to concurrent sessions				
	2A: Batteries and capacitors	**2B: Clusters and nanoparticles**	**2C: Biosensors**	**2D: Ferro-magnetic, ferro-electric and magnetic materials**	**2E: Materials for low energy systems and computing**
14.30	Modified carbon black and NMC for improved lithium-ion battery performance *Amanda Ellis*	Dimensionality-driven novel properties of topological semimetals and applications *Suk-Ho Choi*	Active site engineered nanozymes for advanced biosensing and beyond *Moon Il Kim*	Tailoring antiferromagnetic spin textures using magnetoelectric BiFeO3 *Vincent Garcia*	Frictionless nanohighways in Bismuthene/Graphite *Maxime Le Ster*
14.55	Enabling soft polymers as solid polymer electrolytes for Lithium metal batteries by reinforcing mechanical properties *Mukundan Thelakkat*	Changing Metals and Their Atoms On by One in Subnanometer Clusters and Switching Supports to Control Catalytic Activity and Selectivity *Štefan Vajda*	Continuous Biomolecular Monitoring Using Molecularly Responsive Hydrogel Plasmonic Biosensor *Soohyun Park*	Grain Boundary Complexion Transitions in Ferroelectrics *Catherine Bishop*	Disordered Materials for Low Energy Electronics *Julie Karel*
15.20	Converting Waste Woody Materials into Heteroatom-doped Electrode Materials for Electrochemical Energy Storage *Shanghai Wei*	Atomically precise clusters as the key active sites in selected materials for zero carbon systems *Vladimir Golovko*	Optical biosensor for in vivo biomolecular monitoring *Khulan Sergelen*	Fast spin precession in ferrimagnetic Mn4N thin films with perpendicular magnetic anisotropy *Yao Zhang*	Thin Film Growth of Co2MnGexGa1-x Heusler Alloys and Study of Their Structural, Electrical, and Magnetic Properties *Brijeshkumar Patel*

15.35	Biocompatible supercapacitor engineered from marine collagen impregnated with polypyrrole and tungsten disulfide *Roshan Khadka*	Exploring Electronic Properties in Ligand-Interchangeable Gold Nanocluster Assemblies *Emma Vincent*	An Electrochemical Aptasensor for Detection of Cancer Biomarkers and Extracellular Vesicles *Zarinah Amin*	Electronic Structure and Electrical/Magnetic Behavior of 2D-Stanene (Stanene-Oxide) Thin Film *Sekhar Ray*	Zero Angular Momentum Compensation in Rare Earth Nitrides *Elma Joshy*
15.50	Intercalation of metal ions in prolific class of 2D materials – MXenes *Shubhra Mathur*	Synthesis and structural characterization of novel transition metal oxide clusters Ir3In3Sn12O14, RuIn6Sn6O16 and Ru4In2Sn20O21 *Tilo Söhnel*	Implantable bioelectronics for in vivo and long-term measurement of potassium ions in pine xylem sap *Yi Chen*	Terahertz spin-based sensors design *Dominik Legut*	Self-compensated memory structures with superconducting readout *Jackson Miller*
16.05	**Afternoon Tea**				
	3A: Alloys, ceramics and oxides	**3B: Photoactive materials and optical properties**	**3C: Antimicrobial materials**	**3D: Materials characterisation, porous and functional materials**	**3E: Condensed matter and magnetic materials**
16.35	Strengthening and toughening mechanisms of lightweight high-temperature high Nb-TiAl alloys using nanoscale-silicides *Jun Cao*	Spectroscopy and modelling of oxygenated calcium fluoride doped with erbium and europium ions *Michael Reid*	Plasma-Assisted Printing of Antimicrobials Set to Replace Industry Standards *Daniel Carleton*	Materials Characterisation and Modelling, Critical for the Materials Development Lifecycle *Jacinta White*	Multipole order and chirality in solids *Uli Zuelicke*
16.50	Advanced Dielectric Materials for Capacitors: Excellent Dielectric Performance in Germanium and Tantalum Co–Doped TiO2 Ceramics *Yasumin Mingmuang*	Controlling excited state localisation in molecular photosensitisers *Georgina Shillito*	Accelerating Lab- to- Bedside Biodegradable Nanomaterial-based Antimicrobial Innovation *Shreehari Kodakkat*	Crystal Engineering of Hybrid Framework Materials Incorporating a Tantalum Based Pillar *Nathan Harvey-Reid*	Anisotropic Magnetoresistance and the Fermi surface of GdN *Ted Trewick*
17.05	The Effect of High-Energy Ball Milling on the Sintering Temperature Reduction in X7R-type Dielectric Material (Al0.5Nb0.5)xTi1-xO2 *Jirata Prachamon*	Photoactive 3d transition metal complexes *Stephan Kupfer*	Development of Bactericidal Nanostructures on 3D Polymeric Surfaces *Buddhika Sampath Kumara Sinhasana Pattale Siriwedi Naidelage*	Multicomponent Metal-Organic Frameworks Using Amino Acid and Peptide Ligands *Ghadir Dahalan*	Engineering of emergent magnetism in functional oxide superlattices *Freddy Lyzwa*
17.20	Element and depth-dependent doping of a few-nanometres-thick liquid metal surface oxide *Laetitia Bardet*	Raman studies of triphenylamine-based acceptor-donor dyes *Elkhansa Elbashier*	Active surface coatings with intrinsic antimicrobial properties *Sandya Athukoralalage*	Next-generation zeolite oxygen concentrator: a lifecare solution for COPD patients *Christina Howat*	Controlling Skyrmions in Cu2OSeO3 through Doping: Insights into the Relationship Between Crystal Structure and Magnetic Ordering *Marco Vas*
17.40	Doping Studies of Gallium Oxide Thin Films Produced Using Sol-Gel Techniques *Kate Wislang*		Smart Nanomaterials Actuated by DNA Breathing *Guoqing Wang*	Analysis of pyrolysis reactions for tris(dialkylamino)cyclopropenium chloride salts *Askin Eldiven*	

TUESDAY 11 FEBRUARY 2025					
08.00-18.00	Registration Open				
08.30	**Plenary 3:** TBC *Róisín Owens*				
09.30	Transition to concurrent sessions				
09.35	**Keynote 6:** Electrochemistry in Small Droplets *Minkyung Kang*		**Keynote 7:** Advancing Point of Care Diagnostics Using Capillary Flow Microfluidics *Charles Henry*		**Keynote 8:** Information Processing in Dopant Network Processing Units *Wilfred G. van der Wiel*
10.10	**Morning Tea**				
	4A: Photonics	**4B: Microfluidics**	**4C: Electrocatalysis**	**4D: Comptutional**	**4E: Neuromorphic, unconventional and physical computing Symposium**
10.40	Silicon carbide as a platform for mid-IR metasurfaces *Stefan Maier*	From Microfluidics to Engineering Thermodynamics - An Overview of the Energy Technology Lab at Otago *Sam Lowrey*	Development of Sustainable Electrocatalysts for Anion Exchange Membrane Fuel Cells *Hamish Andrew Miller*	Towards High-Throughput Rational Design of Organic Solar Cells and Semiconductor Materials using Machine Learning and Computational Chemistry *Geoffrey Robert Weal*	(10.40 – 11.10) Neuromorphic Nanowire Networks: A Materials-Driven Approach to Computing Beyond AI *Adam Stieg*
11.05	Giant magnitude of ultraviolet magnetic circular dichroism in thin film Co2MnGa1-xGe1-x Heusler alloys *Simon Granville*	Taking spin coating to another dimension *Finn McIntyre*	Repurposing Li ion battery materials as electrocatalysts for water splitting *Anthony O'Mullane*	Computational design of catalytic nanomaterials for oxidative abatement of air pollutants at very low temperatures *Konstantin Neyman*	(11.10 – 11.40) In Materia Computing with Self-organizing Multiterminal Nanowire Networks *Carlo Ricciardi*
11.30	Hydrogenated amorphous silicon for nanophotonic materials *Duk Yong Choi*	Investigating Dynamics of Janus Particles using Microfluidic Devices *Stephen Chung*	Investigating the use of Plasma Thermal Spraying for Alkaline Water Electrolysis Electrode Fabrication *Glen McClea*	A Divide and Conquer Approach to Nanoparticle Global Optimisation *Nicholas Smith*	(11.40 – 12.10) Neuromorphic Computing with Physical Neural Networks *Zdenka Kuncic*
11.45	Ultrafast UV Luminescence in ZnO Films Fabricated by MF+ECWR Magnetron Sputtering *Jiri Olejnicek*	Rapid In-Situ Bacterial Detection Using Nanostructured Surfaces and Microfluidics *Amal Senevirathne*	Mapping Location of Oxygen Nanobubble Formation on Nickel Surfaces *Rizki Putri Andarini*	Elucidating the Electrolytes Involved in the Solvation of Vanadium Ions in the Catalytic Reactions within Redox Flow Batteries *Christopher Mills*	
12.00	Enhancing Upconversion Efficiency in Lanthanide Systems with Tunable Silver Plasmonic Nanoparticles *Romina Marie Mathew*	Using Lab on a Chip to investigate the invasive biology of pathogenic fungi and oomycetes *Ayelen Tayagui*	Electrochemistry of V5+/4+ reaction on catalytic heteroatom-doped carbon electrode derived from ionic liquids *Pitambar Poudel*	Melting of noble gas systems under extreme conditions *Diana Yu*	(12.10 -12.40) Carbon nanotube based multi nanowire memristive switching devices *Natalie Plank*
12.15	Luminescent Materials with Memory are Optically Memristive Systems *Joseph Schuyt*	Ultrasensitive paper-based fluorescent sensors for detecting liquid illicit drugs *Anindita Sen*		A computational protocol for evaluating MOF-metal oxide chemiresistive sensors for early disease detection *Maryam Nurhuda*	
12.30	Multi-wavelength lasing via self-frequency conversion in GaNAs-based nanowires *Irina Buyanova*	Development of an Automated Microfluidic Ion Pipette Aspiration System for Analysing Viscoelastic Micro-particles *Chi Minh Truong*		Accurate representation of hydrogen in metals by machine-learning enhanced modelling of nuclear quantum effects *Kai Sellschopp*	

12.45	**Lunch & Poster Session**				
13.45	**Keynote 9:** Multimodal imaging platform to study cartilage degeneration using compression-based depth-resolved polarisation-sensitive optical coherence tomography and vibrational spectroscopy *Frederique Vanholsbeeck*	**Keynote 10:** PET imaging of nucleic acid framenworks *Jiang Dawei*	**Keynote 11:** Materials and Devices for Unconventional Computing Approaches *Valeria Bragaglia*		
14.20	Transition to concurrent sessions				
	5A: Photonics and medical spectroscopy	**5B: Biomedical and therapeutic materials**	**5C: Catalysis**	**5D: Waste to value**	**5E: Neuromorphic, unconventional and physical computing Symposium (cont'd)**
14.25	Demonstration of fermionic time-reversal symmetry in a photonic topological insulator *Holger Fehske*	Designing light activated biomaterials for tissue engineering and regenerative medicine applications *Khoon Lim*	Catalysing Global Green Hydrogen Production *Antonio Tricoli*	New Wool-Derived Materials for Pollutant Gas Absorption *Amy Cruickshank*	(14.25-14.55) Analog Behavior in Oxide-Based CBRAM/ECRAM *Michael Kozicki*
14.50	Exciton and phase engineering for efficient quasi-2D perovskite light-emitting diodes *Chuanjiang Qin*	Engineered biomaterials comprises bioactive molecules for surgical sutures potential for wound healing *Azam Ali*	Rational Design of Carbon-Neutral Catalysts in Buried Junction Systems for a Sustainable Future *Tae-Hyuk Kwon*	Novel Cellulose Fibres from Whole Plant Material *Helen Ashmead*	*(14.55 – 15.25)* Creation of various functions and improvement of the device performance by means of ionic nanoarchitectonics *Kazuya Terabe*
15.15	Bridging the visible and mid-IR with nano-optics to watch ultrafast vibrational energy cascades *Rakesh Arul*	Soft conducting polymer hydrogel actuators to study brain cell behavior *Kirill Zhurenkov*	Separating Chiral and Catalytic Moieties in MOF Asymmetric Catalyst *Mohana Arul*	Turning biomass residues into materials: smart combination of physical and chemical processes *Gabriel Paes*	
15.30	Feasibility of Portable Raman Spectroscopy as a Clinical Tool for the Assessment of Photodamage in Skin *Ira Mautner*	Cellular Nanoinjection for Biomedical Applications *Roey Elnathan*	Extraordinary performance of a platinum-copper dual single atom electrocatalyst for the selective oxidation of 5-hydroxymethylfurfural to 2,5-furandicarboxylic acid *Yongfang Zhou*	Microwave pyrolysis embedded with machine learning approach for future biomass-derived graphene-like carbons and its derivatives *Niroshan Manoharan*	*(15.25-15.55)* Ferroelectric domain wall memory-From simple binary resistance switch to memristive properties *Pankaj Sharma*
15.45	Metal-oxide and organic dye-based hybrid flexible printed photodetector for healthcare application *Swati Suman*	Cobra Venom Factor Prevented Hemodynamic Effects Induced by PEGylated Nanoparticles in a Rodent Model of Acute Hypersensitivity Reaction *Yunn-Hwa Ma*	Unique Liquid Metal Activation Pathways with Applications for Renewable Fuels *Mariam Ameen*	A Zero-Liquid-Discharge Method for Cleaner Vanadium Recovery Using Volatile Reagents *Aston Pearcy*	
16.00	**Afternoon Tea**				
	6A: Nano and micro mechanical control	**6B: Collaboration and engagment**	**6C: Proteins and micelles**	**6D: Hydrogen storage materials**	**6E: Neuromorphic, unconventional and physical computing Symposium (cont'd)**
16.30	Acoustically Levitated Droplets as Advanced Materials *Geoff Willmott*	He Honoka Hauwai / German-New Zealand Green Hydrogen Centre for Research, Networking and Outreach *Sally Brooker*	Protein reconfiguration and adsorption at the oil-water interface *Catherine Whitby*	Bridging Scales: Advanced Simulations of Metal Hydride Materials for Hydrogen Storage *Paul Jerabek*	(16.30 – 17.00) Two-dimensional materials for next-generation electronics and optoelectronics technologies *Sumeet Walia*
16.55	Stroking Through Electrolyte: Liquid Metal Droplet Propulsion Through Pulse Time Modulation *Richard Fuchs*	Towards A Green Industry Sector: Decarbonising the Industrial Sector in Germany and Cooperation Potential with New Zealand *Franziska Teichmann*	Lipid-sealed microchambers with integrated ion-sensing transistors - A new tool for membrane protein studies *Adam Micolich*	Assessing Impurity Effects on FeTi Alloys for Hydrogen Storage: A Multicomponent Thermodynamic *Model Ebert Alvares*	(17.00 – 17.15) The role of ergodicity in the performance of memristive reservoir computing *Valentina Baccetti*

17.10	From Movie Screen To Science: Bringing Big Hero Six's Reconfigurable Approach To The Microscale *Nicholas Carlisle*	Practical educational resources co-created with Mātauranga Māori and Pacific knowledge to empower a new generation of community scientists *Matthew Cowan*	Reconfigurable Pickering Emulsions *Shivangi Chourasia*	Exploring Hydrogen Storage in Silicon-Doped Ti-Fe Alloys Using Effective Bond Energy Formalism *Lekshmi Dinachandran*	(17.15 – 17.30) Research Software and Machine Learning Practices in Neuromorphic Computing: A Comprehensive Analysis and Roadmap *Ryan Daniels* (17.30 – 17.45) Dynamics of induced pathways in thermistor grid networks *Matthew Arnold* (17.45 – 18.00) The growth and stability of nanofilaments in atomic switches *Kannan Ridings*
17.25	Tiny Robots: A Giant Step Towards Managing Gut Health *Adam Carlisle*		Micelles Based Synthesis of 2D and 3D Covalent Organic Frameworks Using Surfactants *Sri Varshini Murugan*	Nanometer-scale analysis of hydrogen storage in complex hydrides using small angle neutron scattering and simulations *Arnab Majumdar*	
17.40			Stimuli-responsive microcapsules for sustainable chemistry *Hui Yang*		
17.55			Challenges in Connecting Casein Micelle Structure with Rheology of Skim Milk Concentrate *Cynthia Andriani*		

WEDNESDAY 12 FEBRUARY 2025					
08.00-17.30	Registration Open				
08.30	**Plenary 4:** Seminar: Design and Synthesis of Nanomaterials for Biomedical and Energy Applications *Jackie Y. Ying*				
09.30	Transition to concurrent sessions				
09.35	**Keynote 12:** Perovskite Quantum Dots for Solar Cells and Beyond *Lianzhou Wang*		**Keynote 13:** Multilayer spintronic neural networks with radio-frequency connections *Frank Mizrahi*		
10.10	**Morning Tea**				
	7A: Computational materials and modelling	**7B: Photovoltaics and light haversting**	**7C: Spintronics and magnetic effects**	**7D: Science commercialisation**	**7E: Neuromorphic, unconventional and physical computing Symposium (continued)**
10.40	Highly tuneable hydrogen evolution catalysts of MoS2 on 2D carbon-based supports *Anna Garden*	Singlet Fission Enhanced 2d Perovskite Solar Cells *Nate Davis*	Magneto- versus Electro- caloric effects and what they can tell us *Annie Powell*	Small but Mighty? Innovation, Policy and Sustainability Transitions in New Zealand and its OECD Peers *Kira Matus*	(10.40-11.10) Neuromorphic Computing – An Interdisciplinary Approach *Rainer Waser* (11.10 – 11.40) Brain-like data processing through multistable memristive circuits *Ronald Tetzlaff* (11.40 – 12.10) Bio-inspired time varying networks for novel computing primitives *Hermann Kohlstedt*
11.05	Rational Catalyst Design for CO2 Electrochemical Reduction Reaction *Ziyun Wang*	Exceeding 2.2 V Open-Circuit Voltage in Perovskite/Organic Tandem Solar Cells via Multi-Functional Hole-Selective Layer *Jin Young Kim*	Forming ultimately tunable magnetic materials; fundamental interests in spin-orbit physics to applications in cryogenic electronics *William Holmes-hewett*	None and a Million – Challenges Identifying Just One Problem for a Platform Technology to Solve *Daniel Mak*	
11.30	Computational materials discovery for new battery electrode materials *Joseph Nelson*	Symmetry Breaking Charge Separation in Linked Violanthrone Dimers *Nina I. Novikova*	Efficient generation, conversion and manipulation of electron and photon spins in semiconductor nanostructures for room-temperature opto-spintronics *Weimin Chen*	Commercialisation of Carbon Free Alkalinity to Enhance the Removal of CO2 *Christopher Oze & Megan Danczyk*	

11.55	Intrinsic point defects and polarization effects in BaTiO3 : Insights from ab initio and thermodynamic calculations *Bushra Anam*	Triumph of Efficiency, Stability, and high Mechanical Reliability: Surface Adhesive Perovskite film for Flexible Perovskite Solar Cells *Muhammad Fahim*	Spin-selective electron transfer in chiral materials: Towards the next generation of spintronics *Muhammad Hanif*	Addressing the global plastics problem – value added adhesives derived from recycled plastics *Simon Oakley*	(12.10 – 12.40) Understanding volatile threshold switching in metal-oxide-metal devices and its application as a solid-state neuron *Robert Elliman*
12.10	Implementing Machine Learning Towards Nanocluster Global Optimisation *Elouan Hay-Fourmond*	Quasi-2D Perovskites for Utilising Singlet Fission *Jake Hardy*		Closing the loop: Circular Economy Strategies for Critical Materials in the Energy Transition *Jim Goddin*	
12.25	Developing machine learning models for atomistic simulations: Potential applications and prospects in metal hydride materials *Archa Santhosh*	Morphology control of Y6 thin films in single-component solar cells *Nikita Shumilov*		Dendritic Identifiers as Oracles in Agri-Food Supply Chains *Michael Kozicki*	
12.40	**Lunch**				
13.40	**Keynote 14:** (Cancer) Theranostics with (Intrinsically) Radiolabeled Nanomaterials *Weibo Cai*	**Keynote 15:** The XAS Beamline in Melbourne: 100% Efficient and Awesomely Fast *Bernt Johannessen*		**Keynote 16:** The physics and challenges of unconventional physical computing *Daniel Brunner*	
14.15	Transition to concurrent sessions				
	8A: Medical nanotechnology and spectroscopy	**8B: Synchrotron-based methods for materials science and engineering**	**8C: Additive manufacturing and printing**	**8D: Tissue engineering and analysis**	**8E: Neuromorphic, unconventional and physical computing Symposium (continued)**
14.20	Sonodynamic Therapy of Solid Tumors: From Small-Molecule to Targeted Nanomaterial Sonosensitizers *Alejandro Sosnik*	Longwave spectroscopic studies of metal-organic frameworks and perovskites at the Australian Synchrotron's THz Beamline *Dom Appadoo*	Understanding mechanically activated changes during additive manufacturing *Ronan Daly*	Mechanical testing of human endometrial tissue towards modelling the invasive behaviour of endometriosis *Rachael Wood*	(14.20 – 14.50) Advances in Understanding Fundamentals of Memristive Devices Allow New Applications *Ilia Valov*
14.45	In-clinic differentiation of inflammatory dermatoses and other skin lesions using Raman spectroscopy *Michel Nieuwoudt*	Synchrotron-Based Characterization of Advanced Materials: From Structure to Function *Qinfen Gu*	3D printed plug flow reactor in space? Catalytic decomposition of a green propellants *Matthew Watson*	Designing Light-activated Hydrogels for Biofabrication of Complex Tissues and Biointerfaces *Tim Woodfield*	(14.50 – 15.20) A multiscale approach for plasmo-electronic effects in self-assembled gold nanoparticle networks *Jeremie Grisolia*
15.10	A New Class of Sulfoxide Polymer-Lipid Conjugates for stealth LNP *On Ting Choy*	(15.10 – 15.35) ANSTO beamline presentation TBA	Development of Advanced Biobased Materials: PHA-Plant Biomass Composites for 3D Printing Applications *Yi Chen*	Stiffness Patterning hydrogels to engineer stem cell-derived cardiac scar tissue for disease modelling *Harrison Porritt & Jenny Malmström*	
15.25	Evaluation of Dynamic Light Scattering as a Potential Quality Control Method for Radiolabeled Antibody for Successful Tumor Detection *Jeongsoo Yoo*	(15.35-16.00) Refining structures of electrochemical catalysts for energy storage and conversion *Jinqiang Zhang*	Optimizing material use with high-precision capillary printing for electronic device fabrication *Céline Ternon*	Harnessing oxygen availability to fabricate advanced biological materials for tissue engineering applications *Axel Norberg & Melissa Ishii*	(15.20 – 15.50) Memristive networks: what's so interesting about them? *Francesco Caravelli*
15.40	Enhanced UV-B Emission in BaB8O13: Optimizing Gd3+ Doping with Pb2+, Ce3+, and Pr3+ for Phototherapy Applications *Leelakrishna Reddy*		Innovative Suction Arc Discharge Method for Precise Deposition on Complex Geometrical Shapes *Krzysztof Jankowski*	Exploring Non-Classical Properties of Amyloid Fibrils *Donn Adam Gito*	

15.55	**Afternoon Tea**				
	9A: Thermal management and materials	**9B: Synchrotron-based methods for materials science and engineering**	**9C: Biosensors**	**9D: Textured surfaces**	**9E: Neuromorphic, unconventional and physical computing Symposium (continued)**
16.25	Cost-effective fabrication of advanced thermal management materials for high-power electronic devices *Fei Yang*	The vibrational analysis of crystalline systems at the Australian Synchrotron THz/Far-IR Beamline: from porous materials to interstellar ice surfaces *Courtney Ennis*	Advanced Nanocellulose composites for Information processing *Thomas Dandekar*	Enhancing the Performance and Longevity of Biomass Combustors: Leveraging Microtextures to Reduce Soot Accumulation *Sami Khan*	(16.25 – 16.55) Energy efficient, scalable, self-formed Ag nanostructure based neuromorphic devices exhibiting high degree of linearity for In-memory computing *Giridhar Kulkarni* (16.55 – 17.25) Silicon-on-insulator based dopant network processing units for reservoir computing at room temperature *Marco Fanciulli* (17.25 – 17.40) Critical oscillator networks for reservoir computing applications *Petro Feketa* (17.40 – 17.55) Stochastic Spiking in Percolating Networks of Nanoparticles enables Optimization and Classification *Sofie Studholme*
16.50	Optimizing Thermal Conductivity and Mechanical Properties of Hot-pressed Copper-Titanium/Diamond Composites *Jingnan Ma*	Momentum for catalysis: how surface reactions shape the RuO2 flat surface state *Vedran Jovic*	Electrical characterization of thin films for carbon nanotubes for gas phase biosensor applications *Sangar Begzaad*	Femtosecond Laser Processing and Other Methods to Create Micropatterned Surfaces for Energy Applications *Kirill Misiiuk*	
17.05	Thermal characterisation of cFET Stability *Rhys Marchant-ludlow*		Comparative Analysis of Adenosine CNT-FET Aptasensor performance: Impact of Functionalization Routes and Buffer Solutions *Alireza Zare*	Unveiling Structure Selectivity Relationships in Electrochemical CO2 Reduction Using Patterned Electrodes *Campbell Tiffin*	
17.20	Thermoacoustic characterization of phase change materials *Laura A. Cobus*	Investigation on the spin configuration of electrocatalyst using X-ray absorption spectroscopy *Xiaoning Li*	Smart and multifunctional chitosan film as a biosensor in intelligent food packaging *Shuva Bhowmik*	Fabrication of Nano- and Microstructures on Polysulfides Surfaces *Abigail Mann*	
17.35	Development and characterization of novel and stable nanoparticles embedded PCM-in-water emulsions for thermal energy storage *Sunil Lonkar*		Optimizing LAMP Assays for In-Field Detection of Kauri Dieback Pathogens *Zhuoyue Wang*		
19.30-late	**Conference Dinner @ Te Pae Christchurch Convention Centre (RSVP Required)**				

THURSDAY 13 FEBRUARY 2025					
08.00-16.00	Registration Open				
08.30	**Plenary 5:** TBC *Thomas Bennett*				
09.30	Transition to concurrent sessions				
09.35	**Keynote 17:** Molecular origin of slippery behaviour in tethered liquid layers *Chiara Neto*			**Keynote 18:** Unveiling the hidden secrets of spintronic materials with neutron scattering *Kirrily Rule*	
10.10	**Morning Tea**				
	10A: Catalysis and Innovative materials	**10B: Materials for Environmental and Water Management**	**10C: Electrocatalysis**	**10D: Thermo- and piezo- electric materials**	**10E: Photovoltaic, light havesting and optical materials**
10.40	Designing Metal Single Atom Catalysts for Tomorrow's Energy Sector *Geoffrey Waterhouse*	Water and Light: Breaking Down Biofilms with Greener Photodynamic Materials *Heather Buckley*	Computational insight into the chemical processes underpinning a humidity driven molten carbonate membrane for direct air capture of carbon dioxide *Patricia Hunt*	Development of thermoelectric materials & devices for energy saving and IoT energy harvesting *Takao Mori*	Ultrafast Coulomb Interactions in Organic Semiconductors for Next Generation Solar Panels *Michael Price*
11.05	Are Transition Metal (Oxy)Nitrides Active Catalysts for Electrochemical Nitrogen Reduction? *Prasanth Gupta Sridhar Gupta*	Advanced Water Management Through Thermoresponsive Hydrogel Composites *Jonghwi Lee*	**Invited Speaker TBC**	Strain induced Flexible Piezoelectric device employing Semiconducting Nanowire Network *Céline Ternon*	Non-Volatile Solid Additives for High-Efficient Eco-Friendly Organic Photovoltaic Cells *Shinuk Cho*
11.30	Facile dissociation of molecular nitrogen on crystalline lanthanide surfaces *Kiersten Kneisel*	Electrochemical oxidation of low concentration methane on Pt/Pt and Pt/CP under ambient conditions *Ting Wu*	Halogen Bonding within Ionic Liquids Muhammad *Ali Hashmi*	Mitigating Triboelectric Effects in Piezoelectric Signal Measurements *Alireza Akbarinejad*	Resolving the emissive intermediate in singlet fission with magnetic fields *Damon De Clercq*
11.45	Stable organic cages from aromatic macrocycles: inclusion and assembly *Nigel Lucas*	Probing Reaction Mechanisms on a Membrane Using Metadynamics Simulations *Brandon Meza González*	Novel Hybrid Anion-Pillared MOFs For Strategic Gas Separations *Sydnee Koia*	Defects induced high thermoelectric power factor in sustainable thermoelectric materials *Peter Murmu*	Morphological control of Y6 thin films reveals charge transfer generation is facilitated by co-facial interactions *Aditi Kumar*
12.00	Growth of a Poyoxometalate-Capped Giant Iron-Based Molecular Mineral Structure from Water *Masooma Ibrahim*	Highly efficient zeolite supported Au-Pt alloy nanoparticles for long-term removal of ethylene at 0 degree C *Mingyue Lin*	Fundamental developments toward robust high-permeance ZIF-62 glass membranes *Matthew Cowan*	Enhancement of Power factor for the Conversion of Waste Heat into Electrical Power by Nano-Engineering of Thermoelectric Generator *Wiqar Hussain Shah*	Optimizing growth of self-assembled aluminide stacks for optical applications *Angelo Vitaliti*
12.15	Impact of Ar+8 Ion Beams on the Morphological and Conductive Characteristics of GO-Ti3C2 -PANI Composites *Subodh Srivastava*	Advancing Gas Sensor Technology through Poly(Ionic Liquid) Nanocomposites and AI-Driven Data Analysis for Environmental and Industrial Applications *Jaroslav Otta*	Analogues of MUF-16 that further enhance CO2 capture performance in industrial applications *Elnaz Jangodaz*	Increasing the thermoelectric power of CuI by defect engineering with ion implantation *Martin Markwitz*	Stretching Long-Lived Excited States Using Molecular Design, A Transient Resonance Raman Study *Samuel Harris*
12.30	Textile Sensor Consists of 2D Materials *Azam Ali, Nazmul Islam & Stewart Collie*			Soft Magnetic Materials for Inductive Power Transfer to Electric Vehicles *Nick Long*	Fundamental Properties and Device Applications of Square SnO2 Nanotubes *Ryan Adams*
12.45	**Lunch**				

13.45	**Keynote 19:** CO2 Electro-Reduction: From Metallic Foams to Gas Diffusion Electrodes *Christina Roth*		**Keynote 20:** Unveiling dynamic biotic-abiotic interactions in photosynthetic biohybrids *Xianwen Mao*		
14.20	Transition to concurrent sessions				
	11A: CO2 reduction	**11B: Biosensors and electronics**	**11C: Electrocatalysis**	**11D: Nanoparticles**	**11E: Modelling and materials theory**
14.25	Effect of cathodic potential in electrochemical CO2 reduction *Lei Wang*	Innovative Applications of Laser-Scribed Graphene *Bicheng Zhu*	Function-coordinated Electrocatalysts for Carbon Dioxide Reduction *Yuhang Li*	Gold ultrathin nanorods: synthesis and optical properties *Tatsuya Tsukuda*	Why is gallium liquid at room temperature*? *Nicola Gaston*
14.50	The role of structural dynamics in liquid metal catalysts *Charlie Ruffman*	A strategy towards biomimetic and transient polymer (bio)electronics *Jadranka Travas-Sejdic*	Nanoscale Structure–Activity Mapping of Electrocatalysts *Cameron Bentley*	Molecular effects for tuning charge transport in nanostructured hybrid materials *Simon Tricard*	Nanoscale control of magnetism via phonons - a microscopic picture *Karel Carva*
15.15	Liquid metal chemistry towards CO2 reduction and other catalytic reactions *Torben Daeneke*	Designed solar harvesting protein antenna for bioelectronics and biocatalysis *Dominic Glover*	Immobilized Molecular Catalysts for Heterogeneous Electrochemical Hydrogen Evolution (HER) and CO2 Reduction (CO2RR) *Kieran Demonte*	Catalytic activities of waste-derived gold nanoparticles *Michelle Lau*	Modelling surface solidification of binary alloys with a phase-field Lattice Boltzmann model *Alexander Smith*
15.30	Metal-Organic Frameworks for CO2 Electrocatalysis *Shae Patel*	Copolymers of gelatin and conducting polymers for Transient Electronics *Xin Sun*	Theoretical investigation and screening of dual-atom catalysts (DACs) for the oxygen reduction reaction *Yu Mao*	Ultra-Small Gold Nanoparticle Particle Adsorption and Uptake is Directed by Particle Capping Agent *Aaron Elbourne*	Spin polarized dichalcogenide alloy for selective adsorption of gases *Ahmad Ayesh*
15.45		High Precision Multiplexed Measurements of Insect Odorant Receptors Immobilised on Carbon Nanotube Field Effect Transistor Platforms *Danica Fontein*	Oxygen bubble formation under confinement *Ghazaleh Ramezani*	Quantitative Measurement of Extinction, Scattering, and Absorption Spectra from Metallic Nanoparticles *Alla Gisich*	High-throughput Predictions of Impact Ionization Properties for Material Discovery *Ryan Hall*
16.00	**Conference Closing**				

POSTER PRESENTATIONS Poster Session: Tuesday 11 February 2025, 12.45-13.45		
P.01	Switching Characteristics of Nitrogen-doped NbOx-based CBRAM Fabricated by RF-Magnetron Sputtering	Seoyeon An & Nam-Hoon Kim
P.02	Cu-doped NiO Electrode on 3D Porous Nickel Foam Substrate for Supercapacitors by RF Co-Sputtering	Seoyeon An & Nam-Hoon Kim
P.03	Immobilization and Catalytic Conversion of Polysulfides by In-Situ Generated Nickel in Hollow Carbon Nanofibers for High Performance Lithium–Sulfur Batteries	Jou-Hyeon Ahn
P.04	Lanthanum-promoted Ni@CeO2 Catalyst (La-Ni@CeO2) for enhanced Sustainable Conversion of CO2 to Synthetic natural gas (SNG)	Khalid Alhooshani
P.05	Elucidating Ca2+ and H2O2 Signalling in Plant Roots: Responses to Osmotic Stress, PAMPs and Force Sensing Using Linear Treatment Gradients	Claudia Allan
P.06	Squeezing Through the Gut: Micro-Manufacturing of Smart Capsule	Martin Allen
P.07	Optimizing UHPFRC Mixtures with Nano-Kaolin Clay and Steel Fibers for Improving 3D Concrete Printing Performance	Fadi Althoey
P.08	Towards the Development of a Novel Electrochemical Sensor for the On-Site Detection of Illicit Drugs	Elise Bailey
P.09	The Development of a Harakeke (Phormium tenax) Membrane Towards Sustainable Water Purification.	Jaye Barclay
P.10	Tuning the Electronic Properties of Doped Graphullerite – a Covalently Bonded form of C60	Alex Barnes
P.11	Where is My Capsule?	Farzaneh Baserisalehi
P.12	Power dissipation for 2D and 3D percolating networks of nanoparticles (PNNs)	Phil Bones
P.13	Developing Novel Lanthanide Framework Materials for CO2 Uptake and Catalysis	Yichao Cai
P.14	Construction of a Z-Scheme Heterojunction for Next-Generation Photovoltaic Devices	Jodi Carter
P.15	Contact Angle Experiments for resin 3D Printing vs PMMA Micro-Milling - ELISA Lab-On-A-Chip Development	Alice Cerdeira & Milan Hildreth
P.16	Photophysics of Luminescent Polyacene Metal Organic Frameworks	Sanutep Chan
P.17	Perovskite precursor mixing and dispensing using PDMS based microfluidic channels	Linda Chen
P.18	In-situ Characterization of WS2 and GaN/WS2 Heterostructure by Reflection High-Energy Electron Diffraction	Po-Yen Chen
P.19	Potential in using CMUTs for particle manipulation	Joe Chen
P.20	UPWEARS – A EU Horizon project on sustainable e-textile solution for sportwear	Yi Chen
P.21	Comparison of CO2 photocatalytic reduction efficiency using BiAX (A=O, S, Se, Te; X=Cl, Br, I)/g-C3N4 as catalysts	Chiing Chang Chen
P.22	Carbon dioxide Captured by Amino Acids Containing Deep Eutectic Solvents	Hung-Yi Chi
P.23	Mechanical properties of FRCM composites used as a carbon neutrality material for retrofit of concrete building and infrastructures	Kyoung Kyu Choi
P.24	Structural and Magnetic Phase Transitions in CoMoO4 and CuMoO4	Shen Chong
P.25	Tactile Multimodal Sensor System Inspired by Cutaneous Mechanoreceptors	Kyoung-yong Chun
P.26	Dopaminergic Janus Synapse on Neuroligin-2 Modified Gold-Coated Microspheres	Taek Dong Chung
P.27	Carbon Nanotube Network System for Reservoir Computing	Marissa Dierkes
P.28	N-Heterocyclic Carbene as a Coordinating Moiety Between Metal Nanoparticles and Spin Crossover Compounds in Nanostructured Hybrid Materials for Neuromorphic Learning	Daniel Galvis
P.29	Evaluation of Calcium/Lithium-based Metal-Organic Frameworks for Gas Adsorption by p-DFT and Vibrational Mode Analysis	Jake Gilchrist
P.30	Oxygen Driven Defect Engineering of Monolayer MoS2 for Tunable Electronic, Optoelectronic, and Electrochemical Devices	Sindhu Priya Giridhar
P.31	Mechanochemical reduction of New Zealand resources to TiFe for hydrogen storage	Alexander Haack
P.32	A soft hybrid material for self-powered and static tactile sensing	Chang Soo Han
P.33	Investigating the Influence of Matrix Stiffness on Chondrocyte Behaviour through Tuneable Alginate Hydrogels	Maede Hasannasab
P.34	AI-based automatic process flow diagram generation model for interaction of academia and industry	Byeongmin Ha
P.35	Acoustic pump-probe microfluidic device	Logan Henderson & Jordan Hay
P.36	Development of non-toxic AgInS2 quantum dots for luminescent solar concentrators in zero-emission buildings	Sandhuli Hettiarachchi
P.37	Plasma assisted molecular beam epitaxial growth of β-Ga2O3 (100) thin films on MgO(100) Substrates.	Seth Hibbert
P.38	Exploring Structural Variability in Tri-HBC Compounds: Implications for π-Stacked Porous Solid Design.	Panchami Hirave

P.39	Design of Multilayer Structure Indium Sulfide-based Photoanode for Photoelectrochemical Water Splitting	Yu-kuei Hsu
P.40	Harnessing Solvent-Induced Browning Chemistry of Amino Acids for Nanoparticle Synthesis and Drug Delivery Applications	Teh-Min Hu
P.41	Promoting Bone Regeneration with ECM-Functionalized Titanium Surfaces Mimicking Biomimetic Elastic Proteins	Jun-hyeog Jang
P.42	Contrast enhanced NIR-II photoacoustic imaging with barium sulfate and pigment admixture	Mansik Jeon
P.43	Computational Study of Carbonation Reaction for Carbon Capture and Storage in Concrete	Sohdam Jeong
P.44	Unravel the Sugarcoating; Surface patterning with unprotected sugars towards mimicking the glycocalyx	Jude Kalan
P.45	Anti-Fouling Properties of Phosphonium Ionic Liquid Coatings in the Marine Environment	Sajith Kaniyadan Baiju
P.46	Ion beam tuning of optical properties of halide perovskites	John Kennedy
P.47	Composite polymer electrolyte with surface-functionalized silica mesoball fillers	Jae Hyun Kim
P.48	Cellulose-Based Dispersion of Single-Walled Carbon Nanotubes for Solution Processing Applications	Joonyoup Kim
P.49	Electrocatalytic Activation of (ReV)X_2 (X = S, Se) Alloy Nanosheets for Hydrogen Evolution Reaction	Ju Yeon Kim & Hong Seok Kang
P.50	Asymmetric gradient orbital interaction of hetero-metal active sites for promoting photocatalytic C−C coupling processes	Taekyu Kim
P.51	Synthesis of Graphene like Nanosheets via Single Step Thermal Exfoliation method	Arjun Kumawat
P.52	Effect of Structural Characteristics and Molecular Weights of Biscarbazole-based HTMs on Photovoltaic Performance of Solid-State DSSCs	Younghwan Kwon
P.53	Monovalent ion-selective membranes with enhanced interlayer adhesion	Ji-Hyeon Lee
P.54	A New Pixelation Method Using Ag Thin Film within a Tandem Structure for High-Resolution Full-Color Quantum Dot Light-Emitting Diodes	Kwangkeun Lee
P.55	Precursor crystalline structure from organic pigment red 122 for polysulfide confinement and conversion in lithium–sulfur batteries	Seung Geol Lee
P.56	Dual modification of high-voltage LiFe0.4Mn0.6PO4 cathode for accelerated low-temperature kinetics	Youngil Lee
P.57	Spectroscopic and Computational Investigation of the Efficient Formation of Glycine on Olivine and Ice Surfaces in Interstellar Environments.	Jacob Lewis
P.58	Slip flow of concentrated emulsions in microchannels: Effects of surface wettability	Ssu-Kai Li
P.59	Fascinating and special Circular Dichroism of Helical Assemblies of silver nanowiers	Zheng Fong Li
P.60	Anomalous Magnetization Hysteresis Behavior of Thulium Iron Garnet (TmIG) under Magnetic Circular Dichroism (MCD)	Wei Hsiang Liao
P.61	Crystallization and Young's Modulus of Nanofilm of Physical Elastomer Immersed in Nonsolvent: Effect of Film Thickness	Chih-Jung Lin
P.62	Lipid nanoparticles efficiently deliver DNA vaccine to robustly induce antigen-specific immune responses	Shih-jen Liu
P.63	Enhancing Advanced Material Reliability through Deep Learning: A Conceptual Framework	Jung-Hua Lo
P.64	Polarization-assisted AlGaN Hetero-structure Based Solar-blind Ultraviolet MSM Photodetectors with Enhanced Performance	Hai Lu
P.65	Validation of Gelatine Layering Method for Ultrasound Powering and Communication	Kaleb McGillivray-Seaton
P.66	Electroreduction of NO3- to N2 on Pt(111) and Pd(111) Surfaces	Samantha (Sam) McIntyre
P.67	Sustainable Aerogels: Harnessing Canola Seed Meal Proteins	Steven McNeil
P.68	Development of Spectralon Microfluidic Devices for Enhanced Optical Sensing	Claude Meffan
P.69	Effect of gangue content on the compressive strength of hydrogen direct reduced iron ore pellets	Shaira Mendoza
P.70	Synthesis of Magneto-thermal Catalysts for CO2 Hydrogenation	Akshita Mogaveera
P.71	Improving the memory of percolating networks of nanoparticles	Ben Monaghan
P.72	Superalkalis as catalysts for carbon dioxide activation	Juliet Nelson
P.73	Turning Chrome Shavings Waste into Functional Materials: A Sustainable Approach	Braydon Nikolaison
P.74	Tracking Exciton Diffusion in Photoactive and Electronic Frameworks using Ultrafast Spectroscopy	Sam Otter
P.75	Perovskite encapsulated metal-organic frameworks	Adrian Owens
P.76	A neuromorphic device for Arithmetic Operations: Influence of Presynaptic Pulsing Scheme on Mathematical Precision	Mousona Pal
P.77	An ultrasensitive detection method for ribonuclease H utilizing in vitro transcription of fluorogenic RNA light-up aptamer	Hyun Gyu Park
P.78	Stabilized cathode/sulfide electrolyte interface by modified lithium borate coating	Yong Joon Park
P.79	A Computational Investigation into Hydrogen Production on Twisted Molybdenum Disulfide	Kayla Prendergast
P.80	Improving the size and safety of microbiota sampling capsule robots	Angus Quigley

P.81	Development of a hybrid optoelectronic radiation sensor using a Gd2O3 glass scintillator and a TiO2 photoconductor	Marilou Raduban
P.82	Development of Defect-Free Metal-Organic Framework (MOF) Membranes for Enhanced Gas Separation performance	Harikrishnan Raghavan
P.83	Synthesis of TiFe intermetallic for hydrogen storage applications via direct calciothermic reduction of ilmenite sand	Zarar Rasheed
P.84	Sustainable approach to recover and recycle critical materials from Lithium ion waste batteries	Thilini Rathnayaka Mudiyanselage
P.85	Isolation and Characterisation of Algal Nanocellulose for Tissue Scaffolding Applications	Janet Reid
P.86	A Comprehensive Guide to Exploring Electrochemical Nitrogen Reduction in Model Catalysts	Zulfitri Rosli
P.87	Quinone-containing Molecular Catalysts for Photocatalytic Hydrogen Generation	Leah Sammon
P.88	Ruthenium-gold cluster catalysts for CO2 reduction	Michelangelo Santos
P.89	Investigating the Thermal and Structural Properties of 2D Low Temperature Melting Metals	Caitlin Scott
P.90	Sustainable fabrication of MOF and Polyamide 12 composites for Advanced Hydrogen Storage through Selective Laser Sintering	Chengming Shang
P.91	Understanding anomalous cyclic voltammetric behaviour of gold clusters	Shailendra Kumar Sharma
P.92	Metal ion adsorption by siloxane-crosslinked polysulfides	William Sheard
P.93	Detection of Food Freshness Using Biodegradable Composite Polymer	San San Shen
P.94	Innovative Exosome Isolation Technology Utilizing a Sequential Combination of Charge-Based Filtration, Tangential Flow Filtration, and Lipoprotein-Specific Adsorption	Sehyun Shin
P.95	Alloying Platinum Single Atoms with Nickel Iron nanoalloys for High Performance Hydrogen Evolution Reaction	Muhammad Sial
P.96	Electrocatalytic CO2RR by a molecular complex immobilised on a carbon support	Varinder Singh
P.97	Optimized Extraction Methods for Purifying Bio-Synthesized Indigo from Bacterial Residue and Contaminants	Younga Son
P.98	High-performance bipolar membranes for efficient direct seawater electrolysis	Hyeong-Bee Song
P.99	The use of cellulose in additive manufacturing (3D printing) and thermoforming.	Erica Sue-Tang
P.100	Optogenetic and chemogenetic modulation of cognitive function in mice	Kyoungho Suk
P.101	Elemental Analysis of Enamels paints through Magnetically Assisted Laser Induced Breakdown Spectroscopy.	Rabia Tanveer
P.102	Colossal Permittivity and High-Performance Humidity Sensing in Sodium Yttrium Copper Titanate Ceramics	Prasit Thongbai
P.103	Nanostructure, Morphology, and Electrochemistry of Degradable Oligo(3-hexylthiophene) Grafted onto Poly(caprolactone)	Yuhka Uda
P.104	The plasma-assisted thermal catalytic process for CO2 conversion	Settakorn Upasen
P.105	Tuning magnetic properties in rare-earth nitrides: exploring GdNdN for compensation points	Kiri Van Koughnet
P.106	Tailoring Functional Properties of Perovskite Oxides Using Anisotropic Epitaxy	David Walker
P.107	Wicking dynamics of two-ply channels in porous medium-based microfluidic devices	Yung-Ching Wang
P.108	Study on the preparation of CO2 based monomers via cyclization of Glycidyl Methacrylate and CO2 and its polymerization	Cheng-Chien Wang
P.109	Raman spectroscopy to investigate historic paint samples.	Carlie Watt
P.110	Synthesis and properties of wool keratin-polysaccharide composite hydrogels	Junfeng Wu
P.111	Symmetry Engineering Novel Domain Structures in Barium Titanate Thin Films	Tianyuan Wu
P.112	The synthesis and luminescence properties of ZnO-doped Y2O3 ceramics	Yu-Hui Xue
P.113	Development of smart wound-healing device based on conducting polymers	Jingwen Yang
P.114	Proteolytic reaction-based electrochemical biosensor chip for point-of-care testing	Haesik Yang
P.115	Percolation-Controlled Carbon-based Nanomaterials for High Performance Dielectric Composite Materials	Segi Yu
P.116	Deep Eutectic Solvent (DES) as Green Absorbent for Scrubbing of Aromatic VOCs in Newly Decoration House: Formula Screening Using COSMO-RS	Min-hao Yuan
P.117	Quinone-containing Ruthenium Complexes for Photocatalytic Hydrogen Generation	Winter Zakaria
P.118	Discovery of Novel High-Entropy Materials via Quantum Computing	Houlong Zhuang