AMN11

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 02.12.24

## Te Pae Christchurch Convention Centre

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

| MONDAY 10 FEBRUARY 2025 | | | | | |
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| 08.00-18.00 | Registration Open | | | | |
| 08.30 | **Plenary 2:** A Catalyst Life and its Circumstances<br>*Beatriz Roldan Cuenya* | | | | |
| 09.30 | Transition to concurrent sessions | | | | |
| 09.40 | **Keynote 1:** Molecular origin of slippery behaviour in tethered liquid layers<br>*Chiara Neto* | **Keynote 2:** Ionic Materials for Next Generation Energy Technologies<br>*Doug Macfarlane* | **Keynote 3:** Simulating Josephson junctions one atom at a time<br>*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<br>*Han Young Woo* | Hydrogen generation with sustainable resources using a combined molecular, computational and engineering approach<br>*Keith Gordon* | Tailored nanoporous materials for carbon capture and conversion<br>*Gurwinder Singh* | Photophysics and charge-transfer states in organic semiconductors<br>*JaeHong Park* | Super Resolution Scanning Electrochemical Cell Microscopy<br>*Kim McKelvey* |
| 11.10 | Highly luminescent, ligand-free perovskite quantum dots in metal organic frameworks<br>*Marcus Jones* | Improvement of Photocatalytic Water Splitting activity by Facet-Selective Loading of Ultrafine Rhodium–Chromium Mixed-Oxide Cocatalyst<br>*Yuichi Negishi* | Spatially resolved gas selectivity profiles in porous adsorbents<br>*Lujia (Luke) Liu* | Advanced Ultrafast Photoluminescence Spectroscopy for Investigating Optoelectronic Materials<br>*Kai Chen* | Method for quantifying slow-flow with photoacoustic imaging<br>*Jami Shepherd* |

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

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| 15.35 | Biocompatible supercapacitor engineered from marine collagen impregnated with polypyrrole and tungsten disulfide<br>*Roshan Khadka* | Synthesis and structural characterization of novel transition metal oxide clusters Ir3In3Sn12O14, RuIn6Sn6O16 and Ru4In2Sn20O21<br>*Tilo Söhnel* | Implantable bioelectronics for in vivo and long-term measurement of potassium ions in pine xylem sap<br>*Yi Chen* | Electronic Structure and Electrical/Magnetic Behavior of 2D-Stanene (Stanene-Oxide) Thin Film<br>*Sekhar Ray* | Zero Angular Momentum Compensation in Rare Earth Nitrides<br>*Elma Joshy* |
| 15.50 | Intercalation of metal ions in prolific class of 2D materials – MXenes<br>*Shubhra Mathur* | Understanding anomalous cyclic voltammetric behaviour of gold clusters Shailendra<br>*Kumar Sharma* | | Terahertz spin-based sensors design<br>*Dominik Legut* | Self-compensated memory structures with superconducting readout<br>*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<br>*Jun Cao* | Spectroscopy and modelling of oxygenated calcium fluoride doped with erbium and europium ions<br>*Michael Reid* | Plasma-Assisted Printing of Antimicrobials Set to Replace Industry Standards<br>*Daniel Carleton* | Materials Characterisation and Modelling, Critical for the Materials Development Lifecycle<br>*Jacinta White* | Multipole order and chirality in solids<br>*Uli Zuelicke* |
| 16.50 | Advanced Dielectric Materials for Capacitors: Excellent Dielectric Performance in Germanium and Tantalum Co–Doped TiO2 Ceramics<br>*Yasumin Mingmuang* | Controlling excited state localisation in molecular photosensitisers<br>*Georgina Shillito* | Accelerating Lab- to- Bedside Biodegradable Nanomaterial-based Antimicrobial Innovation<br>*Shreehari Kodakkat* | Crystal Engineering of Hybrid Framework Materials Incorporating a Tantalum Based Pillar<br>*Nathan Harvey-Reid* | Anisotropic Magnetoresistance and the Fermi surface of GdN<br>*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<br>*Jirata Prachamon* | Photoactive 3d transition metal complexes<br>*Stephan Kupfer* | Development of Bactericidal Nanostructures on 3D Polymeric Surfaces<br>*Buddhika Sampath Kumara Sinhasana Pattale Siriwedi Naidelage* | Multicomponent Metal-Organic Frameworks Using Amino Acid and Peptide Ligands<br>*Ghadir Dahalan* | Engineering of emergent magnetism in functional oxide superlattices<br>*Freddy Lyzwa* |
| 17.20 | Element and depth-dependent doping of a few-nanometres-thick liquid metal surface oxide<br>*Laetitia Bardet* | Raman studies of triphenylamine-based acceptor-donor dyes<br>*Elkhansa Elbashier* | Active surface coatings with intrinsic antimicrobial properties<br>*Sandya Athukoralalage* | Next-generation zeolite oxygen concentrator: a lifecare solution for COPD patients<br>*Christina Howat* | Controlling Skyrmions in Cu2OSeO3 through Doping: Insights into the Relationship Between Crystal Structure and Magnetic Ordering<br>*Marco Vas* |
| 17.40 | Doping Studies of Gallium Oxide Thin Films Produced Using Sol-Gel Techniques<br>*Kate Wislang* | | Smart Nanomaterials Actuated by DNA Breathing<br>*Guoqing Wang* | Analysis of pyrolysis reactions for tris(dialkylamino)cyclopropenium chloride salts<br>*Askin Eldiven* | Dimensionality-driven novel properties of topological semimetals and applications<br>*Suk-Ho Choi* |

| TUESDAY 11 FEBRUARY 2025 | | | | | |
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| 08.00-18.00 | Registration Open | | | | |
| 08.30 | **Plenary 3:** TBC<br>*Róisín Owens* | | | | |
| 09.30 | Transition to concurrent sessions | | | | |
| 09.35 | **Keynote 6:** Electrochemistry in Small Droplets<br>*Minkyung Kang* | **Keynote 7:** Advancing Point of Care Diagnostics Using Capillary Flow Microfluidics<br>*Charles Henry* | **Keynote 8:** Information Processing in Dopant Network Processing Units<br>*Wilfred G. van der Wiel* | | |
| 10.10 | **Morning Tea** | | | | |
| | **4A: Photonics** | **4B: Microfluidics** | **4C: Electrocatalysis** | **4D: Computational** | **4E: Neuromorphic, unconventional and physical computing Symposium** |
| 10.40 | Silicon carbide as a platform for mid-IR metasurfaces<br>*Stefan Maier* | From Microfluidics to Engineering Thermodynamics - An Overview of the Energy Technology Lab at Otago<br>*Sam Lowrey* | Development of Sustainable Electrocatalysts for Anion Exchange Membrane Fuel Cells<br>*Hamish Andrew Miller* | Towards High-Throughput Rational Design of Organic Solar Cells and Semiconductor Materials using Machine Learning and Computational Chemistry<br>*Geoffrey Robert Weal* | (10.40 – 11.10)<br>Neuromorphic Nanowire Networks: A Materials-Driven Approach to Computing Beyond AI<br>*Adam Stieg* |
| 11.05 | Giant magnitude of ultraviolet magnetic circular dichroism in thin film Co2MnGa1-xGe1-x Heusler alloys<br>*Simon Granville* | Taking spin coating to another dimension<br>*Finn McIntyre* | Repurposing Li ion battery materials as electrocatalysts for water splitting<br>*Anthony O'Mullane* | Computational design of catalytic nanomaterials for oxidative abatement of air pollutants at very low temperatures<br>*Konstantin Neyman* | (11.10 – 11.40)<br>In Materia Computing with Self-organizing Multiterminal Nanowire Networks<br>*Carlo Ricciardi* |
| 11.30 | Ultrafast UV Luminescence in ZnO Films Fabricated by MF+ECWR Magnetron Sputtering<br>*Jiri Olejnicek* | Investigating Dynamics of Janus Particles using Microfluidic Devices<br>*Stephen Chung* | Investigating the use of Plasma Thermal Spraying for Alkaline Water Electrolysis Electrode Fabrication<br>*Glen McClea* | A Divide and Conquer Approach to Nanoparticle Global Optimisation<br>*Nicholas Smith* | |
| 11.45 | Enhancing Upconversion Efficiency in Lanthanide Systems with Tunable Silver Plasmonic Nanoparticles<br>*Romina Marie Mathew* | Rapid In-Situ Bacterial Detection Using Nanostructured Surfaces and Microfluidics<br>*Amal Senevirathne* | Mapping Location of Oxygen Nanobubble Formation on Nickel Surfaces<br>*Rizki Putri Andarini* | Elucidating the Electrolytes Involved in the Solvation of Vanadium Ions in the Catalytic Reactions within Redox Flow Batteries<br>*Christopher Mills* | (11.40 – 12.10)<br>Neuromorphic Computing with Physical Neural Networks<br>*Zdenka Kuncic* |
| 12.00 | Luminescent Materials with Memory are Optically Memristive Systems<br>*Joseph Schuyt* | Using Lab on a Chip to investigate the invasive biology of pathogenic fungi and oomycetes<br>*Ayelen Tayagui* | Electrochemistry of V5+/4+ reaction on catalytic heteroatom-doped carbon electrode derived from ionic liquids<br>*Pitambar Poudel* | Melting of noble gas systems under extreme conditions<br>*Diana Yu* | (12.10 -12.40)<br>Carbon nanotube based multi nanowire memristive switching devices<br>*Natalie Plank* |
| 12.15 | Multi-wavelength lasing via self-frequency conversion in GaNAs-based nanowires<br>*Irina Buyanova* | Ultrasensitive paper-based fluorescent sensors for detecting liquid illicit drugs<br>*Anindita Sen* | Electroreduction of NO3- to N2 on Pt(111) and Pd(111) Surface<br>*Samantha (Sam) McIntyre* | Probing Reaction Mechanisms on a Membrane Using Metadynamics Simulations<br>*Brandon Meza González* | |
| 12.30 | | Development of an Automated Microfluidic Ion Pipette Aspiration System for Analysing Viscoelastic Micro-particles<br>*Chi Minh Truong* | Electrocatalytic CO2RR by a molecular complex immobilised on a carbon support<br>*Varinder Singh* | Accurate representation of hydrogen in metals by machine-learning enhanced modelling of nuclear quantum effects<br>*Kai Sellschopp* | |

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| 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<br>*Frederique Vanholsbeeck* | | **Keynote 10:** PET imaging of nucleic acid framenworks<br>*Jiang Dawei* | | |
| 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<br>*Holger Fehske* | Designing light activated biomaterials for tissue engineering and regenerative medicine applications<br>*Khoon Lim* | Catalysing Global Green Hydrogen Production<br>*Antonio Tricoli* | New Wool-Derived Materials for Pollutant Gas Absorption<br>*Amy Cruickshank* | (14.25-14.55)<br>Analog Behavior in Oxide-Based CBRAM/ECRAM<br>*Michael Kozicki* |
| 14.50 | Exciton and phase engineering for efficient quasi-2D perovskite light-emitting diodes<br>*Chuanjiang Qin* | Engineered biomaterials comprises bioactive molecules for surgical sutures potential for wound healing<br>*Azam Ali* | Rational Design of Carbon-Neutral Catalysts in Buried Junction Systems for a Sustainable Future<br>*Tae-Hyuk Kwon* | Novel Cellulose Fibres from Whole Plant Material<br>*Helen Ashmead* | *(14.55 – 15.25)*<br>Creation of various functions and improvement of the device performance by means of ionic nanoarchitectonics<br>*Kazuya Terabe* |
| 15.15 | Bridging the visible and mid-IR with nano-optics to watch ultrafast vibrational energy cascades<br>*Rakesh Arul* | Soft conducting polymer hydrogel actuators to study brain cell behavior<br>*Kirill Zhurenkov* | Separating Chiral and Catalytic Moieties in MOF Asymmetric Catalyst<br>*Mohana Arul* | Microwave pyrolysis embedded with machine learning approach for future biomass-derived graphene-like carbons and its derivatives<br>*Niroshan Manoharan* | |
| 15.30 | Feasibility of Portable Raman Spectroscopy as a Clinical Tool for the Assessment of Photodamage in Skin<br>*Ira Mautner* | Cellular Nanoinjection for Biomedical Applications<br>*Roey Elnathan* | Extraordinary performance of a platinum-copper dual single atom electrocatalyst for the selective oxidation of 5-hydroxymethylfurfural to 2,5-furandicarboxylic acid<br>*Yongfang Zhou* | A Zero-Liquid-Discharge Method for Cleaner Vanadium Recovery Using Volatile Reagents<br>*Aston Pearcy* | *(15.25-15.55)*<br>Ferroelectric domain wall memory-From simple binary resistance switch to memristive properties<br>*Pankaj Sharma* |
| 15.45 | Metal-oxide and organic dye-based hybrid flexible printed photodetector for healthcare application<br>*Swati Suman* | Cobra Venom Factor Prevented Hemodynamic Effects Induced by PEGylated Nanoparticles in a Rodent Model of Acute Hypersensitivity Reaction<br>*Yunn-Hwa Ma* | Unique Liquid Metal Activation Pathways with Applications for Renewable Fuels<br>*Mariam Ameen* | Sustainable approach to recover and recycle critical materials from Lithium ion waste batteries<br>*Thilini Rathnayaka Mudiyanselage* | |
| 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<br>*Geoff Willmott* | He Honoka Hauwai / German-New Zealand Green Hydrogen Centre for Research, Networking and Outreach<br>*Sally Brooker* | Protein reconfiguration and adsorption at the oil-water interface<br>*Catherine Whitby* | Bridging Scales: Advanced Simulations of Metal Hydride Materials for Hydrogen Storage<br>*Paul Jerabek* | (16.30 – 17.00)<br>Two-dimensional materials for next-generation electronics and optoelectronics technologies<br>*Sumeet Walia* |
| 16.55 | Stroking Through Electrolyte: Liquid Metal Droplet Propulsion Through Pulse Time Modulation<br>*Richard Fuchs* | Towards A Green Industry Sector: Decarbonising the Industrial Sector in Germany and Cooperation Potential with New Zealand<br>*Franziska Teichmann* | Lipid-sealed microchambers with integrated ion-sensing transistors - A new tool for membrane protein studies<br>*Adam Micolich* | Assessing Impurity Effects on FeTi Alloys for Hydrogen Storage: A Multicomponent Thermodynamic Model<br>*Ebert Alvares* | (17.00 – 17.15)<br>The role of ergodicity in the performance of memristive reservoir computing<br>*Valentina Baccetti* |

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| 17.10 | From Movie Screen To Science: Bringing Big Hero Six's Reconfigurable Approach To The Microscale<br>*Nicholas Carlisle* | Practical educational resources co-created with Mātauranga Māori and Pacific knowledge to empower a new generation of community scientists<br>*Matthew Cowan* | Reconfigurable Pickering Emulsions<br>*Shivangi Chourasia* | Exploring Hydrogen Storage in Silicon-Doped Ti-Fe Alloys Using Effective Bond Energy Formalism<br>*Lekshmi Dinachandran* | (17.15 – 17.30)<br>Research Software and Machine Learning Practices in Neuromorphic Computing: A Comprehensive Analysis and Roadmap<br>*Ryan Daniels*<br><br>(17.30 – 17.45)<br>Dynamics of induced pathways in thermistor grid networks<br>*Matthew Arnold*<br><br>(17.45 – 18.00)<br>The growth and stability of nanofilaments in atomic switches<br>*Kannan Ridings* |
| 17.25 | Tiny Robots: A Giant Step Towards Managing Gut Health<br>*Adam Carlisle* | | Micelles Based Synthesis of 2D and 3D Covalent Organic Frameworks Using Surfactants<br>*Sri Varshini Murugan* | Nanometer-scale analysis of hydrogen storage in complex hydrides using small angle neutron scattering and simulations<br>*Arnab Majumdar* | |
| 17.40 | Squeezing Through the Gut: Micro-Manufacturing of Smart Capsule<br>*Martin Allen* | | Stimuli-responsive microcapsules for sustainable chemistry<br>*Hui Yang* | Synthesis of TiFe intermetallic for hydrogen storage applications via direct calciothermic reduction of ilmenite sand<br>*Zarar Rasheed* | |
| 17.55 | | | Challenges in Connecting Casein Micelle Structure with Rheology of Skim Milk Concentrate<br>*Cynthia Andriani* | Sustainable fabrication of MOF and Polyamide 12 composites for Advanced Hydrogen Storage through Selective<br>*Laser Sintering* | |

| WEDNESDAY 12 FEBRUARY 2025 | | | | | |
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| 08.00-17.30 | Registration Open | | | | |
| 08.30 | **Plenary 4:** Seminar: Design and Synthesis of Nanomaterials for Biomedical and Energy Applications<br>*Jackie Y. Ying* | | | | |
| 09.30 | Transition to concurrent sessions | | | | |
| 09.35 | **Keynote 12:** Perovskite Quantum Dots for Solar Cells and Beyond<br>*Lianzhou Wang* | | | **Keynote 13:** Multilayer spintronic neural networks with radio-frequency connections<br>*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<br>*Anna Garden* | Singlet Fission Enhanced 2d Perovskite Solar Cells<br>*Nate Davis* | Magneto- versus Electro- caloric effects and what they can tell us<br>*Annie Powell* | Small but Mighty? Innovation, Policy and Sustainability Transitions in New Zealand and its OECD Peers<br>*Kira Matus* | (10.40-11.10)<br>Neuromorphic Computing – An Interdisciplinary Approach<br>*Rainer Waser*<br><br>(11.10 – 11.40)<br>Brain-like data processing through multistable memristive circuits<br>*Ronald Tetzlaff* |
| 11.05 | Rational Catalyst Design for CO2 Electrochemical Reduction Reaction<br>*Ziyun Wang* | Exceeding 2.2 V Open-Circuit Voltage in Perovskite/Organic Tandem Solar Cells via Multi-Functional Hole-Selective Layer<br>*Jin Young Kim* | Forming ultimately tunable magnetic materials; fundamental interests in spin-orbit physics to applications in cryogenic electronics<br>*William Holmes-hewett* | None and a Million – Challenges Identifying Just One Problem for a Platform Technology to Solve<br>*Daniel Mak* | |

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| 11.30 | Computational materials discovery for new battery electrode materials<br>*Joseph Nelson* | Symmetry Breaking Charge Separation in Linked Violanthrone Dimers<br>*Nina I. Novikova* | Efficient generation, conversion and manipulation of electron and photon spins in semiconductor nanostructures for room-temperature opto-spintronics<br>*Weimin Chen* | Commercialisation of Carbon Free Alkalinity to Enhance the Removal of CO2<br>*Christopher Oze & Megan Danczyk* | (11.40 – 12.10)<br>Bio-inspired time varying networks for novel computing primitives<br>*Hermann Kohlstedt* |
| 11.55 | Intrinsic point defects and polarization effects in BaTiO3 : Insights from ab initio and thermodynamic calculations<br>*Bushra Anam* | Triumph of Efficiency, Stability, and high Mechanical Reliability: Surface Adhesive Perovskite film for Flexible Perovskite Solar Cells<br>*Muhammad Fahim* | Spin-selective electron transfer in chiral materials: Towards the next generation of spintronics<br>*Muhammad Hanif* | Addressing the global plastics problem – value added adhesives derived from recycled plastics<br>*Simon Oakley* | (12.10 – 12.40)<br>Understanding volatile threshold switching in metal-oxide-metal devices and its application as a solid-state neuron<br>*Robert Elliman* |
| 12.10 | Implementing Machine Learning Towards Nanocluster Global Optimisation<br>*Elouan Hay-Fourmond* | Morphology control of Y6 thin films in single-component solar cells<br>*Nikita Shumilov* | | Closing the loop: Circular Economy Strategies for Critical Materials in the Energy Transition<br>*Jim Goddin* | |
| 12.25 | Developing machine learning models for atomistic simulations: Potential applications and prospects in metal hydride materials<br>*Archa Santhosh* | | | Dendritic Identifiers as Oracles in Agri-Food Supply Chains<br>*Michael Kozicki* | |
| 12.40 | **Lunch** | | | | |
| 13.40 | **Keynote 14:** (Cancer) Theranostics with (Intrinsically) Radiolabeled Nanomaterials<br>*Weibo Cai* | **Keynote 15:** Advanced Materials Capabilities at the Australian Synchrotron<br>*Bernt Johannessen* | | **Keynote 16:** The physics and challenges of unconventional physical computing<br>*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<br>*Alejandro Sosnik* | Longwave spectroscopic studies of metal-organic frameworks and perovskites at the Australian Synchrotron's THz Beamline<br>*Dom Appadoo* | Understanding mechanically activated changes during additive manufacturing<br>*Ronan Daly* | Mechanical testing of human endometrial tissue towards modelling the invasive behaviour of endometriosis<br>*Rachael Wood* | (14.20 – 14.50)<br>Advances in Understanding Fundamentals of Memristive Devices Allow New Applications<br>*Ilia Valov* |
| 14.45 | In-clinic differentiation of inflammatory dermatoses and other skin lesions using Raman spectroscopy<br>*Michel Nieuwoudt* | Synchrotron-Based Characterization of Advanced Materials: From Structure to Function<br>*Qinfen Gu* | 3D printed plug flow reactor in space? Catalytic decomposition of a green propellants<br>*Matthew Watson* | Designing Light-activated Hydrogels for Biofabrication of Complex Tissues and Biointerfaces<br>*Tim Woodfield* | (14.50 – 15.20)<br>A multiscale approach for plasmo-electronic effects in self-assembled gold nanoparticle networks<br>*Jeremie Grisolia* |
| 15.10 | A New Class of Sulfoxide Polymer-Lipid Conjugates for stealth LNP<br>*On Ting Choy* | (15.10 – 15.35)<br>The XAS Beamline in Melbourne: 100% Efficient and Awesomely Fast<br>*Bernt Johannessen* | Development of Advanced Biobased Materials: PHA-Plant Biomass Composites for 3D Printing Applications<br>*Yi Chen* | Stiffness Patterning hydrogels to engineer stem cell-derived cardiac scar tissue for disease modelling<br>*Harrison Porritt & Jenny Malmström* | (15.20 – 15.50)<br>Memristive networks: what's so interesting about them?<br>*Francesco Caravelli* |
| 15.25 | Evaluation of Dynamic Light Scattering as a Potential Quality Control Method for Radiolabeled Antibody for Successful Tumor Detection<br>*Jeongsoo Yoo* | (15.35-16.00)<br>Refining structures of electrochemical catalysts for energy storage and conversion<br>*Jinqiang Zhang* | Optimizing material use with high-precision capillary printing for electronic device fabrication<br>*Céline Ternon* | Harnessing oxygen availability to fabricate advanced biological materials for tissue engineering applications<br>*Axel Norberg & Melissa Ishii* | |

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| 15.40 | Enhanced UV-B Emission in BaB8O13: Optimizing Gd3+ Doping with Pb2+, Ce3+, and Pr3+ for Phototherapy Applications<br>*Leelakrishna Reddy* | | Innovative Suction Arc Discharge Method for Precise Deposition on Complex Geometrical Shapes<br>*Krzysztof Jankowski* | Exploring Non-Classical Properties of Amyloid Fibrils<br>*Donn Adam Gito* | |
| 15.55 | **Afternoon Tea** | | | | |
| | **9A: Thermal management and materials** | **9B: Synchrotron-based methods for materials science and engineering (continued)** | **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<br>*Fei Yang* | The vibrational analysis of crystalline systems at the Australian Synchrotron THz/Far-IR Beamline: from porous materials to interstellar ice surfaces<br>*Courtney Ennis* | Advanced Nanocellulose composites for Information processing<br>*Thomas Dandekar* | Enhancing the Performance and Longevity of Biomass Combustors: Leveraging Microtextures to Reduce Soot Accumulation<br>*Sami Khan* | (16.25 – 16.55)<br>Energy efficient, scalable, self-formed Ag nanostructure based neuromorphic devices exhibiting high degree of linearity for In-memory computing<br>*Giridhar Kulkarni*<br><br>(16.55 – 17.25)<br>Silicon-on-insulator based dopant network processing units for reservoir computing at room temperature<br>*Marco Fanciulli*<br><br>(17.25 – 17.40)<br>Critical oscillator networks for reservoir computing applications<br>*Petro Feketa*<br><br>(17.40 – 17.55)<br>Stochastic Spiking in Percolating Networks of Nanoparticles enables Optimization and Classification<br>*Sofie Studholme* |
| 16.50 | Optimizing Thermal Conductivity and Mechanical Properties of Hot-pressed Copper-Titanium/Diamond Composites<br>*Jingnan Ma* | Momentum for catalysis: how surface reactions shape the RuO2 flat surface state<br>*Vedran Jovic* | Electrical characterization of thin films for carbon nanotubes for gas phase biosensor applications<br>*Sangar Begzaad* | Femtosecond Laser Processing and Other Methods to Create Micropatterned Surfaces for Energy Applications<br>*Kirill Misiiuk* | |
| 17.05 | Thermal characterisation of cFET Stability<br>*Rhys Marchant-ludlow* | | Comparative Analysis of Adenosine CNT-FET Aptasensor performance: Impact of Functionalization Routes and Buffer Solutions<br>*Alireza Zare* | Unveiling Structure Selectivity Relationships in Electrochemical CO2 Reduction Using Patterned Electrodes<br>*Campbell Tiffin* | |
| 17.20 | Thermoacoustic characterization of phase change materials<br>*Laura A. Cobus* | | Smart and multifunctional chitosan film as a biosensor in intelligent food packaging<br>*Shuva Bhowmik* | Fabrication of Nano- and Microstructures on Polysulfides Surfaces<br>*Abigail Mann* | |
| 17.35 | Development and characterization of novel and stable nanoparticles embedded PCM-in-water emulsions for thermal energy storage<br>*Sunil Lonkar* | | Optimizing LAMP Assays for In-Field Detection of Kauri Dieback Pathogens<br>*Zhuoyue Wang* | | |
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| 19.30-late | **Conference Dinner @ Te Pae Christchurch Convention Centre (RSVP Required)** | | | | |

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

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| 12.45 | **Lunch** | | | | |
| 13.45 | **Keynote 19:** CO2 Electro-Reduction: From Metallic Foams to Gas Diffusion Electrodes<br>*Christina Roth* | | | **Keynote 20:** Unveiling dynamic biotic-abiotic interactions in photosynthetic biohybrids<br>*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<br>*Lei Wang* | Innovative Applications of Laser-Scribed Graphene<br>*Bicheng Zhu* | Function-coordinated Electrocatalysts for Carbon Dioxide Reduction<br>*Yuhang Li* | Changing Metals and Their Atoms on by One in Subnanometer Clusters and Switching Supports to Control Catalytic Activity and Selectivity<br>*Štefan Vajda* | Why is gallium liquid at room temperature*?<br>*Nicola Gaston* |
| 14.50 | The role of structural dynamics in liquid metal catalysts<br>*Charlie Ruffman* | A strategy towards biomimetic and transient polymer (bio)electronics<br>*Jadranka Travas-Sejdic* | Nanoscale Structure–Activity Mapping of Electrocatalysts<br>*Cameron Bentley* | Molecular effects for tuning charge transport in nanostructured hybrid materials<br>*Simon Tricard* | Nanoscale control of magnetism via phonons - a microscopic picture<br>*Karel Carva* |
| 15.15 | Liquid metal chemistry towards CO2 reduction and other catalytic reactions<br>*Torben Daeneke* | Designed solar harvesting protein antenna for bioelectronics and biocatalysis<br>*Dominic Glover* | Oxygen Driven Defect Engineering of Monolayer MoS2 for Tunable Electronic, Optoelectronic, and Electrochemical Devices<br>*Sindhu Priya Giridhar* | Catalytic activities of waste-derived gold nanoparticles<br>*Michelle Lau* | Modelling surface solidification of binary alloys with a phase-field Lattice Boltzmann model<br>*Alexander Smith* |
| 15.30 | Metal-Organic Frameworks for CO2 Electrocatalysis<br>*Shae Patel* | Copolymers of gelatin and conducting polymers for Transient Electronics<br>*Xin Sun* | Theoretical investigation and screening of dual-atom catalysts (DACs) for the oxygen reduction reaction<br>*Yu Mao* | Ultra-Small Gold Nanoparticle Particle Adsorption and Uptake is Directed by Particle Capping Agent<br>*Aaron Elbourne* | Spin polarized dichalcogenide alloy for selective adsorption of gases<br>*Ahmad Ayesh* |
| 15.45 | Immobilized Molecular Catalysts for Heterogeneous Electrochemical Hydrogen Evolution (HER) and CO2 Reduction (CO2RR)<br>*Kieran Demonte* | High Precision Multiplexed Measurements of Insect Odorant Receptors Immobilised on Carbon Nanotube Field Effect Transistor Platforms<br>*Danica Fontein* | Oxygen bubble formation under confinement<br>*Ghazaleh Ramezani* | | High-throughput Predictions of Impact Ionization Properties for Material Discovery<br>*Ryan Hall* |
| 16.00 | **Conference Closing** | | | | |

| POSTER PRESENTATIONS<br>Poster Session: Tuesday 11 February 2025, 12.45-13.45 | | |
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| P.01 | 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.02 | Lanthanum-promoted Ni@CeO2 Catalyst (La-Ni@CeO2) for enhanced Sustainable Conversion of CO2 to Synthetic natural gas (SNG) | Khalid Alhooshani |
| P.03 | Elucidating Ca2+ and H2O2 Signalling in Plant Roots: Responses to Osmotic Stress, PAMPs and Force Sensing Using Linear Treatment Gradients | Claudia Allan |
| P.04 | Optimizing UHPFRC Mixtures with Nano-Kaolin Clay and Steel Fibers for Improving 3D Concrete Printing Performance | Fadi Althoey |
| P.05 | Towards the Development of a Novel Electrochemical Sensor for the On-Site Detection of Illicit Drugs | Elise Bailey |
| P.06 | The Development of a Harakeke (Phormium tenax) Membrane Towards Sustainable Water Purification. | Jaye Barclay |
| P.07 | Tuning the Electronic Properties of Doped Graphullerite – a Covalently Bonded form of C60 | Alex Barnes |
| P.08 | Where is My Capsule? | Farzaneh Baserisalehi |
| P.09 | Power dissipation for 2D and 3D percolating networks of nanoparticles (PNNs) | Phil Bones |
| P.10 | Developing Novel Lanthanide Framework Materials for CO2 Uptake and Catalysis | Yichao Cai |
| P.11 | Construction of a Z-Scheme Heterojunction for Next-Generation Photovoltaic Devices | Jodi Carter |
| P.12 | Contact Angle Experiments for resin 3D Printing vs PMMA Micro-Milling - ELISA Lab-On-A-Chip Development | Alice Cerdeira & Milan Hildreth |
| P.13 | Photophysics of Luminescent Polyacene Metal Organic Frameworks | Sanutep Chan |
| P.14 | Perovskite precursor mixing and dispensing using PDMS based microfluidic channels | Linda Chen |
| P.15 | In-situ Characterization of WS2 and GaN/WS2 Heterostructure by Reflection High-Energy Electron Diffraction | Po-Yen Chen |
| P.16 | Potential in using CMUTs for particle manipulation | Joe Chen |
| P.17 | UPWEARS – A EU Horizon project on sustainable e-textile solution for sportwear | Yi Chen |
| P.18 | 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.19 | Carbon dioxide Captured by Amino Acids Containing Deep Eutectic Solvents | Hung-Yi Chi |
| P.20 | Mechanical properties of FRCM composites used as a carbon neutrality material for retrofit of concrete building and infrastructures | Kyoung Kyu Choi |
| P.21 | Structural and Magnetic Phase Transitions in CoMoO4 and CuMoO4 | Shen Chong |
| P.22 | Dopaminergic Janus Synapse on Neuroligin-2 Modified Gold-Coated Microspheres | Taek Dong Chung |
| P.23 | Carbon Nanotube Network System for Reservoir Computing | Marissa Dierkes |
| P.24 | N-Heterocyclic Carbene as a Coordinating Moiety Between Metal Nanoparticles and Spin Crossover Compounds in Nanostructured Hybrid Materials for Neuromorphic Learning | Daniel Galvis |
| P.25 | Evaluation of Calcium/Lithium-based Metal-Organic Frameworks for Gas Adsorption by p-DFT and Vibrational Mode Analysis | Jake Gilchrist |
| P.26 | Mechanochemical reduction of New Zealand resources to TiFe for hydrogen storage | Alexander Haack |
| P.27 | A soft hybrid material for self-powered and static tactile sensing | Chang Soo Han |
| P.28 | Investigating the Influence of Matrix Stiffness on Chondrocyte Behaviour through Tuneable Alginate Hydrogels | Maede Hasannasab |
| P.29 | AI-based automatic process flow diagram generation model for interaction of academia and industry | Byeongmin Ha |
| P.30 | Acoustic pump-probe microfluidic device | Logan Henderson & Jordan Hay |
| P.31 | Development of non-toxic AgInS2 quantum dots for luminescent solar concentrators in zero-emission buildings | Sandhuli Hettiarachchi |
| P.32 | Plasma assisted molecular beam epitaxial growth of β-Ga2O3 (100) thin films on MgO(100) Substrates. | Seth Hibbert |
| P.33 | Exploring Structural Variability in Tri-HBC Compounds: Implications for π-Stacked Porous Solid Design. | Panchami Hirave |
| P.34 | Design of Multilayer Structure Indium Sulfide-based Photoanode for Photoelectrochemical Water Splitting | Yu-kuei Hsu |
| P.35 | Harnessing Solvent-Induced Browning Chemistry of Amino Acids for Nanoparticle Synthesis and Drug Delivery Applications | Teh-Min Hu |
| P.36 | Promoting Bone Regeneration with ECM-Functionalized Titanium Surfaces Mimicking Biomimetic Elastic Proteins | Jun-hyeog Jang |
| P.37 | Contrast enhanced NIR-II photoacoustic imaging with barium sulfate and pigment admixture | Mansik Jeon |
| P.38 | Computational Study of Carbonation Reaction for Carbon Capture and Storage in Concrete | Sohdam Jeong |

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| P.39 | Unravel the Sugarcoating; Surface patterning with unprotected sugars towards mimicking the glycocalyx | Jude Kalan |
| P.40 | Anti-Fouling Properties of Phosphonium Ionic Liquid Coatings in the Marine Environment | Sajith Kaniyadan Baiju |
| P.41 | Ion beam tuning of optical properties of halide perovskites | John Kennedy |
| P.42 | Composite polymer electrolyte with surface-functionalized silica mesoball fillers | Jae Hyun Kim |
| P.43 | Cellulose-Based Dispersion of Single-Walled Carbon Nanotubes for Solution Processing Applications | Joonyoup Kim |
| P.44 | Electrocatalytic Activation of (ReV)$X_2$ (X = S, Se) Alloy Nanosheets for Hydrogen Evolution Reaction | Ju Yeon Kim & Hong Seok Kang |
| P.45 | Asymmetric gradient orbital interaction of hetero-metal active sites for promoting photocatalytic C−C coupling processes | Taekyu Kim |
| P.46 | Synthesis of Graphene like Nanosheets via Single Step Thermal Exfoliation method | Arjun Kumawat |
| P.47 | Effect of Structural Characteristics and Molecular Weights of Biscarbazole-based HTMs on Photovoltaic Performance of Solid-State DSSCs | Younghwan Kwon |
| P.48 | Monovalent ion-selective membranes with enhanced interlayer adhesion | Ji-Hyeon Lee |
| P.49 | 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.50 | Precursor crystalline structure from organic pigment red 122 for polysulfide confinement and conversion in lithium–sulfur batteries | Seung Geol Lee |
| P.51 | Dual modification of high-voltage LiFe0.4Mn0.6PO4 cathode for accelerated low-temperature kinetics | Youngil Lee |
| P.52 | Spectroscopic and Computational Investigation of the Efficient Formation of Glycine on Olivine and Ice Surfaces in Interstellar Environments. | Jacob Lewis |
| P.53 | Slip flow of concentrated emulsions in microchannels: Effects of surface wettability | Ssu-Kai Li |
| P.54 | Fascinating and special Circular Dichroism of Helical Assemblies of silver nanowiers | Zheng Fong Li |
| P.55 | Anomalous Magnetization Hysteresis Behavior of Thulium Iron Garnet (TmIG) under Magnetic Circular Dichroism (MCD) | Wei Hsiang Liao |
| P.56 | Crystallization and Young's Modulus of Nanofilm of Physical Elastomer Immersed in Nonsolvent: Effect of Film Thickness | Chih-Jung Lin |
| P.57 | Lipid nanoparticles efficiently deliver DNA vaccine to robustly induce antigen-specific immune responses | Shih-jen Liu |
| P.58 | Enhancing Advanced Material Reliability through Deep Learning: A Conceptual Framework | Jung-Hua Lo |
| P.59 | Polarization-assisted AlGaN Hetero-structure Based Solar-blind Ultraviolet MSM Photodetectors with Enhanced Performance | Hai Lu |
| P.60 | Validation of Gelatine Layering Method for Ultrasound Powering and Communication | Kaleb McGillivray-Seaton |
| P.61 | Sustainable Aerogels: Harnessing Canola Seed Meal Proteins | Steven McNeil |
| P.62 | Development of Spectralon Microfluidic Devices for Enhanced Optical Sensing | Claude Meffan |
| P.63 | Effect of gangue content on the compressive strength of hydrogen direct reduced iron ore pellets | Shaira Mendoza |
| P.64 | Synthesis of Magneto-thermal Catalysts for CO2 Hydrogenation | Akshita Mogaveera |
| P.65 | Improving the memory of percolating networks of nanoparticles | Ben Monaghan |
| P.66 | Superalkalis as catalysts for carbon dioxide activation | Juliet Nelson |
| P.67 | Turning Chrome Shavings Waste into Functional Materials: A Sustainable Approach | Braydon Nikolaison |
| P.68 | Tracking Exciton Diffusion in Photoactive and Electronic Frameworks using Ultrafast Spectroscopy | Sam Otter |
| P.69 | Perovskite encapsulated metal-organic frameworks | Adrian Owens |
| P.70 | A neuromorphic device for Arithmetic Operations: Influence of Presynaptic Pulsing Scheme on Mathematical Precision | Mousona Pal |
| P.71 | An ultrasensitive detection method for ribonuclease H utilizing in vitro transcription of fluorogenic RNA light-up aptamer | Hyun Gyu Park |
| P.72 | Stabilized cathode/sulfide electrolyte interface by modified lithium borate coating | Yong Joon Park |
| P.73 | A Computational Investigation into Hydrogen Production on Twisted Molybdenum Disulfide | Kayla Prendergast |
| P.74 | Improving the size and safety of microbiota sampling capsule robots | Angus Quigley |
| P.75 | Development of a hybrid optoelectronic radiation sensor using a Gd2O3 glass scintillator and a TiO2 photoconductor | Marilou Raduban |
| P.76 | Isolation and Characterisation of Algal Nanocellulose for Tissue Scaffolding Applications | Janet Reid |
| P.77 | A Comprehensive Guide to Exploring Electrochemical Nitrogen Reduction in Model Catalysts | Zulfitri Rosli |
| P.78 | Quinone-containing Molecular Catalysts for Photocatalytic Hydrogen Generation | Leah Sammon |
| P.79 | Ruthenium-gold cluster catalysts for CO2 reduction | Michelangelo Santos |
| P.80 | Investigating the Thermal and Structural Properties of 2D Low Temperature Melting Metals | Caitlin Scott |
| P.81 | Metal ion adsorption by siloxane-crosslinked polysulfides | William Sheard |

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| P.82 | Detection of Food Freshness Using Biodegradable Composite Polymer | San San Shen |
| P.83 | Innovative Exosome Isolation Technology Utilizing a Sequential Combination of Charge-Based Filtration, Tangential Flow Filtration, and Lipoprotein-Specific Adsorption | Sehyun Shin |
| P.84 | Alloying Platinum Single Atoms with Nickel Iron nanoalloys for High Performance Hydrogen Evolution Reaction | Muhammad Sial |
| P.85 | Optimized Extraction Methods for Purifying Bio-Synthesized Indigo from Bacterial Residue and Contaminants | Younga Son |
| P.86 | High-performance bipolar membranes for efficient direct seawater electrolysis | Hyeong-Bee Song |
| P.87 | The use of cellulose in additive manufacturing (3D printing) and thermoforming. | Erica Sue-Tang |
| P.88 | Optogenetic and chemogenetic modulation of cognitive function in mice | Kyoungho Suk |
| P.89 | Elemental Analysis of Enamels paints through Magnetically Assisted Laser Induced Breakdown Spectroscopy. | Rabia Tanveer |
| P.90 | Colossal Permittivity and High-Performance Humidity Sensing in Sodium Yttrium Copper Titanate Ceramics | Prasit Thongbai |
| P.91 | Nanostructure, Morphology, and Electrochemistry of Degradable Oligo(3-hexylthiophene) Grafted onto Poly(caprolactone) | Yuhka Uda |
| P.92 | The plasma-assisted thermal catalytic process for CO2 conversion | Settakorn Upasen |
| P.93 | Tuning magnetic properties in rare-earth nitrides: exploring GdNdN for compensation points | Kiri Van Koughnet |
| P.94 | Tailoring Functional Properties of Perovskite Oxides Using Anisotropic Epitaxy | David Walker |
| P.95 | Wicking dynamics of two-ply channels in porous medium-based microfluidic devices | Yung-Ching Wang |
| P.96 | Study on the preparation of CO2 based monomers via cyclization of Glycidyl Methacrylate and CO2 and its polymerization | Cheng-Chien Wang |
| P.97 | Raman spectroscopy to investigate historic paint samples. | Carlie Watt |
| P.98 | Synthesis and properties of wool keratin-polysaccharide composite hydrogels | Junfeng Wu |
| P.99 | Symmetry Engineering Novel Domain Structures in Barium Titanate Thin Films | Tianyuan Wu |
| P.100 | The synthesis and luminescence properties of ZnO-doped Y2O3 ceramics | Yu-Hui Xue |
| P.101 | Development of smart wound-healing device based on conducting polymers | Jingwen Yang |
| P.102 | Proteolytic reaction-based electrochemical biosensor chip for point-of-care testing | Haesik Yang |
| P.103 | Percolation-Controlled Carbon-based Nanomaterials for High Performance Dielectric Composite Materials | Segi Yu |
| P.104 | Discovery of Novel High-Entropy Materials via Quantum Computing | Houlong Zhuang |