



SUNDAY 22 SEPTEMBER 2019

ANFF Short Course on Nanofabrication Technologies

To register and read more about this short course, please [click here](#).

Meeting Room 8

SESSION 1

Matthew Boreland

Engineering your Imagination

An introduction to ANFF, nanofabrication and the fabrication process.

10:00 - 10:45

10:00 - 10:45

10:45 - 11:15

Morning Tea

10:45 - 11:15

Meeting Room 8

SESSION 2

Peter Innis

Making Materials and how to process them

Materials and their processing options towards developing functional devices - Electromaterials & Biomaterial synthesis and strategies for processing them

11:15 - 13:30

11:15 - 13:30

SESSION 3

Mariusz Martyniuk

Nanofabrication and manipulation of materials

An overview of Thin Film Deposition techniques, including Molecular Beam Epitaxy, and materials patterning processes.

SESSION 4

Fouad Karouta

Unveiling the Black Box around Reactive Ion Etching

How etching ties in to the fabrication process, what it's capable of, and what needs to be considered.

13:30 - 14:30

13:30 - 14:30

Lunch break

Meeting Room 8

SESSION 5

Peter Innis

Advanced manufacturing with novel materials

Tailored materials and approaches for bespoke 3D constructs – Additive fabrication of biostructures and more.

14:30 - 16:00

14:30 - 16:00

SESSION 6

Kinnari Shelat

Measuring what you've made

A look at the characterising techniques that are essential to analysing and understanding materials.

Riverside Theatre Foyer & Southern Foyer

16:30 - 17:30

16:30 - 17:30

Welcome Reception
Riverview & Southern Foyer



20th International Union of Materials Research Societies International Conference in Asia
22 – 26 September 2019
Perth Convention & Exhibition Centre



MONDAY 23 SEPTEMBER 2019

Riverside Theatre

8:45 - 9:15

Opening Ceremony
Welcome to Country - Richard Walley
Welcome by Co-Chairs: Prof Lan Fu & Prof Julian Gale
AMRS & IUMRS Executives Welcome

8:45 - 9:15

Chairperson: Lan Fu

9:15 - 10:00

577: Nanomaterials and Light for Sustainability and Societal Impact
Naomi Halas

9:15 - 10:00

Chairperson: Lan Fu

10:00 - 10:45

351: Transparent Oxide Semiconductors : from materials design to display application as TFTs
Prof Hideo Hosono

10:00 - 10:45

10:45 - 11:15

Morning Tea

10:45 - 11:15

	Riverside Theatre Chairperson: Ian Chen	River View Room 4 Chairperson: Hoe Tan	River View Room 5 Chairperson: Raffaella Demichellis	Meeting Room 6 Chairperson: Tamio Endo & Victoria Coleman	Meeting Room 7 Chairperson: Satoru Kaneko & Mariana Ionita	Meeting Room 8 Chairperson: Christopher Hutchinson	Meeting Room 9 Chairperson: Thomas Nann	
	B. Energy and Environment Materials	A. Electronic and Optical Materials	F. Computational Materials	D8. Australia-Japan joint forum on Oxide thin films and Nano-composites (Surface-related Science and Engineering)	D7. Australia-Japan joint forum on Carbon and Related Materials – Synthesis, Evaluation and Applications	E. Advanced Structured Materials	D. Advanced Functional Materials	
11:15								11:15
11:20					532: Fluorescence imaging using nanoparticles A/Prof Olga Shimoni			11:20
11:25	10: Nanomaterial Properties And Functions Studied In Transmission Electron Microscope Prof Dmitri Golberg	407: Semiconducting Layered Chalcogenide Materials: Strategies for Chemical Functionalization and Transformation Prof Qing Hua Wang	514: Predictive quantum-mechanical modeling of materials structure, defects, and properties Dr Paul Kent	516: Magnetic, Dielectric and Optical Anomaly in Nano Structural Controlled Strain Gradient Garnet Ferrite Films Prof Hitoshi Tabata		118: Self healing in creep steels and ceramics: from proving the concept to their computational design Prof Sybrand Van Der Zwaag	570: Design and application of novel composite materials for analytical applications Emily Hilder	11:25
11:30								11:30
11:35								11:35
11:40					508: Anti-Fouling, CVD Graphene based membrane for water purification Dr Dong Han Seo			11:40
11:45								11:45
11:50	378: Perovskites for high efficiency tandem solar cells Prof Kylie Catchpole	339: Properties and applications of atomically thin boron nitride Dr Luhua Li	523: Cell Membrane Penetration without Pore Formation: Chemeleonic Properties of Dendrimers in Response to Hydrophobic and Hydrophilic Environments Prof Sean Smith	81: Preparation and control of thin films of metal oxide nanoparticles using air-aqueous interfaces A/Prof Cathy McNamee		510: Next Generation High Entropy Brasses and Bronzes Prof Michael Ferry	295: Loss of magnetism and emergence of superconductivity in cobalt and a self-organized superconductor-ferromagnet hybrid structure Prof Bhupendra Nath Dev	11:50
11:55								11:55
12:00								12:00
12:05					503: Plasma-surface modification of carbon or related materials in aqueous solution for highly functional, flexible, and tough composite materials with slide-ring materials Mr Taku Goto			12:05
12:10	533: Product selectivity control in photocatalytic organic synthetics and exploring plasmonic metal nanoparticles Dr Sarina Sarina	482: Biophotonics applications of upconversion nanoparticles: to see, to touch and to feel the nanoscale world Dr Fan Wang	237: Tuning the properties of Ag-supported silicene by surface modification A/Prof Michelle Spencer	110: AC magnetic susceptibility: A tool to track the transformations of magnetic nanoparticles Dr Lucia Gutierrez		331: Direct observation of hydrogen trapping in steels by using cryo atom probe tomography Prof Julie Cairney	367: Soft Electronic Devices using Flexible, Stretchable and Mendable Polymeric Materials Dr Wei Lin Leong	12:10
12:15								12:15
12:20					449: Supramolecular Doping of Carbon Nanotubes for Thermoelectrics Prof Yoshiyuki Nonoguchi			12:20
12:25								12:25
12:30	14: Anion interactions with vapour deposited PEDOT A/Prof Drew Evans	26: Graphene nanoelectronic devices with asymmetric metal electrodes for high performances Prof Jeon-Kook Lee	276: ZDMatPedia: A Library of 2D Materials by Top-down and Bottom-up Approaches Prof Yuan Ping Feng	520: Defects and Small Polarons in Oxides Prof Anderson Janotti		353: Novel nanocomposites materials for additive manufacturing Dr Xiaopeng Li	518: Mechanical properties of non-crystalline carbons Dr Irene Suarez-Martinez	12:30
12:35								12:35
12:40	17: Interfacial Engineering of Metal Catalysts with Functional Supports for Efficient Electrochemical CO2 Reduction Dr Caiyun Wang	313: Direct imaging of the nanoscale phase distribution in PVDF based blend films for sensing application Prof Dong Guo	86: Li-battery material design using multi-scale modeling and materials Informatics Dr Abhijit Chattopadhyay		405: Carbon nanomaterials in improving electrochemical properties of electrodeposited polypyrrole coatings Dr Alina Pruna			12:40
12:45								12:45
12:50					186: Localized magnetic nanoheating - generating hotspots with iron oxide-based nanoparticles Dr Raluca Maria Fratila		323: Mechanical, electrical and crystallographic property dynamics of bent Ge/Si core-shell nanowires as revealed by in situ transmission electron microscopy Mr Chao Zhang	12:50
12:55						527: High Entropy Alloys for Recycling and Mining? Prof Matthew Barnett		12:55
13:00								13:00

13:00 - 14:00

Lunch break

13:00 - 14:00

13:00 - 14:00

Meeting Room 7
Lunch session: Meet the editors
(Catering supplied outside room)
For more information: [click here](#)

13:00 - 14:00

MONDAY 23 SEPTEMBER 2019

	Riverside Theatre <i>Chairperson: Rachel Caruso</i>	River View Room 4 <i>Chairperson: Francesca Iacopi</i>	River View Room 5 <i>Chairperson: Yuan Ping Feng</i>	Meeting Room 6 <i>Chairperson: Jin Zou</i>	Meeting Room 7 <i>Chairperson: Kate Fox</i>	Meeting Room 8 <i>Chairperson: Julie Cairney</i>	Meeting Room 9 <i>Chairperson: Emily Hilder</i>	
	B. Energy and Environment Materials	A. Electronic and Optical Materials	F. Computational Materials	D8. Australia-Japan joint forum on Oxide thin films and Nano-composites (Surface-related Science and Engineering)	D7. Australia-Japan joint forum on Carbon and Related Materials – Synthesis, Evaluation and Applications	E. Advanced Structured Materials	D. Advanced Functional Materials	
14:00	374: Challenges in Perovskite Device Fabrication: materials approaches to improve performance and large scale fabrication Prof John Bell	164: Tuning properties of Black phosphorus Ms Sruthi Kuriakose	51: Computational Discovery and Design of Dirac and Multiferroic Materials for Electronics Applications Prof Aijun Du	315: Metal oxide nanoparticles as phosphors for white light emitting diodes Dr Alexandra Apostoluk	488: Recent Topics of Diamond-like Carbon Films Prepared by Filtered Arc Deposition Prof Hirofumi Takikawa	399: Massive Transformation in Ti-6Al-4V Dr Shenglu Lu	430: Design and characterisation of quantum matter at atomic scale Dr Muhammad Usman	14:00
14:05								14:05
14:10								14:10
14:15		100: Aesthetically Pleasing Luminescent Solar Concentrators Dr Andrew Nattestad						14:15
14:20	543: Hybrid nanostructures as electrode materials for potassium ion batteries Zaiping Guo		368: Predicting the Structural and Electronic Properties of van der Waals Heterostructures using Artificial Intelligence Prof Mike Ford	524: Development of testing methodologies and documentary standards for advanced nanoscale thin films and composites Dr Victoria Coleman	89: Graphitic films growth on insulators: paper and oxide substrate Dr Satoru Kaneko	109: Microstructure Evolution of Mg Sheets During Bending Deformation Mr Yuhang Huang	370: Potential of graphene for interconnect applications Dr Inge Asselberghs	14:20
14:25								14:25
14:30		382: Interfacial assembly of nanosheets into porous macrostructures Prof Franklin Kim						14:30
14:35								14:35
14:40	88: Self-Recovery Chemistry of In Operando Electrodeposition Enables Stable Operation of Aqueous Zinc-ion Batteries Mr Yijun Zhong		502: In Silico Materials Design for Next Generation Batteries A/Prof Nikhil Medhekar	43: Study of hexagonal Y1-x(Tb/Ce)xMnO3+d for oxygen separation from air Dr Alicja Klimkowicz	197: Nanoscale graphene wrinkles: chemistry, physics and confinement effects A/Prof Jana Kalbacova Vejpravova	132: Dynamic precipitation in aluminium alloys Prof Christopher Hutchinson	135: Development of High Breathable Composite containing Phase Change Material Dr Mohanapriya Venkataraman	14:40
14:45								14:45
14:50								14:50
14:55	261: Fast Li ion diffusion and charge transfer kinetics in amorphous TiO2-x nanotubes for high-rate Li ion storage anodes Ms Yu Jiang	427: Nanostructure fabrication and functionalization using in situ electron beam and plasma chemistry. A/Prof Charlene Lobo	208: Disconnections and resulting grain boundary mobilities in face centred cubic metals Dr Christian Brandl		39: A tool box for rational functionalization of graphene Dr Martin Kalbac	153: Training precipitate strengthened Al alloys for improved fatigue performance Miss QJ Zhang	177: Multilayer Textiles with Improved Thermal Management Based on Back Reflection of Human Body Thermal Radiation A/Prof Dana Kremenakova	14:55
15:00								15:00
15:05								15:05
15:10	308: Lithiation of multilayered ZnO quantum dot/carbon composite as revealed by in situ transmission electron microscopy Mr Joseph Fernando	156: Shape and phase control on colloidal ZnSe nanocrystal by tailoring Se precursor reactivity Miss Wei Chen	390: Machine learning feature engineering of molecules on materials Dr Melisande Julia Fischer	476: Anomalous magnetotransport behavior in a ferromagnetic perovskite oxide with interfacially engineered metal-oxygen bonds Dr Daisuke Kan		212: Design of new maraging steels for additive manufacturing Mr Timothy Murray		15:10
15:15								15:15
15:20							341: Tunable dielectric properties in aligned nanofibres Prof Thomas Nann	15:20
15:25								15:25

Afternoon tea

	Riverside Theatre <i>Chairperson: Rachel Caruso</i>	River View Room 4 <i>Chairperson: Liangliang Li</i>	River View Room 5 <i>Chairperson: Benyamin Motevalli</i>	Meeting Room 6 <i>Chairperson: Paolo Mele & Shunichi Arisawa</i>	Meeting Room 7 <i>Chairperson: Tamlo Endo & Shrikant Saini</i>	Meeting Room 8 <i>Chairperson: Ross Marceau</i>	Meeting Room 9 <i>Chairperson: Irene Suarez-Martinez</i>	
	B. Energy and Environment Materials	A. Electronic and Optical Materials	F. Computational Materials	D8. Australia-Japan joint forum on Oxide thin films and Nano-composites (Surface-related Science and Engineering)	A7. Australia-Japan joint forum on thermoelectric materials for sustainable development	E. Advanced Structured Materials	D. Advanced Functional Materials	
16:00	52: Materials for Energy Applications: How Theoretical Modeling Contributes to the Experiment? Prof Aijun Du	477: Low-dimensional metal halide perovskites for integrated photonics Prof Anlian Pan	511: Universal hidden order in amorphous cellular geometries Dr Gerd Schroeder-Turk	42: High performance oxide superconducting films with designed nano-structures Prof Yutaka Yoshida	3: Thermoelectric performance of IV-VI compounds with octahedral-like coordination: a chemical-bonding perspective Prof Matthias Wuttig	165: The Effect of Molybdenum on Clustering and Precipitation Behaviour of Niobium-Containing Strip-Cast Steel Dr Ross Marceau	555: Deformable Electronics for Human Machine Interface : from self-assembly to designer smart materials and devices Prof PoolSee Lee	16:00
16:05								16:05
16:10								16:10
16:15								16:15
16:20	25: Fabricating high performance - lightweight - lowcost - safe batteries Dr Md Mokhesur Rahman	486: Organic and Perovskite-Based Solar Inks for Roll-to-Roll Printed Solar Cells Dr Doojin Vak	249: A novel coarse-graining approach to simulate suspensions of soft deformable particles Prof Massimo Ciamarra	417: Development of MgB2 based composites for superconducting applications Prof Petre Badica	548: Atomic scale defects responsible for high performance thermoelectric materials Kim SungWng	171: Sacrificial corrosion protection achieved by surface precipitation in aluminium alloys Mr Thang Vu Dinh	483: Materials and defect engineering for cross-disciplinary applications Dr Sumeet Wallia	16:20
16:25								16:25
16:30								16:30
16:35								16:35
16:40	73: Highly efficient radial-junction microwire solar cells by acid based doping process Mr Wonjoo Jin	400: Photoresponse of hyperdoped Si photodiodes Ms Shao Qi Lim	213: Systematically coarse-grained anisotropic-site dynamical simulation models A/Prof David Huang	387: Vortex matter and dynamics in YBa2Cu3O7-x superconducting films with correlated and synergetic pinning centres. Prof Adrian Crisan	547: "Metability" of thermoelectric semiconductors... Focused on Bi2Te2 Sudong Park	189: Strength-toughness-wear resistance relationship in Ti microalloyed martensitic steels Dr Andrii Kostryzhov	441: Luminescence properties of polycrystalline and nanoparticle NaMgF3: Ce,Sm suitable for radiation sensing Miss Hellen Nalunaga	16:40
16:45								16:45
16:50								16:50
16:55	435: Rational design of MOFs and their derivatives as robust substrates for electrochemical energy storage Prof Jiewu Cui	231: Super-transport of Excitons in Atomically Thin Organic Semiconductors at the 2D quantum limit Mr Ankur Sharma	519: Computing a glass-transition temperature in amorphous carbons from molecular dynamics A/Prof Nigel Marks	263: Tuning the Electronic Structure of High-Temperature Superconducting Films by Field Induced Oxygen Diffusion Dr Anna Palau	498: Effect of multi-component nanocomposite under external field on thermoelectric properties of films Prof Guojian Li	206: Thermally activated dislocation mobility in body-centred cubic Cr Dr Christian Brandl	304: Mechanical Properties of AlN Nanowires as Revealed by in situ Transmission Electron Microscopy Dr Konstantin Faershteyn	16:55
17:00								17:00
17:05								17:05
17:10								17:10
17:15	389: Perfecting the Imperfections in Nanomaterials for CO2 Conversion Prof Vivek Polshettiwar	590: Ferroelectric-Driven Exciton and Trion Modulation in Monolayer Molybdenum and Tungsten Diselenides Yi Zhu		21: Evaluation of Element Diffusion or Penetration by TEM Analysis in Development of Low Cost Coated Conductors Dr Ataru Ichinose		151: Advanced steel design for abrasive wear resistance Miss Xiaohan Weng		17:15
17:20								17:20
17:25								17:25
17:30								17:30
17:35								17:35

Riverside Theatre Foyer & Southern Foyer

Dedicated poster viewing session & Drinks

17:30 - 19:00

17:30 - 19:00



20th International Union of Materials Research Societies International Conference in Asia

22 – 26 September 2019

Perth Convention & Exhibition Centre

TUESDAY 24 SEPTEMBER 2019



Riverside Theatre	
Chairperson: Gerd Schröder-Turk	
8:30 - 9:15	580: Nanomaterials and Nanosystems for Catalytic, Energy and Biomedical Applications Jackie Ying Chairperson: Mariusz Martyniuk
9:15 - 10:00	586: Perovskite Solar Cell: The Viable Alternative to Fossil Fuel Nam-Gyu Park

10:00 - 10:30	Morning Tea	10:00 - 10:30
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	Riverside Theatre Chairperson: Rachel Caruso	River View Room 4 Chairperson: Qing Hua Wang	River View Room 5 Chairperson: Amanda Barnard	Meeting Room 6 Chairpersons: Yukiko Yamada-Takamura & Cathy McNamee	Meeting Room 7 Chairperson: Tamia Endo & Saratchandra Babu	Meeting Room 8 Chairperson: Matthew Barnett	Meeting Room 9 Chairperson: Prashant Sonar	
	B. Energy & Environment Materials	A. Electronic and Optical Materials	F. Computational Materials	D8. Australia-Japan joint forum on Oxide thin films and Nanocomposites (Surface-related Science and Engineering)	D7. Australia-Japan joint forum on Carbon and Related Materials – Synthesis, Evaluation and Applications	E. Advanced Structured Materials	D. Advanced Functional Materials	
10:30	505: Insight into catalyst materials and reactor design for a circular economy of CO2 Prof Juan Ramon Morante Leonart	522: Versatile Localized Surface Plasmon Resonance of Silver Nanoparticles in Polymer Solar Cells Prof Jin Young Kim	321: Building Connections: Harnessing Informatics to Discover Pathways for Materials Discovery Prof Krishna Rajan	480: Paper Applications Prof Rodrigo Martins	473: Diamond implants for improving the biointerface A/Prof Kate Fox	579: Additive Manufacturing of Titanium Prof Tim Sercombe	529: Recent progress in sustainable mechanoluminescence materials Prof Chao-Nan Xu	10:30
10:35								10:35
10:40								10:40
10:45								10:45
10:50								10:50
10:55					564: Mesoscopic Graphene Assemblies: Synthesis, Characterization, and Applications Mario Hofmann			10:55
11:00	376: Transmission electron microscopy for the analysis of materials for "beyond lithium and sodium" high voltage batteries Dr Alexey Glushenkov	9: Efficient Er/O Doped Silicon Light-Emitting Diodes at Communication Wavelength by Deep Cooling A/Prof Yaping Dan	375: Exploring Large Scale ToF-SIMS Data Matrices using Artificial Neural Networks A/Prof Paul Pigram	302: Growth and characterization of p-type oxide semiconductor thin films by using mist CVD method. Dr Takumi Ikenoue		293: Strain partitioning during low cycle fatigue of multi-phase steels with a hard phase matrix A/Prof Nicole Stanford	127: High performance lead free dielectrics for energy storage applications Prof Shujun Zhang	11:00
11:05								11:05
11:10								11:10
11:15								11:15
11:20	144: Heavy-metal free colloidal semiconductor nanocrystals as photocatalysts for clean fuel production Dr Guohua Jia	576: 2D Gas Sensors with High Sensitivity and Selectivity: Insight from Theoretical Simulations Liangzhi Kou	531: Data-driven approach to computational materials design A/Prof Kenta Hongo	155: Development of Advanced Oxide Thin Film Prepared by Excimer Laser Assisted Metal Organic Deposition Dr Tetsuo Tsuchiya	561: Scalable synthesis of high quality 2D materials Ya-Ping Hsieh	496: Calculating Steel Making and Steel Refining Processes using Thermo-Calc's New Process Metallurgy Module and the CALPHAD Database TCOX9 Dr Johan Bratberg	481: Oxide Electronics Prof Rodrigo Martins	11:20
11:25								11:25
11:30								11:30
11:35	23: Temperature Effects in Lattice Dynamics of Tin Selenide Dr Sergey Danilkin	329: GaAsSb nanowire photodetectors Dr Ziyuan Li	408: Accelerating Materials Discovery and Design using AI and Machine Learning Dr Troy Loeffler	412: Structural property of ZnO film effects on the growth of vertical-aligned ZnO nanorods Prof Chaoyang Li	551: 3D Polymer-Graphene Biomaterials for Bone Tissue Regeneration Dr Marina Ionita	77: Additive Manufacturing of Duplex Stainless Steels using Selective Laser Melting Mr Derui Jiang	15: Ion Interaction in Vapour Deposited Conducting Polymers for Real-Time Sensing Applications Mr Vithyasaahar Sethumadhavan	11:35
11:40								11:40
11:45								11:45
11:50	30: Developing Modified Layered Oxides for Sodium Battery Application Miss Jenny Stansby	414: Two-Photon Absorbing Photochromic Complexes Dr Adam Woodward	194: Relation extraction with weakly supervised learning based on process-structure-property-performance reciprocity Mr Takeshi Onishi	426: Oxide semiconductor plasmonics for infrared applications A/Prof Hiroaki Matsui	392: Capture of CO2 by ZIFs and its composites with CNTs: A solution to reduce CO2 emissions Prof Saratchandra Babu Mukkamala	93: The effect of individual layer thickness on the strengthening mechanisms of Ni/Al nanolaminates Mr Mohammad Nur E Alam Al Nasim	50: Diverse morphologies of zinc oxide nanoparticles and their electrocatalytic performance in hydrogen production Dr Veronica Sofianos	11:50
11:55								11:55
12:00	49: Repurposing used primary and secondary battery electrodes - a worthwhile value add? Mr Jimmy Wu	361: High-quality narrow-band gap III-V semiconductor/superconductor nano-heterostructures grown by MBE Prof Jianhua Zhao	58: Machine Learning Assisted Material Evaluation for Organic Photovoltaics Mr Wenbo Sun	200: Towards predictive simulations of functional materials using Quantum Monte Carlo; application to transition metal oxides. Dr Anouar Benali		169: 3D printing of WC/Co cermet coatings Mr Chun Kit Sit	275: Barrier Performance of Spray Coated Cellulose Nanofiber Montmorillonite (MMT) Composites Mr Kirubanandan Shanmugam	12:00
12:05								12:05
12:10								12:10
12:15								12:15
12:20	385: Spectrophotometric and Electrochemical Characterization of Phosphoric Acid - Doped Polyaniline Thin Film on ITO as Supercapacitor Electrode Mr Bryan Montalban	123: The PZT/Ni unimorph magnetoelectric energy harvester for wireless sensing application Mr Yun Lu	245: Classification and prediction of defective structures in graphene-oxide nanoflakes Dr Benyamin Motevalli	489: Heusler alloys: Promising Functional Materials - a theoretical study Prof Rita John		182: Microstructure and mechanical properties of Ni-Cu alloys fabricated by wire arc additive manufacturing Dr Andrii Kostyzyhev	318: The optoelectronic devices and colloidal and interfacial properties of carbon nitride Dr Jingsan Xu	12:20
12:25								12:25
12:30								12:30
12:35	583: Advanced material architecture design for rechargeable alkali metal-based batteries Baohua Li	588: Multiferroic materials and multi-fields coupling Mr Zhenxiang Cheng				549: Application of APT in understanding high entropy alloys with exceptional properties Gang Sha	120: Engineered Magnetic Transition Metal Selenides for Spintronics Dr Pierre Ferdinand Poudeu Poudeu	12:35
12:40								12:40
12:45								12:45
12:50								12:50
12:55								12:55

13:00 - 14:00	Lunch break	13:00 - 14:00
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13:00 - 14:00	Meeting Room 7 Lunch session: EMCR Early-Career Researcher Panel Discussion: Academic Career Pathways (Catering supplied outside the room) For more information: Click here	13:00 - 14:00
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20th International Union of Materials Research Societies International Conference in Asia
22 – 26 September 2019
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WEDNESDAY 25 SEPTEMBER 2019

Riverside Theatre

Chairperson: Nikki Stanford

8:28 - 8:30

Session Sponsored by Microscopy Australia

8:28 - 8:30

8:30 - 9:15

557: Interplay of Chemistry and Structure at Lattice Defects in Crystalline Materials studied at the Atomic Scale
Prof Dierk Raabe

8:30 - 9:15

Chairperson: Yun Liu

9:15 - 10:00

571: Fabrication and Multifunctional Regulations of Magnetic Nanomaterials
Yanglong Hou

9:15 - 10:00

10:00 - 10:30

Morning Tea

10:00 - 10:30

	Riverside Theatre Chairperson: Jenny Pringle	River View Room 4 Chairperson: Llangzhi Kou	River View Room 5 Chairperson: Yuri Estrin	Meeting Room 6 Chairperson: Koji Miyazaki & Zhigang Chen	Meeting Room 7 Chairperson: Toshiyuki MORI	Meeting Room 8 Chairperson: Prabeer Barpanda & Lisa Djuandhi	Meeting Room 9 Chairperson: Mell Fischer	
	B. Energy & Environment Materials	A. Electronic and Optical Materials	C. Bio-Materials	A7. Australia-Japan joint forum on thermoelectric materials for sustainable development	B6. Australia-Japan joint forum on Advance Energy Materials	G. Advanced Fabrication, Characterisation & Devices	F. Computational Materials	
10:30	552: Polymer Composites with High Thermal Conductivity and Their Application in Advanced Electronic Packaging Xiaoliang Zeng	475: Water-based 2D-Material Inks: from printed devices to biological applications Prof Cinzia Casiraghi	521: How cell architecture can influence cell signalling Dr Vijay Rajagopal	125: Data Driven Approach to Thermoelectrics Materials Discovery - Machine Learning and High Throughput Computations Prof Kedar Hippalgaonkar	251: Improve of electrode performance and long-term stability by creating anode reaction active site into anode layer for SOFC Dr Shigeharu Ito	467: Kinetic Limitations in Battery Electrodes from Multi-scale Operando X-ray Studies Prof Karena Chapman	236: Development of accurate and reliable first-principles method for the study of molecular vibrational properties Prof Shaoqing Wang	10:30
10:35								10:35
10:40								10:40
10:45								10:45
10:50	82: Ultrasonic Spray-Processing Technique for Coating Large Area (1 cm ²) multilayer inverted CH ₃ NH ₃ PbI ₃ perovskite solar cells Miss Li Hui Chou	437: A study of the effects of CdZnTe/CdTe dislocation filters on the MBE-grown CdTe buffers on lattice mismatched GaSb (211)B substrates Dr Wenwu Pan	141: Engineering novel stimuli-responsive and directional control mechanisms for smart micromotors Dr Kang Liang	363: Micro Power Generators Based on Thermoelectric Films Dr Liangliang Li	117: Development of Highly Stable Oxide-Based Electrocatalysts for Polymer Electrolyte Fuel Cells and Water Electrolyzers Toward Applications of Green Hydrogen A/Prof Yoshiyuki Kuroda		247: Atomistic Mechanism of Li-Ion Charge Storage Kinetics in Amorphous Titanium Oxide Dr Jodie Yuwono	10:50
10:55								10:55
11:00								11:00
11:05	115: Molecular Dynamics Study of Fast Li ⁺ Ion Transport in Metal Borohydrides. Dr Kartik Sau	22: Aggregation Induced Emission (AIE) Properties of Heteroleptic Ir(III) Complexes With Non-chromophoric Ancillary Ligand Effect : Synthesis, Characterization And Photophysical Investigations Dr Kirankumar R. Surati	404: Current status, challenges and future outlook for zinc in biodegradable implant applications Dr Jeffrey Jones Venezuela	69: Machine-learning-assisted development of Al ₂ Fe ₃ Si ₃ -based thermoelectric material Dr Yoshiki Takagiwa	219: Synthesis of ionic liquid-type polyanions containing mobile cations for polymer electrolyte Prof Takashi Morinaga	468: Microstructural semiconductor characterisation for optimum device applications A/Prof Jennifer Wong-Leung	317: Grain boundary complexions versus local topology obtained from first principles Dr Reza Mahjoub	11:05
11:10								11:10
11:15								11:15
11:20	147: Giant caloric effects in fast-ion conductors: a promising route towards ambient solid-state cooling Dr Claudio Cazorla	28: Enhancing oxygen evolution efficiency of multiferroic oxides by spintronic and ferroelectric polarization regulation Miss Xiaoning Li	38: Bio-composites Reinforced with Natural Fibers: Static, Dynamic-mechanical and Thermal Properties A/Prof Rajesh Mishra	193: Sodium Cobaltate as a building block for thermoelectric materials and modules Dr Hussein Assadi	253: High-pressure and high-temperature synthesis of perovskite osmium oxide and related compounds Dr Kazunari Yamaura	491: Fabrication of Functional Molecular Tunnel Junctions: Diodes, Memory, and Plasmon Sources A/Prof Christian Nijhuis	299: Molecular Simulations of Dislocations in CdTe, HgTe and ZnTe Mr Nigel Hew	11:20
11:25								11:25
11:30								11:30
11:35	150: Improving efficient photocatalytic properties of TiO ₂ nanorod via defect engineering using F doping Mr Ilhan Yoo	54: Flexible piezoelectric energy harvester/sensor with high voltage output over wide temperature range Miss Yanhua Sun	187: A link between magnetic nanoparticles biiodistribution and the effect of magnetic hyperthermia in cancer treatment Dr Lucia Gutierrez	526: Phonon Engineering in Thermoelectric Materials and Flexible Thermoelectric Devices for Body Heat Harvesting and Personal Refrigeration Prof Woochul Kim	198: Film formation mechanism of solid electrolyte interface (SEI) in lithium ion battery electrolyte containing pyridinium ionic liquid Dr Ryo Shomura	40: Tuning the Mn:Fe ratio in P2 Na ₂ /3Fe _{1-y} MnyO ₂ : Electrochemical performance and structural evolution Dr Neeraj Sharma	103: A grand canonical Monte Carlo - molecular dynamics hybrid free energy analysis of grain boundary segregation Mr Rodrigo Campos	11:35
11:40								11:40
11:45								11:45
11:50	246: Multiple roles of cobalt pyzrole-pyridine complex in high performing perovskite solar cells Dr Jianfeng Lu	76: Cost-effective Fabrication of Flexible Ni Microgrid Transparent Conducting Electrode via Electroplated Metal Transfer Mr Jeonghwan Park	581: pH-activatable versatile micelleplexes with tumor penetration for photodynamic-improved PD-L1 Immunotherapy Prof Hui Yang	500: Enhancement of thermoelectric efficiency by minimizing thermal conductivity in respect to lattice and bipolar thermal conductivity in (Bi,Sb) ₂ Te ₃ polycrystalline alloys. Prof Sang-Il Kim	270: Hydrothermal synthesis and characterization of niobium oxy-hydroxides with perovskite-related structures Dr Miwa Saito	65: Direct observation of relationships between domains and their properties in Pb(Mg _{1/3} Nb _{2/3})O ₃ -x%PbTiO ₃ single crystals by scanning probe microscopy Ms Jihong Bian	223: Computational Investigation of Magnesium Electrochemistry in Aqueous Electrolytes Dr Jodie Yuwono	11:50
11:55								11:55
12:00								12:00
12:05	258: An iron-based oxide electrocatalyst for efficient hydrogen evolution reaction in alkaline solutions Mr Xiaomin Xu	84: A Highly Stable Transparent Heating Stickers Using Ni/Ag Hybrid Microgrid Electrode Mr Kangmin Lee	244: Additive manufacturing of biodegradable porous polymer scaffolds for bone tissue engineering Dr Mingyuan Lu	507: Chemistry of Unconventional Clathrates and Their Potential for Thermoelectric Applications Dr Kirill Kovnir	470: Electrical Properties and Fuel Cell Performance of Doped Lanthanum Silicate Oxide Ion Conductor Prof Atsushi Mineshige	199: Combining in situ heating environmental SEM and FIB-SEM approaches to investigate the 3D thermal evolution of nanoporous gold Prof Andrea Falqui	301: Effects of edge functional groups on salt rejection by graphene oxide membranes. Ms Ruosang QIU	12:05
12:10								12:10
12:15								12:15
12:20	75: ITO-free carrier-selective contact for crystalline silicon solar cells Mr Deokjae Choi	92: Interface effect: a defect dipoles resulted single loop in antiferroelectric PbZrO ₃ thin films Mr Ming Wu				209: Tracing solute atoms in Mg alloys by scanning transmission electron microscopy Dr Yuman Zhu	47: An Integrated Computational Materials Engineering Framework for Designing Sintered Materials Dr Tesfaye Molla	12:20
12:25								12:25
12:30								12:30
12:35	215: Investigating carbon formation on bimetallic (Ni-Co/SBA-15) catalyst in dry reforming of methane Dr Muhammad Rizwan Azhar	534: Tuning the performance of perovskite photovoltaics via compositionally-controlled ferroelastic domains Prof Joanne Etheridge				211: Characterisation of the Structure and Dynamics in Cation Stabilised γ-Na ₃ PO ₄ Miss Emily Anne Cheung	434: Reimagining the Scherrer equation - size-independent K factors and a new La for turbostratic carbons Dr Matthew Rowles	12:35
12:40								12:40
12:45								12:45
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13:00								13:00

13:00 - 14:00

Lunch break

13:00 - 14:00

13:00 - 14:00

Meeting Room 7
Scientific Writing Workshop
ONLY OPEN TO ECR & PhDs
(Catering supplied outside the room)
For more information: [Click here.](#)

13:00 - 14:00

WEDNESDAY 25 SEPTEMBER 2019

	Riverside Theatre <i>Chairperson: Luhua Li</i>	River View Room 4 <i>Chairperson: Zhenxiang Cheng</i>	River View Room 5 <i>Chairperson: Kate Fox</i>	Meeting Room 6 <i>Chairperson: Paolo Mele & Hussein Al Assadi</i>	Meeting Room 7 <i>Chairperson: Toshiyuki MORI</i>	Meeting Room 8 <i>Chairperson: Christian Nijhuis</i>	Meeting Room 9 <i>Chairperson: Daniel Grimwood</i>
	B. Energy & Environment Materials	A. Electronic and Optical Materials	C. Bio-Materials	A7. Australia-Japan joint forum on thermoelectric materials for sustainable development	B6. Australia-Japan joint forum on Advance Energy Materials	G. Advanced Fabrication, Characterisation & Devices	F. Computational Materials
14:00							
14:05	487: Bulk Hexagonal Boron Nitride with a Quasi-isotropic Thermal Conductivity Dr Srikanth Mateti	517: Developing multi-quantum parametric oxides as a new catalysts Prof Yalin Lu	362: Advances in zinc and its alloys as biodegradable metals for medical applications Prof Yufeng Zheng	343: Improvement of both thermoelectric and mechanical properties for n-type Mg2Si applicable to practical power generation device fabrication Prof Tsutomu Iida	358: Relationship between segregation, interface and polarization of La0.6Sr0.4Co0.2Fe0.8O3 cathode of solid oxide fuel cells Prof San Ping Jiang	350: Atomic Layer Deposition from Conventional Design to Forced-Flow Design - Uniform Coating and Large-Scale Production for Porous Nanostructures Prof Tsong-Pyng Perng	
14:10							
14:15							
14:20							
14:25	418: Nanosponges of High Surface Area Amorphous Zeolites as Heterogeneous Catalysts Mr Ayan Maity			146: Thermoelectric properties of As-based 122 Zintl compounds Prof Chul-Ho Lee		319: Characterisation of Energy Storage Materials using Synchrotron Radiation Dr Mark Paskevicius	
14:30		225: In situ nanostructural analysis of volatile threshold switching and non-volatile bipolar resistive switching in a mixed-phase a-VOx asymmetric crossbars Ms Shruti Nirantar	386: Two-dimensional Nanoclay Particles for Tumour-selective Nanomedicine Dr Zi Gu	366: Development of the Performance Measurement System for the Thermoelectric Generation System Mr Seong Joon Heo	365: Perovskite Catalysts for Oxygen Reduction Reaction in Solid Oxide Fuel Cells and Oxygen Evolution Reactions in Water Splitting Prof John Zhu		
14:35	31: Plastic Heliostat Mirrors Dr Marta Llusca					218: Operando in a transmission electron microscope characterization of two terminal devices A/Prof Martial Duchamp	
14:40		124: The structure evolution of enhanced piezoelectric properties in KNN-based ceramics Mr Xiaoyi Gao					F. Pawsey Supercomputing Workshop on Big Data and High Performance Computing
14:45			563: Investigating the lubrication mechanisms of articular cartilage Dr Saeed Miramini				
14:50	322: Development of prototype metal hydride reactors for solar thermal energy storage applications Dr Terry Humphries			67: Enhancing the thermoelectric performance of Li(CoNi)O2 by Ni replacement with earth abundant Mg Prof Satish Vitta		294: In situ heating STEM investigation of solid state cation-exchange reactions Prof Andrea Falqui	
14:55		185: Fast Reaction of Cu-Sn TLP Joints Bonded using Pre-annealed Sn/Cu/Sn Composite Preform for High-temperature Applications Miss Soeun Jeong			461: Lithium Diffusion Coefficient in Solid State Battery Materials: SIMS and NMR analysis Dr Naoaki Kuwata		
15:00	439: Synergistic Engineering of Hierarchical Nanocomposite for Boosting Their Supercapacitive Performance and Beyond Prof Yucheng Wu		173: Aggregation-induced emission bio-probes: Lighting up hydrogels and revealing their properties in situ A/Prof Youhong Tang	66: Effect of double doping, Li and Se, on the thermoelectric properties of Cu2Te to improve figure-of-merit Prof Satish Vitta		325: Decorative electro-magnetic transparent metal-semiconductor thin-films for consumer electronics Dr Bastian Stoehr	
15:05		62: Large-area synthesis of two-dimensional MoO3-x for enhanced optoelectronic applications Mr Aram Arash					
15:10							
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Afternoon tea

	Riverside Theatre <i>Chairperson: Yuan Chen</i>	River View Room 4 <i>Chairperson: Ruth Knibbe</i>	River View Room 5 <i>Chairperson: Xiaobo Chen</i>	Meeting Room 6 <i>Chairperson: Matthias Wuttig & Kirill Kovnir</i>	Meeting Room 7 <i>Chairperson: Lianzhou Wang</i>	Meeting Room 8 <i>Chairperson: Neeraj Sharma & Jihong Bian</i>
	B. Energy & Environment Materials	D. Advanced Functional Materials	C. Bio-Materials	A7. Australia-Japan joint forum on thermoelectric materials for sustainable development	B3. Energy Generation and Conversion	G. Advanced Fabrication, Characterisation & Devices
16:00						
16:05	340: High thermal conductivity of high-quality atomically thin boron nitride Dr Luhua Li	234: Graphenic carbon for on-silicon, miniaturised energy storage Prof Francesca Iacopi	501: Sintering and Biocompatibility of Blended Elemental Ti-Nb alloys Dr Damon Kent	95: An overview of key skutterudite materials and technology development over the last 30 years Dr Thierry Caillat	525: Efficiency enhancement of semiconductor photovoltaic structures from power generation to solar-fuel production Prof Masakazu Sugiyama	479: Oxidant or Catalyst for Oxidation? Reductant or Catalyst for Reduction? A Discussion of how we Observe Structural Disorder and its Effects on Reactivity Dr Rosalie Hocking
16:10						
16:15						
16:20	324: Inkjet printing of in-situ prepared solution-based inorganic inks for solar photovoltaics Dr Anjana Kothari	391: Synthesis of black phosphorus single crystal through vapor phase transport method Prof Woo Gwang Jung		129: Tuning the thermoelectric properties of skutterudites using multiple strategies - substitution, filling and composites Prof Satish Vitta		471: Deciphering the electrochemical redox mechanism of battery insertion materials by in-situ X-ray diffraction Dr Prabeer Barpanda
16:25						
16:30						
16:35	440: Low-dimensional electrochromic nanostructures for energy-saving applications Prof Yong Zhang	466: Dispersion improvement of halloysite nanotubes for developing advanced dental composites Mr Kiho Cho	474: Can we control the biointerface of metallic implants during the additive manufacturing process? A/Prof Kate Fox		11: Characterization of nano carbon at material interfaces for applications in energy storage systems Prof Cheng Yan	348: The Measurement of Electronic Structure and Bonding Around Nano-Voids in Aluminium A/Prof Philip Nakashima
16:40						
16:45				119: Nanointerface Engineering of Electronic Transport in Bulk Nanostructured half-Heusler Alloys Dr Pierre Ferdinand Poudeu Poudeu		
16:50	107: Boosting the oxygen evolution reaction activity of a perovskite through introducing multi-element synergy and building an ordered structure Mr Hainan Sun	472: Non-ferroelectric, nonlinear polarization in doped rutile TiO2 ceramics Ms Yun Liu	494: Developing in vitro models of human neurogenesis A/Prof Larisa Haupt		377: Vortex fluidic mediated fabrication of functional nano carbon materials Prof Colin Raston	409: Rapid Neutron Powder Diffraction with Wombat: A Review Dr Andrew Studer
16:55						
17:00				309: Thermoelectric properties of Ba1-xKxZn2As2 crystallized in the ThCr2Si2-type structure Ms Haruno Kunioka		
17:05						
17:10						

Riverside Theatre

Chairperson: Neeraj Sharma

582: Ionic Liquid and Plastic Crystal Based Electrolytes for Advanced Batteries - From Fundamentals to Applications
Prof Maria Forsyth

Symposia dinner - Optus Stadium



20th International Union of Materials Research Societies International Conference in Asia
22 – 26 September 2019
Perth Convention & Exhibition Centre



THURSDAY 26 SEPTEMBER 2019

Riverside Theatre	
Chairperson: Debbie Silvester-Dean	
9:13 - 9:15	Session Sponsored by Microscopy Australia
9:15 - 10:00	585: The new microrecycling science and microfactories™ for transformation of waste into value-added materials Prof Veena Sahajwalla
10:00 - 10:30	Morning Tea

	Riverside Theatre Chairperson: Alexey Glushenkov	River View Room 4 Chairperson: Achitya Dhar	River View Room 5 Chairperson: Larisa Haupt	Meeting Room 6 Chairperson: Michihiro Ohta & Kedar Hippalgaonkar	
	B. Energy & Environment Materials	G. Advanced Fabrication, Characterisation & Devices	C. Bio-Materials	A7. Australia-Japan joint forum on thermoelectric materials for sustainable development	
10:30	535: "White graphene" and its nanocomposites for thermal management applications Dr Weiwei Lei	499: In operando energy-resolved polarized neutron imaging of the charging cycles of a Li-ion battery - how to image the lithiation and de-lithiation and current distribution in 3D Dr Luise Theil Kuhn	227: Time-resolved observations of liquid-liquid phase separation at the nanoscale using in situ transmission electron microscopy A/Prof Martial Duchamp	80: Correlation between Seebeck coefficients of organic thermoelectric materials and their oxidation levels A/Prof Ichiro Imae	10:30
10:35	432: Photovoltaic-Photoelectrochemical Tandem Devices for Stand-Alone Solar Hydrogen Generation Dr Siva Karuturi		188: Localized hyperthermia as a tool for cell membrane hyperfluidization Dr Raluca Maria Fratila	41: Thermoelectric properties of Al-doped ZnO composite films with polymer nanoparticles fabricated by pulsed laser deposition Prof Paolo Mele	10:35
10:40	443: 3D carbon-coated NiCo ₂ S ₄ nanowires doped with nitrogen for electrochemical energy storage and conversion Prof Yan Wang	544: Design and Optimization of the Lithium Ion Battery Module for the Solar Street Light Evyv Kartini	281: Three dimensional in vitro models for the study of tumour angiogenesis Dr Laura Bray	157: preparation and performance optimization of conducting polymer/inorganic nanocomposite thermoelectric materials A/Prof Qin Yao	10:40
10:45	509: Semiconductor Nanomaterials for Solar Fuel Generation Prof Lianzhou Wang	273: Luminescent Lead Halide Based Perovskite Nanoparticles as A New and Effective Element for Detection of Methyl Iodide Dr Wenping Yin	448: Nano and Microstructure Investigation of Silk Fibroin-Based Hydrogels for Biomedical Applications: A Small Angle Scattering Study Dr Jitendra Mata	243: Printable thermoelectric materials prepared by a wet process Prof Koji Miyazaki	10:45
10:50	512: Molecular design and commercialization of high-performance, environmental and functional polymer nanocomposites Haihua Wang	5: 2D Materials Photonics and Optoelectronic Device Applications Prof Qiaoliang Bao	96: Improved hemostatis by bionanomaterials A/Prof Takuya Tsuzuki	191: Growth of coated hybrid-perovskite thin film for thermoelectric applications Mr Shrikant Saini	10:50
10:55	239: Designing materials for the light enhanced methanation of carbon dioxide Dr Emma Lovell	7: Pursuit the Interface and Dipole for Organic-based Photovoltaics Mr Yanting Yin	360: Finding the right substrates to correctly model biomolecular functions for brain disease drug development. A/Prof Anthony White	493: High Thermoelectric Performance and Diverse Crystal Structures in Cu ₂ (S, Se, Te) Solid Solutions Dr Kunpeng Zhao	10:55
11:00	459: Study on the adsorption principle of conducting polymer/oxide composites for wastewater treatment Prof Wei Yan	91: Crystallinities and Superconducting Properties of thickened Artificial Pinning Center doped YBa ₂ Cu ₃ O _y Coated Conductors by using Vapor-Liquid-Solid growth technique. Mr Tomohiro Ito			11:00
11:05		272: Site specific depth profiling of layered structures by FIB-ToF-SIMS Dr William Rickard			11:05
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12:45 - 13:45	Lunch break	12:45 - 13:45
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THURSDAY 26 SEPTEMBER 2019

Riverside Theatre	
Chairperson: Ian Chen	
13:45 - 14:30	562: Graphene-Based Soft Materials Dan Li
Riverside Theatre	
14:30 - 15:00	Closing Ceremony & Awards