UNSW SYDNEY
Australia's Global University

School of Chemistry Annual Report 2017

UNSW Sydney
Sydney NSW 2052
Australia

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HEAD OF SCHOOL REPORT

2017 was a year of great change – a year of appointing many new staff and saying farewell to others, designing significant new research space in two new buildings, a restructure of the administrative and technical functions and preparing for perhaps the most significant change – UNSW3+, which is the change from teaching over two 13-week semester to over three 10-week terms.

While every year sees turnover of academic, administrative and technical staff, 2017 was abnormal. We appointed 6 new academic staff: Drs Junming Ho, Kris Kilian, Laura McKemmish, Suzanne Neville, Nicole Rijs and Anna Wang. Three of these – Kris, Nicole and Anna – were enabled through the new Scientia Fellow initiative within the UNSW Strategy-2025. Also as part of the Strategy, we also appointed Nobel Laureate, Professor Fraser Stoddart to the School through the SHARP (Strategic Hire) Committee in a 0.25 FTE capacity. Suzanne, Kris and Junming started in late 2017, while Nicole, Laura, Fraser and Anna will start in 2018. Marcus Cole decided to retire at the end of 2017 and move back to Melbourne.

The change in administrative and technical staff was even greater. With the central restructuring, Amanda Troobnikof and Sue Liu moved to new positions within UNSW. Dr Toby Jackson was appointed School Manager on a permanent basis and, due to the increasing size and complexity of the School, the Lab Manager position was split in two, with Dr Nancy Scoleri accepting the position of Lab Manager (Teaching) and Dr Josh Peterson as Lab Manager (Research). The was also significant change in the technical staff with Warren Truong, Majid Asnavandi, David Jacyna and Clare Sullivan joining the School while Peta DiBella, Berta Litvik, Michael McMahon and Ed Stewart retired or moved on to something else.

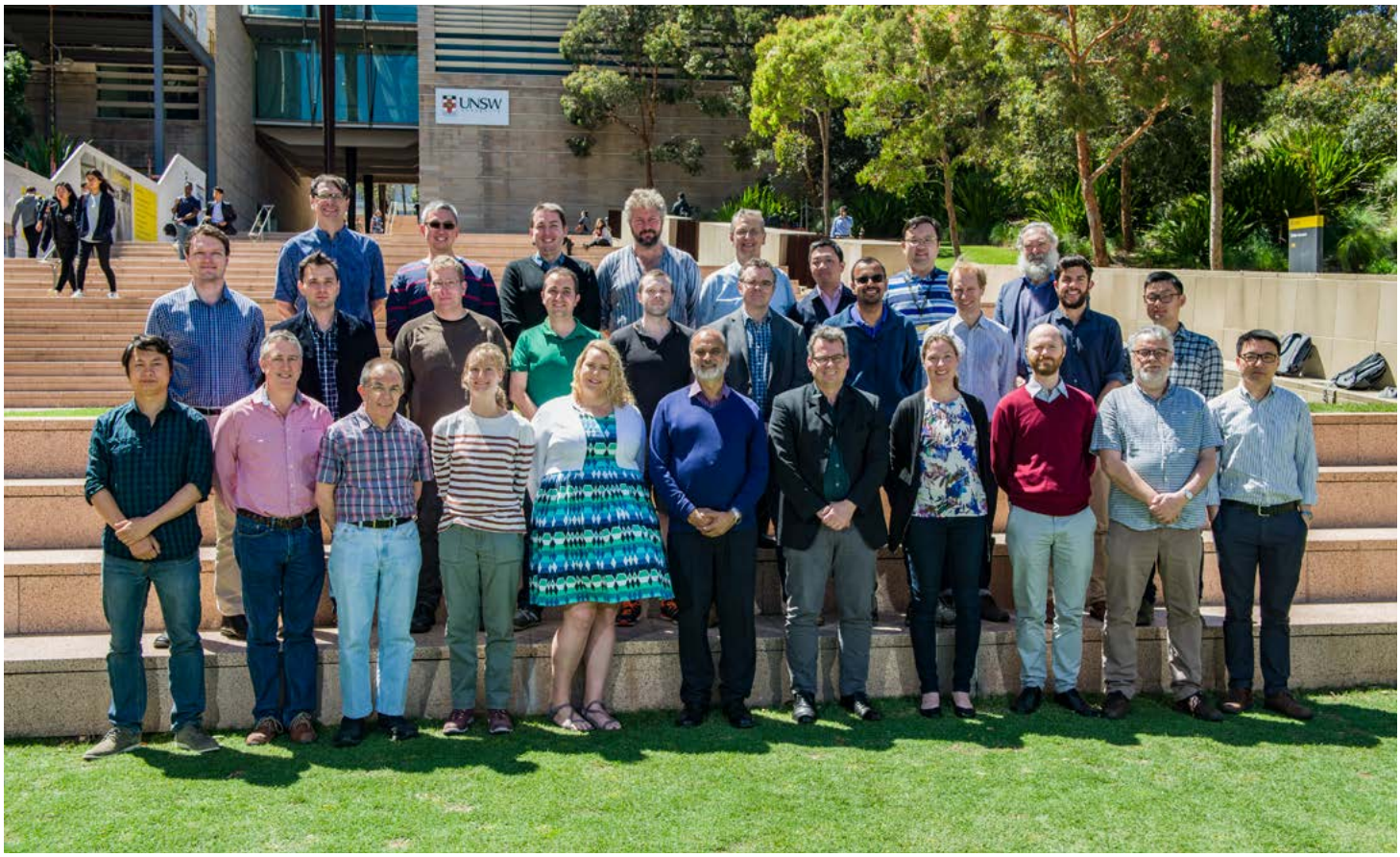
Members of the School had success in Future Fellowships and Early Career Awards (NHMRC and ARC DECRA). Dr Jon Beves, Dr Suzanne Neville and Professor Chuan Zhao were successful in their applications for ARC Future Fellowships. We also welcomed several new ARC and NHMRC Research Fellows: Drs Robert Chapman and Adam Martin started their Fellowships this year (awarded last year) and Drs Iman Roohani, Chris Medcraft, Xianjue Chen and Yiling Zhong were awarded new Fellowship this year, to start next year.

Accompanying the growth in academic staff was significant growth in the number of researchers in the School – mostly in Higher Degree by Research (HDR) students. In 2017, 160 PhD and Masters students were enrolled in the School along with 35 post-doctoral researchers and research fellows conducting research in the various research groups.

Such growth must be presaged by success. Researchers in the School published 254 articles (mostly in journals) in 2017 – the same as 2016. But impressively, the quality is outstanding: 95% of these papers were published in Q1 (first quartile standard) journals.

It seems that every year I report about space pressures. Finally, we are seeing a significant change. Last year I reported that a Business Case to build Chemistry research labs on Level 7 of Hilmer was successful, and throughout 2017 a lot of time was spent designing this space. The Gooding, Thordarson, Tilley, Kilian, Martin and Goncales groups will move into these new labs early in 2018. Throughout 2017 there was also a lot of planning work towards the new Science and Engineering Building, which is scheduled to open in early 2019 with the top two floors being mostly Chemistry research. The combination of Hilmer and SEB space will add >50% to the research lab footprint in the School and will relieve a lot of the research lab space and office pressures – although, of course, we continue to hire new researchers at a rapid rate!

Perhaps the largest change to day-to-day operations is in the teaching domain. In 2017, UNSW announced that the teaching calendar would change from the current 2 x 13-week semesters to 3 x 10-weeks terms. There are a lot of advantages for students, and for utilization of UNSW teaching spaces. However, it will create a lot of work for everyone involved with the teaching program. Every course will have



to be modified to account for the different mode of delivery, especially the laboratory programs. While every course is being designed, the School decided at the annual retreat to take the opportunity to redesign our Third Year courses to better match modern chemistry research with six new courses replacing the current four traditional ones. This is only possible because of the large increase in academic staff creating more capacity to teach these new courses.

I think we will look back at 2017 as the year of peak disruption and uncertainty in the design of the 2025 Strategy. I forecast 2018 as the year of greatest activity as the Strategy crystallizes and takes effect. It would be a brave Head of School to predict smooth sailing after 2018, but that is how the current weather forecast seems.

Thanks to everyone in the School for their patience in a year of great change and I want to particularly recognise the help and support of the Chemistry Administration team.

Professor Scott Henderson Kable

School of Chemistry academic staff

Back row: Dr Graham Ball, Dr Junming Ho, A/Prof Jason Harper, Prof Tim Schmidt, Prof Pall Thordarson, Dr Pu Xiao, Dr Hongxu Lu, Emeritus Prof Brynn Hibbert

Middle row: Dr Alex Donald, Dr Iman Roohani, Dr Jon Beves, Dr VInicius Goncales, Dr Scott Sulway, A/Prof John Stride, Dr Neeraj Sharma, Dr Rob Chapman, Dr Adam Martin, Dr Alex Soeriyadi

Front row: Dr Vinh Nguyen, Prof Scott Kable, Dr Ron Haines, Dr Kim Lapere, Dr Shannan Maisey, Prof Naresh Kumar, A/Prof Jonathan Morris, Dr Suzanne Neville, Dr Luke Hunter, A/Prof Steve Colbran, A/Prof Chuan Zhao

STAFF

School of Chemistry Committees – 2017

School Executive Committee

- Professor Scott Kable (Chair)
- Scientia Professor Justin Gooding
- Professor Pall Thordarson
- A/Prof Jason Harper
- Dr Gavin Edwards

Research Committee

- Professor Pall Thordarson (Chair)
- Professor Scott Kable
- Scientia Professor Justin Gooding
- A/Prof Chuan Zhao
- A/Prof. Jonathan Morris
- Dr Neeraj Sharma

Postgraduate Committee

- Scientia Professor Martina Stenzel (Chair)
- Professor Scott Kable
- Professor Tim Schmidt
- A/Prof. Shelli McAlpine
- Dr Alex Donald
- Dr Jon Beves
- Mr Ken McGuffin

Teaching Committee

- A/Prof. Jason Harper (Chair)
- Dr Gavin Edwards
- Professor Scott Kable
- A/Prof Steve Colbran
- A/Prof John Stride
- Dr Ron Haines
- Dr Luke Hunter
- Dr Scott Sulway
- Mr Steve Yannoulatos

Building & Space Committee

- Professor Scott Kable (Chair)

School HS Consultation Committee

- Dr Graham Ball (Chair)

Outreach Committee

- Professor Naresh Kumar (Chair)

Search Committee

- Professor Scott Kable (Chair)

School Teaching Committee

Mr Steve Yannoulatos, Professor Scott Kable, Dr Scott Sulway, Dr Luke Hunter, A/Prof John Stride, Dr Ron Haines, A/Prof Jason Harper, A/Prof Steve Colbran

Academic Staff

Dr Graham Edwin Ball

BSc (Hons) PhD University of Sheffield, UK

Professional Activities:

- RACI NSW Inorganic Division Representative

Research:

- Chemical and biological applications of NMR spectroscopy.
- Characterisation of chemical reactive intermediates, especially organometallics.
- Applications of computational chemistry.
- Investigations of drug-DNA interactions.
- Structure elucidation

Dr Jonathan Beves

BSc (Hons I), MSc University of Sydney, PhD University of Basel

Professional Activities:

- RACI NSW Board Secretary
- RACI Inorganic Division NSW Representative
- Editorial Board of Polyhedron and Frontiers in Supramolecular Chemistry

Research:

- Supramolecular chemistry
- Coordination chemistry

Professor David Black

BSc (Hons 1), MSc University of Sydney
PhD, University of Cambridge

Professional Activities:

- Secretary General, ICSU (2011-2018)
- Member of National Committee for Chemistry
- Member of NMI Reference Materials Review Committee, National Measurement Institute, Australian Government Analytical Laboratory

Research:

- Synthetic organic chemistry including methods of synthesis, heterocyclic chemistry (especially indole chemistry, photochemistry.
- Organic aspects of coordination chemistry including ligand design and synthesis, macrocycles, organometallic chemistry.
- Polymer chemistry - new polyamides, polyesters and modified peptides. Self-assembly studies involving hydrogen bonding.
- Development of mild and efficient new metal complex catalysts related to Green Chemistry

A/Prof Stephen Boyd Colbran

BSc (Hons), PhD, Otago

Professional Activities:

- Level 2/3 Student Advisor & Level 2/3 Teaching Laboratory Coordinator, School of Chemistry, UNSW
- PhD examiner: University of Otago
- Research grant reviewer: Australian Research Council, American Chemical Society Petroleum Research Fund, and Deutschen Forschungsgemeinschaft (DFG) Germany.
- Referee for the journals: Journal of the American Chemical Society; Angewandte Chemie International Edition, ACS Catalysis, Chemistry–A European Journal; Journal of Physical Chemistry B, Inorganic Chemistry; Organometallics; Dalton Transactions; European Journal of Inorganic Chemistry; Inorganica Chimica Acta

Research

- Transition metal chemistry, electrochemistry and catalysis

A/Prof Marcus Lawford Cole

BSc (Hons I) (Medal) 1998, PhD 2001, Cardiff University

Professional Activities:

- Fellow of the RACI

Research:

- Low oxidation state and hydrido complexes of the p- and f-block elements.
- Catalytic applications of N-heterocyclic carbenes.
- Probes for the quantification of multidentate ligand stereoelectronics.
- Sterically hindered ligand design

Dr Willilam Alex Donald

BSc Seattle University PhD University of California, Berkeley

Professional Activities:

- Treasurer, Australian and New Zealand Society for Mass Spectrometry
- Chair, RACI NSW Analytical & Environmental Chemistry Division
- Editorial board, Expert Opinion on Therapeutic Patents
- Editorial board, Journal of Enzyme Inhibition and Medicinal Chemistry
- Editorial Board, International Journal of Molecular Sciences (section Biochemistry, Molecular and Cellular Biology)

Research:

- Fundamental and applied mass spectrometry, ionization and ion fragmentation
- Developing methods for single-cell chemical analysis by mass spectrometry
- Portable ion mobility devices with significantly higher resolving power than conventional devices

Dr Gavin Leslie Edwards

BSc (Hons), PhD (Monash)

Professional Activities:

- Associate Dean – Academic Programs

Professor Leslie Field

Ph.D, D.Sc University of Sydney

Professional Activities:

- Secretary for Science Policy, Australian Academy of Science
- Fellow of the Australian Academy of Science
- Fellow of the Royal Australian Chemical Institute
- Member of the American Chemical Society
- Fellow of the Royal Society for Chemistry
- Fellow of the Royal Society of NSW
- Member of the International Society for Magnetic Resonance
- Director and Chairman of UNSW Innovations Pty Ltd (ABN 25 000 263 025)
- Director of Australian Technology Park Innovations Pty Ltd (ABN 15 092 808 850)
- Director of the Victor Chang Cardiac Research Institute Pty Ltd (ACN 068 363 235)
- Director Uniseed UITT Pty Ltd
- Director Uniseed Management Pty Ltd
- National ICT Australia Ltd (NICTA) UNSW Member Representative
- Member ARC Centre for Functional Nanomaterials Advisory Board
- Member of the National Drug & Alcohol Research Centre (NDARC) Board of Management

Research:

- Organometallic chemistry of coordinated dinitrogen - nitrogen fixation.
- C-H Bond activation and functionalisation
- Organometallic chemistry of carbon dioxide
- Applications of NMR spectroscopy in organic & organometallic chemistry
- Transition metal catalysis in organic synthesis
- Transition metal acetylides, organometallic polymers and new materials
- Metallocene chemistry

Scientia Professor J. Justin Gooding

B.Sc. Hons (Melb), D. Phil (Oxon)

Professional Activities:

- Founding Co-Director of the Australian Centre for NanoMedicine
- Inaugural Editor-in-Chief, ACS Sensors
- Founding co-Director, New South Wales Smart Sensing Network (NSSN)
- Handling editor for Journal of Chemical and Biological Interfaces. Member of the editorial board of the journals Electrochemistry Communications, Electroanalysis, Sensors, Nanobiotechnology, Sensors and Actuators B, Sensor Letters, Journal of Nanoeducation, Analyst, Chemical Sciences, Biosensors
- Referee for the journals Nature Materials, Nature Nanotechnology, Nature, Science, Nature Communications Journal of the American Chemical Society, Analytical Chemistry, Langmuir, Journal of Physical Chemistry B., Electroanalysis, Electrochemistry Communications, Biosensors Bioelectronics, Nucleic Acids Research, The Analyst, Chemical Communications

Research:

- Modified surfaces for controlling surface interactions with cells for biomaterials applications (with Dr. Katharina Gaus, Medicine UNSW).
- Nanoparticle based biosensors labelling and detection in for medical diagnostics (with Professor Richard Tilley, Chemistry, UNSW).
- Detection of microRNA (with Prof. Maria Kavallaris, Australian Centre for NanoMedicine).
- The three dimensional printing of cells (with Australian Centre for NanoMedicine).
- The immobilisation of homogeneous catalyst on surfaces (led by Professor Barbara Messerle, Macquarie University).
- Nanoparticle architectures for electrocatalysis (with Professor Richard Tilley, Chemistry, UNSW)

Dr Ronald Stanley Haines

B.Sc. in Pure and Applied Chemistry (UNSW 1978)
Ph.D. (UNSW 1982)

Professional Activities:

- First Year Chemistry Laboratory Coordinator
- School of Chemistry IT Coordinator
- Member, School of Chemistry Teaching Committee
- Member, Faculty of Science IT Group

Research:

- Assessment and instruction in undergraduate Chemistry laboratories.
- Chemical education and the impact of mobile devices and web development technologies on content delivery to students.
- Chemical kinetics, in particular the influence on reaction mechanisms of ionic liquids as solvents

A/Prof Jason Brian Harper

B.Sc. 1995, University of Adelaide, B.Sc.(Hons), 1996, Ph.D., 2000, Australian National University

Professional Activities:

- Director of Teaching, School of Chemistry
- National Scientific Program and Organisational Committee, 8th International Conference on Green and Sustainable Chemistry (Melbourne 2017)
- External reviewer, Bachelor of Science (Chemistry), University of Wollongong
- Reviewer for national funding bodies: Australia, UK
- Ph.D. Examiner: Australia
- Treasurer, Southern Highlands Conference on Heterocyclic Chemistry
- Member, IUPAC Subcommittee on Structural and Mechanistic Organic Chemistry
- Fellow, Royal Australian Chemical Institute
- Member, American Chemical Society (ACS)
- Director, Systems Chemistry Australia

Research:

- Application of physical organic chemistry to understanding organic processes, including:
- The development of an understanding of ionic liquids as novel reaction media, and their applications.
- The examination of the chemical and physical properties of N-heterocyclic carbenes
- The investigation of novel NMR spectroscopic methods for monitoring reaction kinetics

Dr Junming Ho

BSc UWA, BSc (Hons) PhD ANU

Professional Activities:

- Editorial board member, Chemical Data Collections – an Elsevier journal

Research:

- Computational chemistry
- Hybrid electronic structure methods
- Solvent effects and
- Molecular dynamics

Dr Luke Hunter

BSc (Advanced) (Honours), PhD, The University of Sydney

Professional Activities:

- Secretary, RACI NSW Natural Products Group

Research:

- Design and synthesis of compounds targeted to the future treatment of cancer, bacterial infection, malaria, stroke and alcoholism
- Exploration of stereoselective fluorination as a tool to control the 3D conformations of molecules

Professor Scott Henderson Kable

B.Sc. (Hons) (Griffith), Grad. Dip. Business Admin. (QUT) PhD (Griffith)

Professional Activities:

- Board Member, RACI

Research:

- Photochemistry
- Atmospheric Chemistry
- Reaction Mechanisms

Professor Naresh Kumar

BSc (Hons 1) Punjab Agricultural University, India
MSc Punjab Agricultural University, India
PhD University of Wollongong, Australia

Professional Activities:

- Academic in charge: B Med Chem (Honours) program
- Academic in charge: School of Chemistry Outreach program
- Member, Royal Australian Chemical Institute (RACI)
- Member, American Chemical Society
- Chair, RACI (NSW) Natural Products Chemistry Group
- Member RACI Bioactive Discovery and Development Group
- Assessor for ARC Discovery, Linkage and LIEF projects
- Assessor for ARC Laureate Fellowship applications
- Reviewer for NHMRC Project Grant applications
- Research project evaluation for Auckland Medical Research Fund, and Cancer Society of New Zealand
- Reviewer for Academic Research Fund applications, Nanyang Technological University, Singapore
- PhD thesis examiner for national and international universities

Research:

- Design and synthesis of novel antimicrobial agents including quorum-sensing inhibitors and antimicrobial peptide mimics
- Development of synthetic methodologies for the preparation of biologically important natural products and their analogues
- Heterocyclic chemistry
- Novel antimicrobial biomaterials

Dr Kim Lapere

BSc (Honours), PhD, The University of Western Australia

Professional Activities:

- Teaching Fellow Coordinator
- UNSW School of Chemistry Marketing Committee

Research:

- Chemistry Education

Dr Shannan Maisey

BScComm, BSc PhD, UWA

Professional Activities:

- UNSW School of Chemistry Marketing Committee
- Tutorial Coordinator
- UNSW Faculty of Science Equity and Diversity Committee

Research:

- Student perceptions of learning in the collaborative learning paradigm.
- Threshold/mastery approach to assessment
- Digital badging and microcredentialing

A/Prof Shelli Renee McAlpine

BSc University of Illinois, PhD UCLA

Professional Activities:

- Chair of the American Chemical society Australian chapter
- American Chemical Society: International committee board member
- NHMRC grant reviewer
- ARC grant reviewer
- Conference organizing committee for RACI congress meeting in the Medicinal chemistry and chemical biology division the RACI Congress

Research:

- Investigating the mechanism of action of Heat shock protein 90 inhibitors as chemotherapeutics
- Designing small molecules that target Heat shock protein 70 and Heat shock protein 27

A/Prof Jonathan Charles Morris

BSc (Hons) UWA, PhD ANU

Professional Activities:

- Deputy Dean of Graduate Research
- Member, Research Committee, School of Chemistry, UNSW
- Fellow, Royal Australian Chemical Institute and Member, American Chemical Society.
- Referee for ACS, RSC, Wiley and Elsevier Journals.
- Member, Scientific Advisory Board, Exonate Ltd.
- Treasurer of Organic Division, RACI
- Treasurer of Medicinal Chemistry and Chemical Biology Division, RACI

Research:

- Design of inhibitors for RNA Splicing Kinases
- Total synthesis of natural products
- Natural Product-Inspired Compound Libraries
- Design of Isoform Selective Ceramide Synthase Inhibitors
- New drugs to counteract the side effects and premature ageing caused by chemotherapy

Dr Suzanne Neville

BSc (Hons), PhD, USyd

Professional Activities:

- RACI NSW Branch council
- Australian Synchrotron PAC council

Research:

- Molecular sensing in porous materials
- Molecule-based switches

Dr Vinh Nguyen

B.E (1st class Honours) UNSW, Ph.D ANU

Professional Activities:

- UNSW Chemical Society President

Research:

- Chemistry of non-benzenoid aromatic ions
- Synthetic methodology
- Organocatalysis

Professor Timothy Schmidt

BSc (Hons 1M) USYD, PhD Cambridge

Professional Activities:

- Associate Editor, Journal of Photonics for Energy

Research:

- Molecular photonics, electronics and excitonics•

Dr Neeraj Sharma

Bachelor of Advanced Science, PhD USyd

Professional Activities:

- RACI Materials Division Chair
- Asian Crystallographic Association Regional Representative
- Program Advisory Committee, Powder Diffraction Beamline, Australian Synchrotron
- Member of National Committee for Crystallography (NCCr), Australian Academy of Sciences
- Judge for the NSW Crystal Growing Competition (RACI)
- Organising committee for the symposia:
  - "Lithium-ion batteries" at the 232nd Electrochemical Society conference National Harbor, USA in Oct. 1-6, 2017.
  - "Advanced Materials for Energy Storage" at Materials Challenges in Alternative & Renewable Energy (MCARE 2017) in Jeju, Korea in Feb. 19-23, 2017.
  - "Advanced Materials and Technologies for Electrochemical Energy Storage Systems" at PacRIM12 , Hawaii, USA
- Co-Editor ECS Transactions, Issue 80-10, Ch. 4.

Research:

- Towards the next generation of batteries including sodium- and potassium-ion batteries and lithium-sulfur batteries
- Scaffolding layered electrode materials
- Tuning negative thermal expansion to produce zero thermal expansion materials
- Using and understanding electrochemically-activated solid state synthesis
- In situ studies of materials and processes
- Structural investigations using neutron and X-ray scattering

Scientia Professor Martina Heide Stenzel

MSc, University of Bayreuth, Germany
PhD University of Stuttgart, Germany

Professional Activities:

- Co-Director Centre for Advanced Macromolecular Design (CAMD)
- Fellow of the Royal Australian Chemical Institute (RACI) and past chair of the RACI polymer division
- Scientific editor of the RSC journal Materials Horizon
- Associate editor: Beilstein Journal of Nanotechnologu
- Member of the editorial board of the journals Macromolecular Bioscience, Macromolecular Rapid Communications, Biomacromolecules, Polymer Chemistry, Journal of Materials Chemistry B and Acta Biomaterialia
- Chair of the National Chemistry Committee of the Australian Academy of Science.

Research:

- New polymer materials for drug delivery
- Self-assembly of polymers into nano-objects such as cylindrical micelles, vesicles, spherical micelles and other structures
- Hollow nanoparticles for the delivery of proteins
- Nanoparticles with proteins or sugars to generate bioactive nanoparticles with high affinity for cancer cells
- Macromolecular ligands for metal complexes and their use in cancer therapy
- Polyion complex micelles for protein delivery
- Investigation into the interaction of nanoparticles with cancer cells in 2D and in 3D multicellular spheroids

A/Prof John Arron Stride

BSc (Hons.) Ph.D. (Chemistry), University of East Anglia, UK

Professional Activities:

- AINSE Councillor
- ACNS Program Advisory Committee
- School of Chemistry Honours Coordinator

Research:

- Molecular magnetism
- Nanostructured materials
- Molecular dynamics
- Photo-active devices
- Porous framework materials

Dr Scott Andrew Sulway

MChem (Hons), Ph.D. University of Manchester
P.G.C.E. Secondary Science – Chemistry, Manchester Metropolitan University

Professional Activities:

- Member of the School of Chemistry Teaching Committee
- Demonstrator Training – Providing ongoing professional development to help enable a better learning environment

Research:

- Lab Skills & the pedagogy of what we teach in a lab

Professor Pall Thordarson

BSc. Chemistry, University of Iceland, PhD Chemistry USYD

Professional Activities:

- Editorial board member – Commissioning Editor, the Australian Journal of Chemistry.
- Membership of the Royal Australian Chemical Institute, The American Chemical Society, The Royal Society of New South Wales, The Icelandic Chemical Society, Society of Porphyrins and Phthalocyanines (SPP), The Australian Microscopy and Microanalysis Society and the Marie Curie Fellowship Association
- Australian Research Council (ARC) College of Expert member.

Research:

- Systems Chemistry
- Self-assembled gels for biomedical applications and electroactive displays.
- Biophysical chemistry and the supramolecular chemistry of proteins.
- Non-linear interactions in supramolecular chemistry

Professor Richard Tilley

MChem Oxford, PhD Cambridge

Professional Activities:

- Member of the Advisory Board of the journal, Nature Publishing Group Asia Materials
- Member of the Advisory Board of the new Wiley journal, ChemPlusChem

Research:

- Electron microscopy and Nanoparticle synthesis and applications

A/Prof Chuan Zhao

PhD Northwest University

Professional Activities:

- Chair of Electrochemistry
- Division Royal Australian Chemical Institute

Research:

- Electrochemical energy conversion and storage
- Sensors
- Bionics

Research Fellows

DECRA Fellows

Dr Robert Chapman

BE (Hons 1), UNSW, PhD Sydney

Research:

- Oxygen tolerant controlled radical polymerisation systems for biomaterials design
- Protection of enzymes by nanoencapsulation
- Synthesis of controlled polyolefins

Professional Activities:

- Community editorial board (Materials Horizons)
- Member RACI, Member RSC

Dr Hongxu Lu

PhD, University of Tsukuba, Japan

Research:

- Nanoparticle trafficking in 3D tumor models
- Nanoparticle uptaking in micropatterned tumor cells
- Development of 2D and 3D cellular models for nanoparticle evaluation and drug screening

Professional Activities:

- Co-Manager of PC2 lab
- Honour review member
- Postgraduate review member

Dr Pu Xiao

PhD Wuhan University

Research:

- Surface coated nanodiamonds as drug delivery carriers and simultaneous imaging;
- Photopolymerization under visible LEDs

Professional Activities:

- Marker for undergraduate research course and Honours cohort
- Panel member of the Research Progress Review for PhD students

UNSW Laureate Fellow

Dr Vinicius R. Goncales

BSc (Hons), PhD, USP - Brazil

Research:

- Charge-transfer on semiconducting junctions
- Electrochemical mapping
- Light-addressable amperometric sensors
- Light-activated electrochemistry

Professional Activities:

- Course Coordinator NANO2002

NHMRC Fellows

Dr Adam Martin

Bsc (Hons) Curtin, PhD UWA

Research:

- Supramolecular hydrogel scaffolds
- Primary neuronal cutlures
- Novel transfection agents
- Flexible metal organic frameworks

Professional Activities:

- Committee member, RACI NSW Branch

Dr Iman Roohaniesfahani

PhD USYD

Research:

- Tissue Engineering and regenerative medicine.
- Stem cells interaction with biomaterials
- Skeletal tissue regeneration
- Cardiovascular tissue regeneration
- Biofabrication and 3D printing of Biomaterials
- Design and fabrication of medical implants
- Synthesis of novel compositioned bioceramics
- 3D scaffolds for gene and growth factor delivery
- Biosurface patterning

Dr Alexander Hertanto Soeriyadi

B. Eng, PhD Chemistry, UNSW

Research:

- Photonic Crystals for Probing Enzyme Activity: Single cells vs Bulk Measurement.
- Silk fibroin biomaterial for wound healing applications
- Natural and green based food preservatives

Vice Chancellor Fellows

Dr Sheng Cheng

PhD, Nanjing University of Science and Technology

Research:

- Nanomaterial synthesis
- Electrocatalysis
- Renewable energy

Dr Yuhua Xue

PhD Zhejiang University, China

Research:

- Synthesized graphene oxide nanosheets and prepared graphene fibres.
- Characterization of graphene oxide and graphene fibres.
- Preparation of wearable devices by using graphene fibres as electrodes, preparation of core-shell graphene fibres for stretchable strain sensors and supercapacitors.
- Preparation of graphene-gold Janus fibres for sensors and supercapacitors.

Academic Staff Awards

Professor David Black

- 2017 Craig Medal of the Australian Academy of Science

Dr William Alexander Donald

- ***Emerging Investigator,*** Journal of the American Society for Mass Spectometry.

Scientia Professor J. Justin Gooding

- ***International Society of Electrochemistry (ISE) Katsumi Niki Prize for Bioelectrochemistry.*** Having transformed people's thinking on how redox protein should be linked to electrode, this ISE award is yet another recognition of the esteem that his peers around the world hold him in for his remarkable contributions to this field.
- ***Eureka Prize for Outstanding Mentor of Young Researchers*** – is often referred to as the Oscar of Australian Science. What is even more remarkable is that is this is the second Eureka prize for Justin as he also won the Eureka Prize for Scientific Research in 2009!

  As the citation on the Eureka Prize states: "Through a program of individualised mentorship, Professor Justin Gooding has trained and developed an all-new breed of research leader in bionanotechnology and nanomedicine. He has focused on developing innovative, entrepreneurial and passionate researchers who become talented mentors in their own right."
- *UNSW* - Innovation Award in Enterprise and Engagement.
- *Bertram Dillon Steel Lectureship* from the University of Queensland, School of Chemistry
- *Australian Council for Graduate Research* - Special Commendation Award for Excellence in Promoting Industry Engagement in Graduate Research

Dr Luke Hunter

- Appointed to a five-year term as a Fellow of the UNSW Scientia Education Academy.

Dr Suzanne Neville

- ***Royal Australian Chemical Institute Alan Sargeson Lectureship.*** This is a prestigious early career researcher award and acknowledges significant and innovative individual contributions to the field by researchers within 10 years of being awarded their PhD.

Dr Neeraj Sharma

- **Postgraduate Council of The University of New South Wales:** Postgraduate Research Supervisor Award

Scientia Professor Martina Stenzel

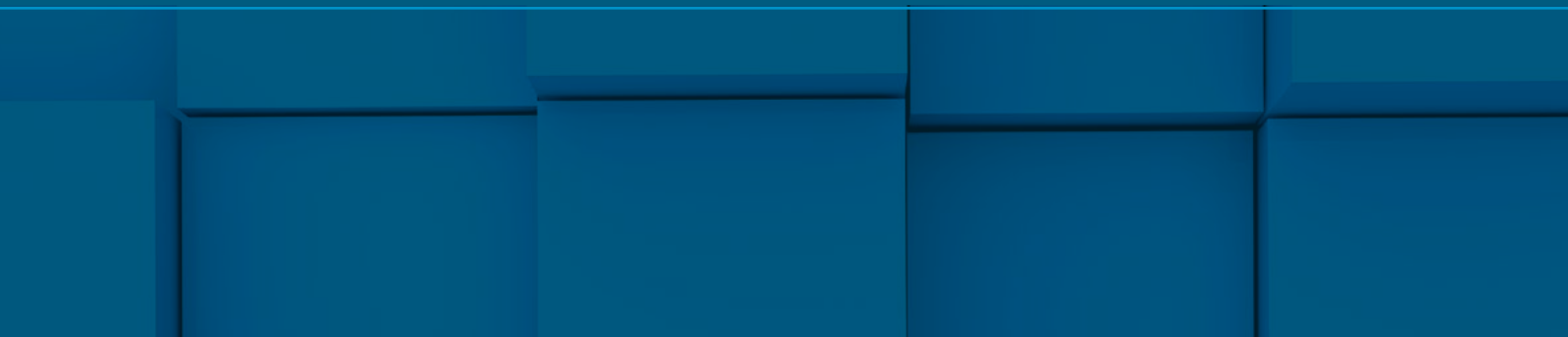
- **Royal Australian Chemical Institute HG Smith Medal.** This is one of the most prestigious research awards of the RACI. It is awarded to a person who "in the opinion of the RACI Board, has contributed most to the development of some branch of chemical science; this contribution will be judged by research work published or accepted for publication during the ten years, or equivalent relative to opportunity, immediately preceding the award."

A/Prof. Chuan Zhao

- ***International Association of Advanced Materials (AAM) Medal*** for his contribution to the field of advanced electrochemical materials for energy conservation and storage.

UNSW Vice Chancellor's Team Award for Teaching Excellence

- ***Student Lab Skills Project:*** awarded to Associate Professor Stephen B. Colbran, Dr Ronald Stanley Haines, Dr Luke Hunter, Professor Scott Kable, Dr Scott Sulway.



Staff

Administration

Head of School
Professor Scott Henderson Kable
BSc (Hons 1), PhD, Griffith

Deputy Head of School
Scientia Professor John Justin Gooding
BSc Melb. DPhil Oxon

Director of Research
Professor Pall Thordarson
BSc Iceland, PhD Syd

Director of Teaching
Associate Professor Jason Brian Harper
BSc Adelaide, BSc ANU PhD ANU

Deputy Director of Teaching
Dr Gavin Leslie Edwards
BSc PhD Monash, CChem, MRACI

Post Graduate Research Coordinator
Scientia Professor Martina Heide Stenzel
MSc Bayreuth, PhD Stuttgart

Graduate Studies Coordinator
Dr Graham Edwin Ball
BSc PhD Sheffield, MRACI

Honours Coordinator
Associate Professor John Arron Stride
BSc (Hons.) PhD E.Anglia

Higher Year Teaching & Laboratory Coordinator
Associate Professor Stephen Boyd Colbran
BSc PhD Otago

First Year Coordinator
Dr Luke Hunter
BSc(Adv)(Hons), PhD USYD

IT Coordinator
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BSc PhD UNSW

Seminar Coordinator
Dr Vinh Nguyen

Outreach Coordinator
Professor Naresh Kumar
MSc Punj. PhD W'gong, CChem, MRACI

Talented Students Program Coordinator
Dr Neeraj Sharma
BSc (Hons) PhD USYD

School Manager
Dr Toby Jackson

Administrative Officer
Jodee Anning
BA UNSW

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BSc Melb., DPhil Oxon

Martina Heide Stenzel
MSc Bayreuth, PhD Stuttgart

Professors

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Scott Henderson Kable
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Naresh Kumar
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BSc USyd, PhD Cambridge

Pall Thordarson
BSc Iceland, PhD Syd

Associate Professors

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BSc PhD Otago

Marcus Lawford Cole
BSc (Hons) PhD Cardiff

Jason Brian Harper
BSc Adelaide, BSc ANU PhD ANU

Shelli Renee McAlpine
BSc III, PhD UCLA

Jonathan Charles Morris
BSc UWA, PhD ANU

John Arron Stride
BSc (Hons.) PhD E.Anglia

Chuan Zhao
BSc Shaanxi, MSc PhD Northwest UT

Senior Lecturers

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BSc (Hons), MSc USyd, PhD Basel

Graham Edwin Ball
BSc PhD Sheffield, MRACI

William Alexander Donald
BSc Seattle, PhD UCA Berkley

Gavin Leslie Edwards
BSc PhD Monash, CChem, MRACI

Suzanne Neville
PhD USYD

Neeraj Sharma
BSc (Hons) PhD USYD

Lecturers

Junming Ho
BSc UWA, Hons ANU, MSc Nanyang TU, PhD ANU

Shannan Maisey
BScComm, BSc, PhD, UWA

Ronald Stanley Haines
BSc PhD UNSW

Luke Hunter
BSc (Adv)(Hons), PhD USYD

Associate Lecturers

Kim Lapere
PhD Berkley

Scott Andrew Sulway
MChem (Hons), PhD Manchester

ARC Laureate Fellows

Dr Vinicus Goncales
PhD, USP, Brazil

DECRA Fellows

Dr Hongxu Lu
BSc MSc Ocean University of China, PhD Tsukuba University, Japan

Dr Pu Xiao
BSc PhD Wuhan University, China

NHMRC Fellows

Dr Adam Martin
PhD UWA

Dr Alex Soeriyadi
PhD UNSW

Vice Chancellor Postdoctoral Fellows

Dr Robert Chapman
BE (Hons 1), UNSW, PhD USYD

Dr Sheng Chen
PhD, Nanjing University of Science & Technology

Dr Yuhua Xue
Ph.D. Zhejiang University, China

Dr Yuanhui Zheng
PhD Monash

Casual 1st Year Teaching Staff

Dr Kakali Chowdhury
PhD, Uni New Dehli, India

Joan P. Ross
BSc Syd.

Research Staff

Professor Leslie D. Field
(Deputy Vice Chancellor – Research)

Research Associates

Dr Manohari Abeysinghe
BSc, PhD Wales

Dr Muhammad Alam
PhD Tokyo Institute of Technology, Japan

Dr Abbas Barfidokht
PhD UNSW

Dr Tania Benedetti
BSc, PhD, University of Sao Paulo

Dr Renxun Chen
BSc (Hons), PhD UNSW

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BSc MSc Harbin Institute, PhD UWA

Dr Amir Asadpoor Darvish
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Dr Biswath Das
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PhD UWA

Dr Nastaran Hesar
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Dr Celine Heu

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PhD Imperial College London

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BSc MSc PhD Khartoum, FRSC, MRSC, RACI

Dr Sreenu Jennepalli
PhD Wollongong

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Dr Yibing Li
PhD Griffith University

Dr Guillaume Longatte
PhD P.A.S.T.E.U.R., Ecole Normale Supérieure, Paris

Dr Andrew McGrath
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Dr Paul Malek Mirzayans

Dr Klaas Nauta
PhD UNC

Dr Daniel Nieves

Dr Shashidhar Nizalapur
BDc (Hons), PhD UNSW

Dr Stephen Parker
PhD UNSW

Dr Shyamal Prasad
PhD, Victoria University, NZ

Dr Wenhao Ren
PhD Wuhan Universityof Technology, China

Dr Lydia Sandiford
PhD Kings College London

Dr Synove Scotwell
BSc PhD Otago

Dr Parisa Sowti Khiabani
BSC Materials Science & Eng Tabriz, PhD UNSW

Dr Roya Tavallaie
BSc Tehran, MSc Alzahra, PhD UNSW

Dr Hamish Toop
BSC (Hons) Adelaide, PhD UNSW

Dr Robert Utama
BEng (Hons), PhD Industrial Chemistry, UNSW

Dr Wang Wenqian
BSc Liaoning University, PhD UST Beijing

Dr Jonathan Wojciechowski

Dr Chin Ken Wong
PhD UNSW

Dr Ying Yang
BSc Yantai, MSc Shandong, PhD UNSW

Dr Yiling Zhong
PhD Soochow University, Suzhou, China

Visiting Fellows

Emeritus Scientia Professor

Michael Nicholas Paddon Row
BSc Lond, PhD ANU, CChem, FRSC, FRACI

Emeritus Professors

Roger Bishop
BSc St And., PhD Camb., CChem, FRSC, FRACI

David Brynn Hibbert
BSc PhD Lond., CChem, MRSC, FRACI

Conjoint Professors

Grainne Mary Moran
BSc PhD NUI, CChem, MRACI

Professorial Visiting Fellows

Alan Norman Buckley
BSc Syd., PhD Monash, MRACI

Barbara Messerle
BSc PhD Syd

Ronald Postle
PhD Leeds

Visiting Fellows

Dr Nicholas Armstrong
B.App.Sc (Hons 1st), PhD UTS

Dr Joseph John Brophy
BSc, PhD DSc UNSW, DipEd Monash, CChem, FRACI

Honorary Associate Professors

A/Prof. Roger Read
BSc PhD Syd., DIC Lond., CChem, FRACI

Adjunct Senior Lectuer

Dr Alex Falber
Algae Enterprises Ltd, Victoria, Australia

Professional and Technical Staff

Administrative Support

Anne Ayres

Kenneth Gerard McGuffin
BA Syd

Computer Officer

Ray Arnhold

Finance Officers

Amanda Troobnikoff

Henrietta Holden

Laboratory Manager

Dr Nancy Scoleri
BSc (Hon), PhD Adel.

Marketing

Dr Sue Min Liu

School Store

Ian Aldred

Shan Balachandran

Student Services Manager

Steve Yannoulatos
BSc (Hons) UNSW

Technical Officers

Dr Majid Asnavandi

Peta Di Bella
BSc (Hons) UQ

Hitendra Gopal

David Jacyna

Berta Litvak
BSc UTS, MEdAdmin UNSW

Michael McMahon

Dr Ruth Thomas
BSc, PhD UNSW

Dr Warren Truong

Svetislav Videnovic
BChemEng, Sarajevo


UNSW

ReSEARCH

Director of Research Report

The year 2017 was quite eventful for the School in terms of research. Of particular note was the growth in industry-related activities and the impact that UNSW's 2025 Strategy, specifically SHARP and Scientia are having on the School.

Grants:

The School had another very strong year in terms of grant success and income. First up is the fact that the School obtained no less than three ARC Future Fellowships with Associate Professor Chuan Zhao, Dr Jon Beves and Dr Suzanne Neville being successful. Combined, these Future Fellowships will bring over $2.4M to the School. The single largest grant the School obtained, however, was its share in the ARC Industrial Transformational Training Centre (ITTC) for the Chemical Industries that was awarded $3.2M in funds from the ARC over the next 5 years. This Centre is a joint effort between the University of Melbourne, Swinburne University and UNSW, with the UNSW node led by Scientia Professor Martina Stenzel. This major ARC centre comes on top of two other ARC Centre of Excellence nodes within the School.

The School did well in the main ARC grant round announced in early November with a total of over $1.7M in new research grant funding to the School. This included 3 ARC Discovery grants; 2 of them with the first named investigator (Professor Naresh Kumar and Associate Professor Jason Harper) coming from our School, as well as three ARC DECRA fellowship to Xianjue Chen, Yiling Zhong and Christopher Medcraft. In addition, researchers from the School, Professor Naresh Kumar, Professor Scott Kable, Professor Timothy Schmidt, Dr Alex William Donald, Dr Neeraj Sharma and Scientia Professor Justin Gooding where Chief Investigators on four ARC LIEF grants totalling $2.1M.

The School had one of its best years with NHMRC grants; Dr Iman Roohaniefahani won a New Investigator grant, and he and Professor Jonathan Morris were Chief Investigators on two successful NHMRC projects. The School did well in internal research grant schemes with three RIS (formerly MREII) grants awarded to Professor Pall Thordarson, Dr Suzanne Neville and Professor Richard Tilley.

Industry initiatives:

The expansion of industry related activities continued at full speed in 2017. Associate Professor Chuan Zhao's UNSW-China Torch Project continued to grow with UNSW commissioning the build of a new laboratory in the Hilmer building to accommodate this

project. The UK based biopharmaceutical company, Exonate (UK), which is based on compounds developed in the labs of Associate Professor Jonathan Morris, continued with its success. In February 2017, Exonate was awarded $8M from the Wellcome Trust in the UK to further its development of therapeutic eye drops to treat age-related macular degeneration. This award further cements the strong relationship between Exonate and UNSW.

Accolades to our staff:

Externally, our staff also received a number of accolades. Scientia Professor Martina Stenzel was awarded the prestigious RACI HG Smith Memorial Medal, Associate Professor Chuan Zhao won the International Association for Advanced Materials (IAAM) Medal and Dr Suzanne Neville won the RACI Alan Sargeson Lectureship.

Publications:

After three years of exceptional growth in publications, our output has steadied with 240 papers published in 2017. This included no less than five *Nature Communications* publications as well as a paper in *Nature Biotechnology* and another in *Nature Nanotechnology*.

UNSW 2025 Strategy – SHARP & Scientia

The School did exceptionally well from the UNSW 2025 Strategy in 2017. The School secured no less than four of the inaugural Scientia PhD students with the first student arriving in April 2017. The School also obtained one Scientia Fellow from the first round of the Scientia Fellowship scheme, Dr Kris Kilian who arrived at the end of 2017. A further two candidates, Drs Nicole Rijs and Anna Wang won a Scientia Fellowship in 2017 and will be joining the School in 2018. Last but not least, the School announced in December 2017 its first successful Strategic Hire and Retention Pathway (SHARP) Professor, which is no other than one of the 2016 Nobel Prize Winners in Chemistry, Sir Fraser Stoddart, who will be joining the School of Chemistry in 2018 as a part-time Professor.

It has been a challenging and rewarding five years as Director of Research in the School and I would like to thank all staff for their support, but I will be handing over the baton of Director of Research into the capable hands of Scientia Professor Martina Stenzel in 2018. I wish everyone continued success in both securing grant funding and publishing.

Professor Pall Thordarson
Director of Research

Research Highlights

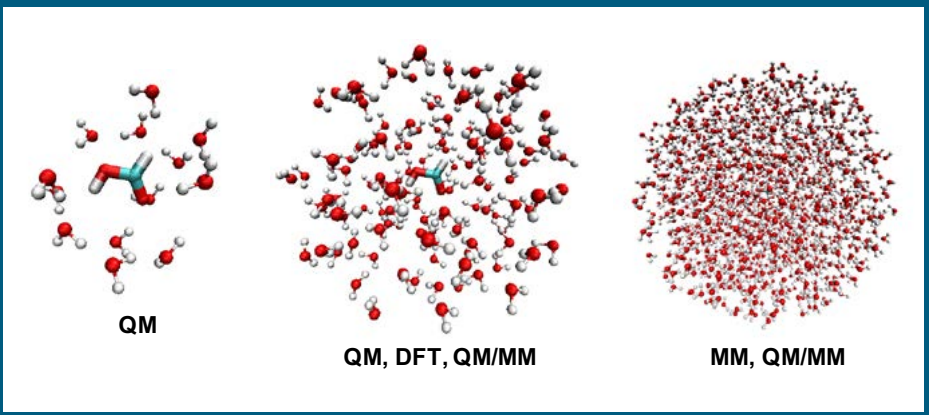
Dr. Junming Ho

Dr. Junming Ho is a graduate of the University of Western Australia and the Australian National University. Prior to his appointment at UNSW, he was a research fellow at Yale, and a research scientist in the Institute of High Performance Computing in Singapore. His research interests include but are not limited to computational chemistry, biomolecular simulations and physical organic chemistry. He is the leader of the Mechanism and Modelling Group (MMG) in the School of Chemistry.

Modelling Solvation

In *ab initio* quantum chemistry, there is a well-known variational principle which provides a framework whereby gas phase electronic energies can be systematically improved towards the "exact" answer. However, such a framework does not currently exist for condensed phase energy calculations (in practice anyway). Since much of chemistry occurs in the condensed phase, our group has a longstanding interest in the development of robust computational procedures for calculating solution phase kinetics and thermodynamics. In particular, we have developed very accurate methods for predicting pKas and redox potentials, as well as physicochemical properties such as logP.

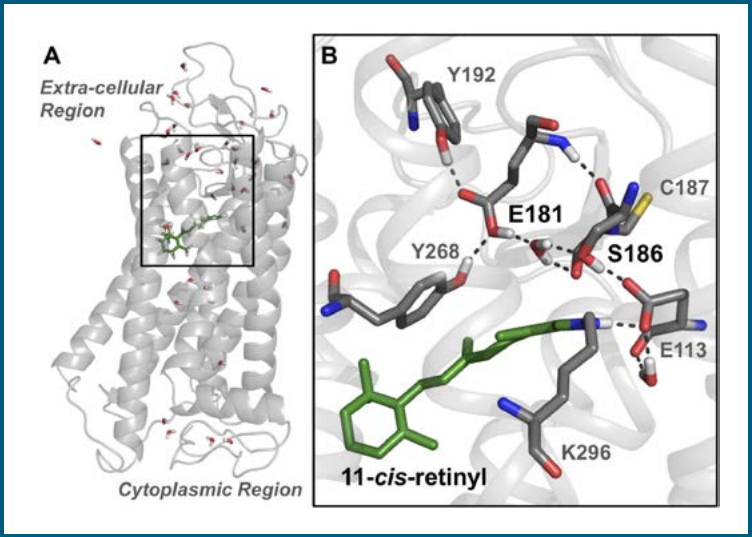
At present, approximate methods such as continuum solvation models that treat solvent molecules implicitly are the most popular because of their computational efficiency and performance. However, these models are limited in scope, e.g. applicable only at 298 K, or validated for certain solvents only. Whilst explicit solvent approaches model solute-solvent interactions explicitly, these are usually based on approximate molecular mechanics force fields which may not capture short-range effects such as charge transfer. Towards the goal of developing a truly universal solvation model, we are working with experimentalists to probe the performance of existing and new solvation models under different circumstances, e.g. mixed solvent systems, high-temperature effects. This work also entails using state-of-the-art methods, e.g. hybrid quantum mechanics/molecular mechanics (QM/MM) and QM-based force fields, and ab initio molecular dynamics simulations.



Hybrid Quantum Mechanics/Molecular Mechanics (QM/MM) Models

The group develops and applies QM/MM methods to understand the structure-activity relationships and mechanisms of various heterogeneous processes. We have co-developed the Moving-Domain QM/MM method to improve the electrostatic description of macromolecular interactions, and also applied these methods to understand the mechanism of photoprotection in light-harvesting proteins, thermal isomerisation of photoreceptors and fragmentation patterns in highly charged proteins.

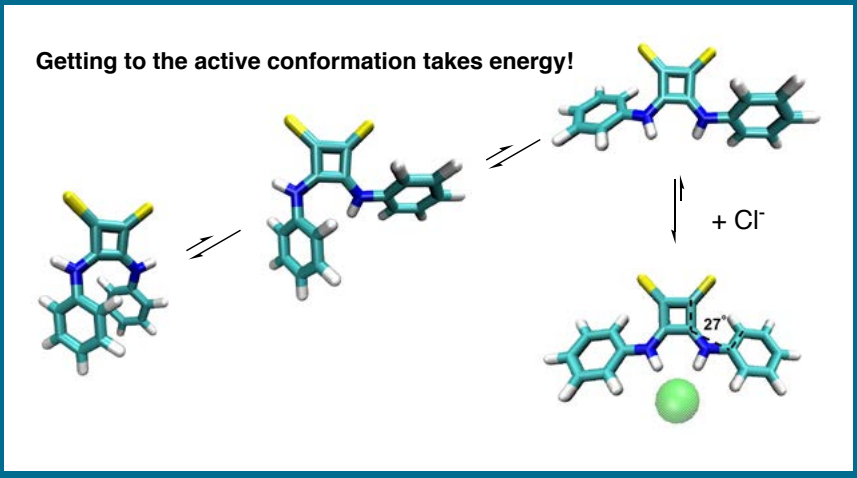
A challenge in QM/MM modelling is the systematic determination of a QM region that balances cost and accuracy. QM/MM models employing large QM regions give results that are closer to the full QM result, but are also computationally more expensive. The group is currently developing new procedures for the systematic determination of minimal QM regions in QM/MM models. These developments are crucial for improving the cost-effectiveness of these models.



Physical Organic Chemistry of Anion Receptors

Anionophores are molecules that bind anions, most commonly through hydrogen bonding. Recent studies have revealed that these molecules possess anti-cancer properties by transporting anions across cell membranes thereby leading to cell death. The group employs multi-scale methods, i.e. electronic structure theory, molecular dynamics simulations and machine learning methods, to better understand the structure-activity relationship of these compounds, and to accelerate the discovery of new anionophores as novel therapeutic agents.

As part of this work, we recently discovered that conformational reorganisation plays an important role in the activity of these molecules, particularly their affinity of anions. For a long time, the acidities of these hydrogen bond donors have been used to gauge the strength of the hydrogen bonds they form with their guest. However, our work has suggested that the energy penalty associated with binding-induced change in geometry, can also play a huge role. This discovery may be important for designing more effective anionophores in the future.



More information on the Mechanism and Modelling group can be found at
http://www.chemistry.unsw.edu.au/ho-group

TeACHING

Director of Teaching Report

Associate Professor
Jason B. Harper
Director of Teaching

The developments in the School of Chemistry regards teaching in 2017 were significant both in terms of the achievements during the year, but also with respect to the planning for the significant changes that will happen in 2019 with the implementation of UNSW3+.

A first point to note was that our Chemistry majors in the B.Sc. and B.Adv.Sc. programs, along with the B.Med.Chem. program, have been accredited by the Royal Australian Chemical Institute. This accreditation has been amended recently and now focuses on the competencies of our graduates rather than simply the number of hours they spend learning the material. The programs were commended for the depth of content and the fact that the many of our staff teach content into more than one of the traditional disciplines. The report also highlighted the issues associated with the less quantitative threshold learning outcomes (TLOs), particularly teamwork and the contextualising of the material, though did indicate that the way these were developed in the B.Med. Chem. program was to be applauded.

The School's ongoing efforts to introduce a teaching approach which focuses on threshold and mastery knowledge (and links directly to the TLO model indicated above) took a significant step in 2017. With the cooperation of the School of Chemical Engineering, a specialist first year course was undertaken for the first time that used this core knowledge model in the assessment of both the theory and practical components. This project is significant as such a development simplifies final assessment (students have already either completed the threshold material or not, and hence have either passed or failed the course), which is significant moving to the shortened term model, along with being able to assume such knowledge in higher year courses.

Our recent grant successes in the Education sphere have continued in 2017. The School, particularly through the work of Dr Scott Sulway, has been successful as part of a UNSW SEIF (Scientia Education Investment Fund) grant led by Elizabeth Angstmann in the School of Physics, to develop professional development courses for high school teachers and depth studies for high school students. Along with the potential for these courses to be used in a wider Master of Science Education, this clearly has implications for the development of ongoing connections with high school teachers.

The impending move to the UNSW3+ model looms large over every aspect of the University, and teaching in the School of Chemistry is no exception. Along with the necessary identification of dependencies, development of study planners, allocation of courses to terms and discussions of content distribution, the School has been very proactive in ensuring we are well placed moving into the trimester model. These developments have included:

- Initiating new assessment models, particularly for exams, which might be considered to streamline the marks compilation and submission process in the shortened model.
- Pre-emptive consideration of content redistribution, particularly in the laboratories, to enable a smooth transition from the semester to term model.
- Construction of new third year courses that, along with broadening our offerings to senior students and better reflecting our staffing profile, have been specifically designed with the trimester model in mind.

A continued effort on this front will be required in 2018, as the conversion of all courses to a trimester model is undertaken.

First Year Chemsitry

Dr. Luke Hunter

1st Year Coordinator

2017 was a bumper year for 1st year chemistry. The total number of enrolments was 2,598; a new record!

Semester 1:		Semester 2:		Summer semester:	
CHEM1001	78	CHEM1011	419	CHEM1021	115
CHEM1011	530	CHEM1021	386		
CHEM1031	465	CHEM1041	152		
CHEM1051	31	CHEM1061	21		
CHEM1151	38	CHEM1821	61		
CHEM1811	78	CHEM1829	112		
CHEM1831	112				

It's always a massive challenge to deliver a good experience to such a large number of students. It can only be a team effort, and I'm very grateful for the hard work of our Student Support Manager, Steve Yannoulatos; the 1st year laboratory director, Dr Ron Haines; the Head of School, Professor Scott Kable; and our education-focused academics Drs Kim Lapere, Shannan Maisey and Scott Sulway. Not to mention the small army of other lecturers, tutors and demonstrators who all contributed their best. Thank you.

During 2017 we consolidated the "skills assessment" concept in our laboratory classes: this assessment method has now been rolled out across all first year courses. Notably, the lab skills assessment concept is also trickling upwards and has now been embraced in 2nd year chemistry courses too.

Two new 1st year courses (CHEM1811/21: Engineering Chemistry 1A/B) were introduced in 2017. These courses were designed in collaboration with the School of Chemical Engineering, and we envisage that these will become the preferred options for all of our Engineering students in the future.

The teaching and assessment methods in CHEM1811/21 were innovative, and deserve a special mention. We piloted a "threshold / mastery" concept of teaching and assessment for the theory component of these courses, analogous to the "core / non-core" lab skills concept. The "threshold / mastery" approach was very successful: we found that it gave students better feedback on their progress; it reduced student stress by de-weighting the final exam; it gave a high pass rate; and it provided much greater transparency and consistency in students' learning outcomes. Dr Kim Lapere deserves most of the credit for this great success.

Building on the outcomes of the "threshold / mastery" pilot, the School of Chemistry secured a grant of $170,000 from the UNSW Strategic Educational Innovation Fund to implement this concept across all of first year chemistry in 2019. The transition to 3+ is going to be huge.

Honours Program

Associate Professor John Stride

Honours Coordinator

The term 'Honours Program' in the School of Chemistry covers several UNSW undergraduate Programs.

Our Honours cohort includes students enrolled in the (i) Bachelor of Science majoring in Chemistry, (ii) the Bachelor of Advanced Science majoring in Chemistry, (iii) the Bachelor of Science in Medicinal Chemistry, and (iv) the Bachelor of Science in Nanoscience. Students from several other degree programs, such as the Bachelor of Environmental Science majoring in Chemistry, may also enroll in the Bachelor of Science program majoring in Chemistry for Honours.

In the first two 'chemistry' focused degrees, students undertake their entire fourth year in the School of Chemistry. This comprises a research project in collaboration with a member of the academic staff and contemporary chemistry courses delivered by formal lectures. In the 'medicinal chemistry' focused degree, students follow the above but also have a greater interaction with academic staff in the Pharmacology section of the School of Medical Sciences, including collaborative projects.

The BSc Nanoscience students undertake a research project that represents just over 80% of their final year. This is carried out in the School of Chemistry, the School of Physics and/or the School of Materials Science and Engineering, and is supplemented by a number of undergraduate courses taught by these three Schools.

In 2017, thirteen (13) students completed Honours through the Bachelor of Science and Advanced Science BSc Programs, nine (9) completed Honours through the Bachelor of Medicinal Chemistry, with a further five (2 Chemistry, 2 Medicinal Chemistry and 1 Nanoscience) beginning Honours in July 2017. Three (3) students completed their Bachelor of Science in Nanoscience with research projects in the School of Chemistry.

Eric Foley (BSc Adv. Sci.) received a University Medal for outstanding performance across his degree programs. Eric was also awarded the Angyal Prize for the best performance in a Chemistry Honours thesis, David Neale received the Cavill Prize for the best performance in a Medicinal Chemistry Honours thesis and Jimmy Wu won the Nanoscience Prize for the best performance in a Nanoscience Honours thesis.

Postgraduate Research Coordinator

Scientia Professor Martina Stenzel

Postgraduate Research Coordinator

Postgraduate research (HDR) student enrolments continue to grow rapidly in 2017, with 38 new HDR students enrolled over both the sessions. In 2017, the School had 148 PhD and 10 MSc/MPhil students actively enrolled. In addition to the 158 postgraduate students that were enrolled at the end of 2017, 25 PhD and 2 MSc/MPhil submitted and graduated during 2017. Most students completed their thesis in less than 4 years and the school had only two overtime enrolments in 2017.

The students' progress was showcased in various research days from seminars given by first and third year students and poster presentation prepared by second year students. As usual, the best presentations were awarded. In 2017, the awards went to Gulia Oss, Daniel Wenholz and Duyen Nguyen (oral presentation) and Neil Mallo, Matthew Peterson and Janina-Miriam Noy (poster)

Outreach And Marketing Coordinator

Professor Naresh Kumar

Outreach & Marketing Coordinator

The School has been busy in organizing a variety of programs to foster stronger links with high schools and to market School of Chemistry programs to prospective students. Many of our academics, staff and students are actively involved in these efforts, which promote our presence locally and internationally; they also help draw attention to our teaching programs, facilities and research strengths.

The following activities were undertaken in 2017.

UNSW/Matrix Chemistry Practical Day:

UNSW/Matrix Practical Day saw 123 year 12 students, from various local schools, arrive to use our laboratories for practical sessions with tutors from Matrix and UNSW Chemistry. This was a great opportunity to put our school on the radars of self-motivated students.

Email campaign and newsletter to high school teachers:

To bring more high school students on site, we sent out invitations to science teachers who were on our mailing lists from past events. We also promoted school group visits in the Beacon Newsletter that UNSW Science sends to subscribing science teachers.

Science Majors Expo and Postgraduate Information Evening:

We advised undergrad students who were yet to declare their majors at the Science Majors Expos (27 April and 21 September), as well as undergraduate students looking to do postgraduate studies at the Postgraduate Info Evenings (10 May and 11 October).

RACI 100 Reactions in 100 Days:

To support this RACI event, and increase our social media presence, we submitted chemistry videos made by UNSW TV last year to the project.

Titration Competition:

Despite the event growing bigger each year, we hosted both NSW regionals (84 students, 16 June), and the national finals (102 students, 9 September) of the RACI Titration Competition at UNSW. By hosting, we have the opportunity to show off our teaching spaces to ambitious and high-achieving chemistry students.

School visits:

We welcomed >120 senior school students to Chemistry from Sydney Boys High and Matraville Sports High (27 June), Randwick Boys High (20 June), and Orange High School (7 September). Most groups participated in hands-on activities in our teaching labs, others toured our facilities and heard about research activities from our students.

National Science Festival:

This year, we were in hyper-drive for National Science Festival. We set up expos and ran workshops at Australian Museum (8 – 18 August), wowed younger crowds at Science in the Swamp at Centennial Park (12 August), and inspired high school girls attending Women on Mars at the Opera House (18 August).

Participation in the Group visits organised by UNSW Science:

We were again involved in many of the Faculty's outreach events such as Science & Engineering Parent and Student Info Evening (21 March 2017), Onshore Agent training day (5 May), Nura Gili Winter School (4 July 2017), Singapore Republic Polytechnic students (19 September 2017), L'Oréal Girls in Science Forum (01 November 2017), and ASPIRE program.

UNSW Open Day (2 September 2017):

Despite the disruptions around work place change, Open Day was a resounding success. We drew large crowds at our lectures, advisory desks, and our demonstrations in the Chemistry Marquee. Just days later, Alex Soeriyadi travelled to Indonesia for the UNSW Science Race Challenge to engage with year 12 students from 26 schools from all over the country.

Science on the Road:

With a team of student demonstrators, Scott Sulway took Science on the Road again to run expos and workshops for primary and high school students in Dubbo (13-17 November) – an annual event hosted by Australian Museum. Naresh Kumar travelled with the UNSW International India Road Show from 20–25 November.

Alumni engagement:

This year we re-connected with many of our past students for "100 Faces of Chemistry", a project conceived by Martina Stenzel. This powerful marketing tool is now on our school homepage to showcase the varied careers of our alumni – to show prospective students the many different career options available after studying chemistry. We invited some of the alumni we profiled to speak to current and future students – about careers in industry and beyond – at different events including Open Day and Chemistry Prize Giving Evening.

Work Experience:

The Year 10 work experience students shadowed our researchers, asking questions and making videos on 28 November 2017. They edited their videos to explain research in Chemistry, in their own words.

UNSW Info Day:

This year the info day was held on 16 December 2017 so that the academic advisors can speak with students just after they receive their ATAR results – to help them either feel assured that they made the right decisions on their course preferences, or to make changes to their preferences.

Social Media:

We were again active on Social media. Our school Facebook page has close to 3000 followers. Many students and several academics are active on Facebook. Through this activity, people can see that we have pride in our school, and support our colleagues. We also advertised our MedChem and Nanoscience Programs on Facebook.

UNSW Chemical Society

The UNSW Chemical Society assists in the organisation of the School Seminar Series, a weekly program of talks from distinguished academics around Australia and the world. In addition the society organises a number of prestigious, endowed lectureships each year, and in 2017 it played host to the following Lecture series.

The Howard Lectures, 2017:

- **Professor Klaus Muller, ETH Zurich, 6th April 2017**
  Fluorination Patterning: Structural Motifs and Impacts on Properties relevant to Drug Discovery
- **Professor Robert Grubbs (Nobel Laureate), Caltech USA, 31st July 2017**
  Translating Fundamental Science into Products
- **Professor Brad Smith, Universityof Notre Dame, 17th August 2017**
  Synthetic Mimic of Biotin/Avidin Self-Assembly For Optical Imaging and Diagnostics
- **Professor Alan Rowan, Univeristy of QLD, 6th November 2017**
  Catalysis and Motion. Mimicking the Processive Machinery of Life

The Dwyer Lecture, 2017:

- Prof Andrew Gordon, Oxford University, 20th July 2017
  Order, Disorder, Flexibility, Function

The Mellor Lecture, 2017:

- Professor Eric V. Anslyn, University of QLD, 6th November 2017
  Undergraduate Research at the University of Texas, What¹s Unique With Us?

SOCS 2017 Presidents Report

The Students of Chemistry Society has been busy as usual, with a number of student events run alongside several School of Chemistry functions such as poster days, student talk sessions and guest lectures.

The executive were elected (see below) and the planning for the year ahead commenced quickly.

President
Tim Elton

Treasurer
Karin Schaffarczyk-McHale

Secretary
Tom McDonald

Social Coordinator
Alyssa Gilbert

Merchandise
Marwa Rahimi

Arc Representative
Jonathan Ryan

Higher Year Rep.
Adrian Kadribasic

Nano. Rep.
Johanna Wordsworth

The social events for the year followed a traditional setting. The annual SOCS trivia night was a great success. We also hosted more BBQ events than in previous years which were generally well attended and appreciated. A special thank you to Alyssa and JD for being quiz masters.

The biggest event of the year was the SOCS Chem Ball, now in its 15th year! Held in Pyrmont this year, it was a change of pace – yet enjoyed by the whole-school in a great night of celebration. A big thanks to Karin and Alyssa for their efforts in organizing this fantastic event.

Apart from these big-ticket events, SOCS was strongly involved in a number of smaller school events, organising drinks and food for the school research poster day, named lecture series and special seminars, the school End of Year Party and PhD presentations, among other events. In every case, the executive was on hand to provide support and ensure the smooth running of the event.

SOCS has invested in a coffee machine that is available for use for persons who pay a small fee each month. This is currently being run at cost to benefit tired PhD students!

SOCS has continued to play a part in the social life of the School of Chemistry. In facilitating a number of events, it helps to bring a social aspect to the School which is enjoyed by many students. This contributes to the overall enjoyment of chemistry students at UNSW, and makes Chemistry a great department to be a part of.

Thanks must also be given to the School, in particular Prof. Scott Kable, who has been very generous and supportive of SOCS throughout the year. ARC continues to support us as well, providing financial support for several of our events.

Tim Elton
SOCS President 2017

STUDENTS

Undergraduate Student Prizes

Honours Prize Winners

The Angyal Prize
Best performance in Honours Chemistry
Eric Foley

The Cavill Prize
Best performance in Honours Medicinal Chemistry
David Neale

The Nanoscience Honours Prize
Best performance in Honours Nanoscience
Jimmy Wu

Third Year Prize Winners

The E&FJ Cowper Prize in Chemistry
and
School Medal for best performance in Level 3 Chemistry
Albert Fung

Medicinal Chemistry Prize
Best performance in Level 3 Medicinal Chemistry
Albert Fung

The RACI Analytical Chemistry Group Prize
Best performance in Level 3 Analytical Chemistry
Michaela Wong

The University of New South Wales Chemical Society Dwyer Prize
Best performance in Level 3 Inorganic Chemistry
Rebecca Lai

The Inglis Hudson and Jeffery Bequests
Best performance in Level 3 Organic Chemistry
Albert Fung

The Bosworth Prize
and
Medal for best performance in Level 3 Physical Chemistry
Stephen Roche

The University of New South Wales Chemical Society Parke-Pope Prize
Meritorious performance in Level 3 Chemistry Courses
Jin Kato

Second Year Prize Winners

The School of Chemistry Prize
and
School Medal for best performance in Level 2 Chemistry
Thomas Zhou

Howard Prize Level 2 Analytical Chemistry
Thomas Zhou

Howard Prize Level 2 Inorganic Chemistry
Thomas Zhou

Howard Prize Level 2 Organic Chemistry
Nathan Castellino

Howard Prize Level 2 Physical Chemistry
Zane Zhang

The University of New South Wales Chemical Society George Wright Prize
Meritorious performance in Level 2 Chemistry Courses
Lorrie Jacob

Year 10 Prize Winner

The School of Chemistry Prize
For Excellence and Enthusiasm in Chemistry for Year 10 students
Nikki Fang

First Year Prize Winners

The June Griffith Memorial Prize
and
School Medal for best performance in Level 1 Chemistry
Christina Shin

Howard Prize
Chemistry 1A
Ali Alalow

Howard Prize
Chemistry 1B
Christina Shin

Howard Prize
Higher Chemistry 1A
Yan Chan

Howard Prize
Higher Chemistry 1B
Junjun Pan

Howard Prize
Medicinal Chemistry 1A
Jack Bennett

Howard Prize
Medicinal Chemistry 1B
Jack Bennett

The University of New South Wales Chemical Society Prize
Meritorious performance in Level 1 Chemistry Courses
Benjamin Connor

Postgraduate Prize Winner and Scholarships

Don Craig Memorial Prize
For academic excellence in a research project in the area of Crystallography
Matthew Peterson

Paddon- Row Scholarship
For the highest ranked commencing local PhD student
Susannah Brown

Black Scholarship
For the highest ranked commencing international PhD student
Hsiang-Sheng Chen

Teaching Fellows

Jeffrey Black
Laura Buckton
Stephen Butler
James Christian
Aaron Kennedy
Jessica Kho
James Mc Pherson
Jess Onie
Giulia Oss
Kieran Rowell
Jonathon Ryan
Muhammad Zenaidee
.

Postgraduate Student Awards and Prizes

8th International Nanomedicine Conference

- Jonathan Wojciechowksi (Supervisor: Professor Pall Thordarson), Nano award for best 3-minute poster presentation, *"Chemically Programmed Supramolecular Hydrogels".*

10th Australasian Organometallics meeting (OZOM10)

- James McPherson (Supervisor: A/ Prof Stephen B. Colbran), Australian Journal of Chemistry Student Prize, *"Dipyridylpyrrolato anion analogues of terpyridine metal complexes"*

31st Reactive Organometallics Symposium (ROMS 31)

- Surabhi Naik (Supervisor: Professor Les Field) Best student talk, *"Dinuclear Acetylide-bridged Ruthenium Complexes.*

Australian and New Zealand Society for Mass Spectrometry

- Morphy Dumalo (Supervisor: Dr AlexDonald), Best student talk *"Solid-phase microextraction dielectric barrier discharge ionisation for mass spectrometry"*

Australian Institute of Nuclear Science and Engineering

- James Christian, Emily Cheung and Sunny Wang (Supervisor: Dr. Neeraj Sharma), AINSE Postgraduate Student Award – Engineering top-up scholarship & facility access

Royal Australian Chemical Institute (RACI) NSW, 100-Year Anniversary Congress

- Rajesh Kuppusamy (Supervisor: Professor Naresh Kumar), Poster Prize *"Design and synthesis of short amphiphilic cationic peptidomimetics based on biphenyl backbone as antibacterial agents".*
- Genevievve Duche (Supervisor: Professor Pall Thordarson), Poster Prize, *"Designing a topical drug delivery using self-assembled hydrogels in liposomes"*

Royal Australian Chemical Institute (RACI) NSW, Analytical and Environmental Division

- Muhammad Zenaidee (Supervisor: Dr. Alex Donald), Original Research Publication Award, "Highly charged protein ions: the strongest organic acids to date,
- M.A. Zenaidee, M.G. Leeming, F. Zhang, T.T. Funston and W.A. Donald,
- Angewandte Chemie International Edition 2017, 56, 8522-8526

Royal Australian Chemical Institute (RACI) NSW, Natural Products Chemistry Group Annual One-Day Synposium

- Rajesh Kuppusamy (Supervisor: Professor Naresh Kumar), Poster Prize *"Design and synthesis of short amphiphilic cationic peptidomimetics based on biphenyl backbone as antibacterial agents"*

Royal Australian Chemical Institute (RACI) NSW, Research and Development Topics

- Diana Zhang (supervisor: Dr Alex Donald), 1st place talk *"Rapid Chiral Analysis of Amino Acid Enantiomers Using High-Definition High-Field Asymmetric Waveform Ion Mobility Mass Spectrometry"*
- Pathipa Suwannakot (Superviosr: Dr Alex Donald), Best student poster *"Rapid detection of perfluorooctanoic acid at parts-per-quintillion levels in water using metal-organic framework coated microneedles and mass spectrometry"*
- Muhammad Zenaidee, (Supervisor: Dr Alex Donald), Original research Publication Award *"Highly charged protein ions: The most acidic organic species to date"*

Royal Australian Chemical Institute (RACI) NSW, Honours and Masters-by-Research Presentation Evening

- Eric Foley (Supervisor: Dr Alex Donald), 1st place talk *"Probing the Mechanism of Supercharging Proteins in Electrospray Ionisation and Improving Peptide Identification by Mass Spectrometry"*

School of Chemistry – Research Poster Prizes

The four School Poster Prizes were awarded to:

- Catalysis & Industry (John Morris Prize): Tim Elton (Supervisor A/Prof Steve Colbran), *"Organic Hydride Donor Metal Complexes"*
- Energy & Environment (Shimadzu Prize): Richard Ggondosiswanto (Supervisor: A/Prof. Chuan Zhao), *"Salt-on-a-Chip: Miniaturised Ionic Liquids System for Gas Sensing Applications"*
- Medicinal Chemistry (Thermo Fisher Scientific Prize): Jonathon Ryan (Supervior: A/Prof. Jonathan Morris), *"Convergent Syntheses of the Naphthylisoquinoline Alkaloids"*
- Nanoscience (Thermo Fisher Scientific Prize): Huixin Wang (Supervisor: Dr Alex Donald), *"Advanced Mass Spectrometry Methods for Unravelling the Mechanisms of Organophosphate Toxicity"*

Student Conference Presentations 2017

10th Australasian Organometallics Meeting (OZOMN 10), Dunedin, New Zealand, 10th – 13th January

- James McPherson
  Dipyridylpyrrolato anion analogues of terpyridine metal complexes

2nd Metallosupramolecular Symposium, Adelaide, 20th January 2017

- Ena Luis
  Photoactive Supramolecular Building Blocks

Australian X-ray Analytical Association, Melbourne, Australia, February 2017

- James Christian
  Investigating New Electrode Materials for Next Generation Batteries

14th Latin American Conference on Physical Organic Chemistry, Concon, Chile, 7th – 11th May 2017

- Rebecca R. Hawker, Ronald S. Haines and Jason B. Harper
  Ionic liquid effects on organic processes: Can we rationally design a better solvent?

31st Reactive Organometallics Symposium (ROMS 31) Macquarie University, Sydney, 9th June 2017

- Surabhi Naik
  Dinuclear Acetylide-bridged Ruthenium Complexes

21st Annual Green Chemistry and Engineering Conference, Reston, Virginia, USA, 13th – 15th June 2017

- William E.S. Hart
  Mechanistic analysis of lignin fractionation in an ionic liquid through the use of model compounds

72nd International Symposium on Molecular Spectroscopy, University of Illinois, 19th – 23rd June 2017

- Kelvin Lee, Michael McCarthy, John Stanton
  On the Relative Stability of Cumulenone and Aldehyde Isomers: when we HEAT345(Q) Things UP

8th International Nanomedicine Conference, Sydney, Australia, 3rd – 5th July 2017

- Genevieve Duche, Matthew Kearnes, Pall Thordarson
  Assessing the social aspect of a novel drug delivery system used for topical application in aesthetic therapy. A story of collaboration between science and social science
- Y. Yang, S.G. Parker, S. Ciampi, J.J. Gooding
  Light Activated Electrochemistry for Single Cell Isolation and Analysis
- R. Utama, L. Atapattu, A. O'Mahony, J. Ribeiro, M. Kavallaris, J.J. Gooding
  High Throughput Production of Multicellular Spheroid Assays Using 3D Bioprinting
- M. Sriram, S. R. C. Vivekchand, P. R. Nicovich, R. D. Tilley, J.J. Gooding
  Digital biosensors for enhanced disease detection
- R. Pardehkhorram, Y.H. Zheng, P. Bakthavathsalam, R.D. Tilley, N.A. Lee, J.J. Gooding
  Immuno-Gold Nanorods Composite for Food Safety Monitoring

Royal Society of Chemistry Mo0lten Salt Discussion Group Summer Meeting, Nottingham, UK, 5th July 2017

- Karin S, Schaffarczyk McHale, Ronald S. Haines, Jason B. Harper
  Rationalising Reaction Outcomes in Ionic Liquids Through Investigation of Substitution Processes

26th Australia and New Zealand Society for mass Spectrometry Conference, Adelaide, Australia, 16th – 20th July 2017

- Morphy Dumlao
  Solid Phase Microextraction Diectric Barrier Discharge ionisation Mass spectrometry for forensic application
- Hyun Eui Lee
  Capturing reactive high-valent iron(IV)-oxo intermediates of catalytic cycles using theta-capillary nanoelectrospray ionisation mass spectrometry
- Muhammad Zenaidee
  Ion 'supercharging' significantly improves global protein identification in whole-cell protein digests by liquid chromatography tandem mass spectrometry

RACI Centenary Congress, Melbourne, 23rd – 30th July 2017

- Aldilla VR, Nizalapur S, Martin A, Yee E, Thordarson P, Black DStC, Kumar N,
  Novel Glyoxylamide-Based Peptide Mimics As Self-Assembled Gels
- Dobrowolski J, Fraser B, Black, D, Kumar, N,
  A general and efficient synthesis of 5,6 dihydrodibenzo[b,h][1,6]naphthyridines
- James McPherson
  Dipyridylpyrrolato anion analogues of terpyridine metal complexes
- Jonathon Ryan
  Total Synthesis of Ancistrotanzanine A and Ancistrotectorine C
- V.T.G. Tan, D.H.T. Nguyen, R.H. Utama, F. Ercole, J.F. Quinn, M. Kahram, M.R. Whittaker, T.P. Davis, J.J. Gooding,
  Modular Photo Induced Hydrogel via Thiolene Click Chemistry for 3D Cell Cultures
- Sunny Wang
  Modification of Negative Thermal Expansion Materials Via Electrochemical Insertion

- **Jimmy Wu**
  Doping Alkali-metal Layer of $LiCoO_2$ and $Li(Ni_xMn_yCo_z)O_2$, Producing Scaffolded Electrodes
- **Wangfeng Yang**
  Ligament Size-Dependent Electrocatalytic Activity for CO2 Reduction on Nanoporous Ag

68th Annual Meeting of the International Society of Electrochemistry, Rhode Island, USA, 27th August – 1st September 2017

- **Richard Gondosiswanto**
  Salt-on-a-chip: Microcontact Printing of Ionic Liquids for "Membrane-less" and "Spill-less" Gas Sensors

16th European Symposium on Physical Chemistry, Durham, UK, 3rd – 8th September 2017

- **Rebecca R. Hawker, Ronald S. Haines, Jason B. Harper**
  Ionic liquid effects on organic processes: Which one do you choose?
- **Nicholas Konstandaras**
  Correlating structure and reactivity. Electronic and strain effects in a range of systems

Royal Society of Chemistry Molten Salt Discussion Group Summer Meeting, London, UK, 15th September 2017

- **Rebecca R. Hawker, Ronald S. Haines, Jason B. Harper**
  Ionic liquid effects on organic processes: Which one do you choose?

International Conference on BioNano Innovation, University of QLD, 24th – 27th September 2017

- **Fan Chen**
  Light-Sheet microscopy: a tool to reveal nanoparticle penetration in solid tumours
- **Mingxia Lu**
  Enhanced Antimetastatic Activity of the Ruthenium Anticancer Drug RAPTA-C Delivered in Fructose-Coated Micelles
- **Kristel Tjandra, Joshua A. McCarroll, Maria kavallaris, Pall Thordarson**
  Identification and Application of Cell-Targeting Peptide as Drug Carrier
- **Chin Ken Wong, Fan Chen, Alexander F. Mason, Martina Stenzel, Pall Thordarson**
  One polymer, multiple polymersome shapes and sizes – but which has superior cellular uptake properties and tumour penetration ability?

232nd Electrochemistry Society Meeting, National Harbor, USA, 1st – 5th October 2017

- **Damian Goonetilleke**
  Application of operando methods for characterisation of structural evolution in electrochemical systems
- **Junnan Liu**
  Novel Electrode Materials By Modification Route of Negative Thermal Expansion Materials

Harvard-Smithsonian Centre for Astrophysics Postdoc Symposium, 20th October 2017

- **Kelvin Lee, Michael McCarthy**
  Laboratory Measurements and Quantum Chemistry of Astronomical Metal-Bearing Species

RACI Annual Organic Symposium, USYD, 29th November 2017

- **Dobrowolski J, Fraser B, Black, D, Kumar, N,**
  Investigating the nitrogen-heterocyclic analogues of the antimalarial natural product, dependensin

32nd Reactive Organometallics Symposium, (ROMS 32) UNSW, Sydney, December 2017

- **Timothy Elton**
  Organic Hydride Donor Metal Complexes
- **Kenneth K.C. Hong**
  Cationic Complexes To Faciliate Alkane Binding

RACI NSW Organic One-Day Inorganic Chemistry Symposium, Sydney, 29th November 2017

- **Neil Mallo**
  Photochromic switching of Donor-Acceptor Stenhouse Adducts in organic solvents

RACI NSW Research and Development Topics, Hobart, Australia, 3rd – 6th December 2017

- **Muhammad Zenaidee**
  Highly charged protein ions: The most acidic organic species to date

RACI NSW Organic One-Day Organic Chemistry Symposium, USYD, 2nd December 2017

- **Reece Crocker**
  Stimuli Responsive Organic Dyes with Tropylium Chromophore
- **Tom Hawtrey**
  The design and synthesis of potent and selective inhibitors of kinases involved in alternative splicing

Conference Posters 2017

OZOM10, Dunedin, New Zealand, 10th – 13th January 2017

- **Aaron Kennedy**
  Heterometallic Cages from Dinuclear Ruthenium(II) Polypyridyl Complexes

23rd Winter Fluorine Conference, American Chemical Society, Division of Fluorine, Florida, USA, 15th – 20th January 2017

- **Ahmed M. Ahmed, Luke Hunter**
  A flexible, iterative strategy for synthesizing fluorinated bioactive molecules
- **Alexandra Daryl Ariawan, Luke Hunter**
  Exploiting the fluorine gauche effect for applications in medicinal and supramolecular chemistry

Electrochemistry, Pittcon, Chicago USA, 5th – 9th March 2017

- **L. Zarei, M.H. Choudhury, R. Tavallaie, V.R. Gonçales, S. Ciampi, S.G. Parker, J.J. Gooding**
  Fabrication of High-Density DNA Microelectrode Arrays Using Light Activated Electrochemistry
- **R. Piya, J.J. Gooding, P.J. Reece, A.H. Soeriyadi**
  Cell Based Biosensing on Micropatterned Porous Silicon Photonic Crystal: Towards Single Cell Sensing
- **S.M. Silva, R. Tavallaie, D.B. Hibbert, J.J. Gooding**
  DNA Surface Hybridization: Electrochemical Investigation

Gordon Research Conference, Bioorganic Chemistry, New Hampshire, USA, 11th – 16th June 2017

- **Laura K. Buckton**
  Design, synthesis, and biological evaluation of C-terminal heat shock protein 90 inhibitors

19th IUPAB Congress, Edinburgh, UK July 2017

- **Christopher P. Pracey**
  Solution structure of the Mitoxantrone-DNA complex: A NMR and molecular modelling study

12th International Sypmposium on Macrocyclic and Supramolecular Chemistry, Cambridge, UK, 2nd – 6th July 2017

- **Aaron Kennedy**
  Design of Functional Molecular Cages
- **Ena Luis**
  Photoactive cages containing ruthenium(II) polypyridyl metalloligands
- **Hasti Iranmanesh**
  Ruthenium(II) polypyridyl complexes as pH–sensitive photocatalysts
- **Neil Mallo**
  Photochromic switching of Donor-Acceptor Stenhouse Adducts in organic solvents

8th International Nanomedicine Conference, Sydney, Australia, 3rd – 5th July 2017

- **Eric Du, Liyuan Wang, Robert Nordon, Pall Thordarson**
  Self-assembled peptide hydrogels as fully defined 3D cell matrices
- **Geneviève Duché, Matthew Kearnes, Pall Thordarson**
  Encapsulating self-assembled peptide hydrogels in liposomes for drug delivery and aesthetic therapy
- **Abbas Darestani Farahani, Adam Martin, Pall Thordarson**
  The Role of Aromatic Interactions in Self-Assembled Gels: Fluorinated Aromatic Capping Group
- **Michael P. F. Lawler, Adam Martin, Pall Thordarson**
  Peroxide Responsive Bio-mimetic gels as sensors for oxidative cellular stress
- **Holly McEwen, Adam Martin, Pall Thordarson**
  Designing tunable transfection agents using self-assembled short peptides
- **Russul Mamdooh**
  Cellular uptake of polymeric micelles with different loading in 2D and 3D models
- **A.J. McGrath, A.M. Henning, S. Cheong, J.J. Gooding, R.D. Tilley**
  Seed-mediated synthesis of iron nanoparticles for biomedical imaging
- **Alexander Rashleigh, Pall Thordarson, Angela Finch**
  Fluorescently labelled peptides that bind to the complement C5a receptor
- **Kristel Tjandra, Joshua A. McCarroll, Pall Thordarson, Maria Kavallaris**
  Tumour-targeting peptide for cancer therapy
- **Jonathan P. Wojciechowski, Pall Thordarson**
  Chemically Programmed Supramolecular Hydrogels
- **Y.F. Wu, K. Chuah, P.J. Reece, A.P. Micolich, J.J. Gooding**
  Single-Molecule Detection of Proteins Based On Solid-State Nanopore Array Combined With Magnetic Nanoparticles As Capturing Vehicles

22nd International Symposium on Photochemistry and Photophysics of Coordination Compounds, Oxford, UK, 9th – 14th July 2017

- **Aaron Kennedy**
  Design of Functional Molecular Cages
- **Hasti Iranmanesh**
  Ruthenium(II) polypyridyl complexes as pH–sensitive photocatalysts

Warwick Polymer Conference, Warwick, UK, 11th – 14th July 2017

- **Chin Ken Wong, Alexander F. Mason, Martina H. Stenzel, Pall Thordarson**
  Non-spherical polymersomes: Unusual shapes obtained through fine-tuning of p-p stacking interactions

4th EuChMS Inorganic Chemistry Conference, Denmark, 2nd – 6th July 2017

- **L. Ezzedinloo, SB. Colbran**
  New organo-transition metal electrocatalysts for reduction of carbon dioxide

42nd International Conference on Coordination Chemistry, Brest, France, 3rd – 8th July 2017

- **Christopher Barnett, Marcus L. Cole, Jason B. Harper**
  Control of N-Heterocyclic Carbene Properties
- **Kai Buys**
  Using Pincer Ligands to Study s- and p-Block Halides and Hydrides
- **Vera Diachenko**
  The Kinetic Stabilisation of Group 13/14 Complexes with a Super Bulky Diiminopyridine
- **Anthony R. Leverett**
  Exploring thallium organometallic/ organoamide coordination chemistry

GRC – Stress Proteins in Growth, Development and Disease, Maine, USA, 9th – 14th July 2017

- **Jessica Kho**
  Synthesis and mechanistic studies of peptides targetting HSP27
- **Samantha S. Zaiter**
  Using Cyclic Peptides to Modulate the Interaction Between Chaperones and Co-chaperones

Controlled Release Society Annual Meeting, Boston, USA, 16th – 19th July 2017

- **Fan Chen**
  Penetration of protein drug loaded polyion complex micelles on 3D tumor cell spheroid
- **Haiwang Lai**
  Drug Delivery System Based on Prodrug Polymer Functionalized Nanodiamonds

26th Australia and New Zealand Society for mass Spectrometry Conference, Adelaide, Australia, 16th – 20th July 2017

- **Eric Foley**
  New Supercharging Additives for Protein Analysis by Electrospray Ionisation Mass Spectrometry
- **Huixin Wang**
  Advanced Mass Spectrometry Methods for Unravelling the Mechanisms of Organophosphate Toxicity

Controlled Release Society Annual Meeting and Exposition, Seattle, Washington, USA, 17th – 20th July 2017

- **Md. Musfizur Hassan, Pall Thordarson**
  Rational and Strategic Design of Hydrogelators for Controlled Drug Delivery

RACI Centenary Congress, Melbourne, Australia, 23rd – 30th July 2017

- **Almohaywi B, Iskander G, Griffith R, Black DStC, Kumar N,**
  Fimbrolide-based lactams as inhibitors of quorum sensing in Pseudomonas aeruginosa
- **Cameron Dover**
  The excimer in singlet fission is wasting excitons
- **Lisa Djuandhi**
  Investigation of sulfur-rich copolymers as cathode materials in Li-S batteries
- **Timothy Elton, G. Ball, L. Field, SB. Colbran**
  Organic Hydride Donor Ligands: Towards CO2 reduction
- **L. Ezzedinloo, B. Das, A. McSkimming, G. Ball, M. Bhadbhade, SB. Colbran**
  Sustainable Energy Research: i) Ruthenium-Hydride Organohydride Conjugates in Chemical Reduction of CO_2 — Beyond; 2 ii) One Catalyst — Two Reactions
- **Tim Fang**
  Exploiting Metal Impurities in Carbon Nanotubes for the Direct Synthesis of Electroactive Materials
- **Elham Gholizadeh**
  The problem of quenching in photochemical upconversion
- **Alireza Kharazmi, Miranda Shaw, Meredith Jordan, Scott Kable**
  Photochemistry of Propionaldehyde and its impact to the atmosphere
- **Nuraini V, Black D, Kumar N,**
  Novel ring fused flavonoid systems derived from ortho-quinone methides
- **Thomas MacDonlad**
  Photochromic switching of donor-acceptor Stenhouse adducts in organic solvents
- **H. McEwen**
  Designing transfection agents using self-assembling short peptides
- **Keiran N. Rowell, Meredith Jordan, Schott H. Kable**
  Computational studies of non-standard photochemistry for atmospheric simulation

The Page Lectures Symposium, Huddersfield, UK, 27th July 2017

- **Karin S. Schaffarczyk McHale, Ronald S. Haines, Jason B. Harper**
  Towards understanding microscopic interactions in ionic liquids and their effects on S_N2 processes

Associations in Solution IV, Newfoundland, Canada, 31st July – 4th August 2017

- **Jeffrey J. Black, Leigh Aldous and Jason B. Harper:**
  Thermoelectrochemistry for Harvesting Waste Heat

16th European Symposium on Physical Organic Chemsitry, Durham, UK, 3rd – 8th September 2017

- **Karin S. Schaffarczyk McHale, Ronald S. Haines, Jason B. Harper**
  Towards understanding microscopic interactions in ionic liquids and their effects on S_N2 processes
- **Rebecca R. Hawker, Ronald S. Haines, Jason B. Harper**
  The effect of an ionic liquid solvent on two nucleophilic aromatic substitution reactions

Faraday Discussions – Ionic Liquids: from fundamental properties to practical applications, Cambridge, UK, 11th – 13th September 2017

- **Rebecca R. Hawker, Ronald S. Haines, Jason B. Harper**
  Ionic liquid effects on organic reactions: Rationally designing better solvents?
- **Sinead T. Keaveney, Rebecca R. Hawker, William S. Price and Jason B. Harper**
  NMR diffusion measurements to examine solvent–solvent and solvent–solute interactions in mixtures containing ionic liquids

RACI NSW Annual Natural Products Chemistry Symposium, Macquarie University, Sydney, 22nd September 2017

- **Nuraini V, Black D, Kumar N,**
  Synthesis of novel fused ring systems and biarylmethane flavonoids as anticancer agents

2017 International Conference on BioNano Innovation, University of QLD, 24th – 27th September 2017

- **Abbas Darestani, Farahani, Adam D. Martin, Eric Du, Md. Musfizur Hassan, Pall Thordarson**
  Fluorinated Aromatic Capping Groups in Short peptide Hydrogels
- **Geneviève Duché, Pall Thordarson, Matthew Kearnes**
  Using self-assembled peptide hydrogels and liposomes to design a topical drug delivery system

34th International Symposium on Free Radicals, Hayama, Japan, 27th September – 1st October 2017

- **Alireza Kharazmi, Miranda Shaw, Aaron Harrison, Meredith Jordan, Scott Kable**
  Photochemistry of 2-methylbutanal and its impact in the atmosphere

Proteostasis and Disease Symposium, Wollongong, NSW, 20th – 22nd November 2017

- **Laura K. Buckton**
  Design, synthesis, and biological evaluation of C-terminal heat shock protein 90 inhibitors
- **Jessica Kho**
  Synthesis and mechanistic studies of peptides targeting HSP27
- **Marwa N. Rahimi**
  Towards a novel class of Heat Shock Protein 90 (Hsp90) inhibitors: design, synthesis and biological evaluation of cyclic peptides
- **Smantha S. Zaiter**
  A novel class of peptides that inhibit the folding function of heat shock protein 70

ANSTO User Meeting, Melbourne, Australia, 22nd – 24th November 2017

- **Sunny Wang**
  Modification of negative thermal expansion materials via electrochemical ion insertion

4th International Conference on Sodium Batteries, Tokyo, Japan, 28th – 30th November 2017

- **Jennifer Stansby**
  Structural Evolution and Electrochemistry of P2 $Na_{2/3}Mn_{0.9}Ti_{0.05}Fe_{0.05}O_2$

28th Annual RACI NSW Organic One-Day Symposium, Sydney, Australia, 29th November 2017

- **Aldilla VR, Nizalapur S, Martin A, Yee E, Thordarson P, Black DStC, Kumar N,**
  Novel glyoxylamide peptide-mimics based on N-acylisatins as Self-assembled gels for drug delivery of ciprofloxacin
- **Eric Y. Du, Liyuan Wang, Robert Nordon, Pall Thordarson**
  Fine tuning self-assembled peptide hydrogels for fully defined cell matrices
- **Alyssa Gilbert, Ronald S. Haines, Jason B. Harper**
  Identifying ionic liquid effects on an S_N1 process
- **Rebecca R. Hawker, Ronald S. Haines, Jason B. Harper**
  Ionic liquid effects on organic reactions: Rationally designing better solvents?
- **Karin S. Schaffarczyk McHale, Ronald S. Haines, Jason B. Harper**
  Towards understanding microscopic interactions in ionic liquids and their effects on S_N2 processes
- **Nuraini V, Black D, Kumar N,**
  Synthesis of Novel Fused Ring Systems and Biarylmethane Flavonoids as Anticancer Agents
- **Kristel Tjandra, JoshuaA A. McCarroll, Maria Kavallaris, Pall Thordarson**
  Cell-targeting peptide for cancer therapy: From discovery to application
- **Jonathan P. Wojciechowski, Pall Thordarson**
  Chemically Programmed Supramolecular Hydrogels

- **Chin Ken Wong, Alexander F. Mason, Martina H. Stenzel, Pall Thordarson**
  Formation of non-spherical polymersomes driven by hydrophobic directional aromatic perylene interactions

RACI NSW Research and Development Topics, Hobart, Australia, 3rd – 6th December 2017

- **Morphy Dumlao**
  Solid Phase Microextraction Diectric Barrier Discharge ionisation Mass spectrometry for forensic application
- **Panthipa Suwannakot**
  Rapid detection of perfluorooctanoic acid at parts-per-quintillion levels in water using metal-organic framework coated microneedles and mass spectrometry

RACI NSW One-Day Organic Symposium, USYD, December 2017

- **Stephen Butler**
  Using the AAL(S) Scaffold for PP2A activation
- **Stephen Wearmouth**
  Development of selective kinase inhibitors using the variolin B scaffold

First Exciton Science Workshop, University of Melbourne, Parkville, 10th – 13th December 2017

- **Elham Gholizadeh**
  Quenching of upconversion in high concentration of sensitize

Undergraduate and Postgraduate Enrolments

Enrolment statistics 2017

	2011	2012	2013	2014	2015	2016	2017
ENROLMENTS in CORE CHEMISTRY COURSES							
First Year	1966	1966	2445	2117	2506	2237	2,398
Second Year	336	352	340	399	383	384	382
Third Year	102	187	215	219	233	198	202
Level III CHEM electives	80	99	128	137	116	99	103
ENROLMENTS in SERVICE COURSES							
First Year	954	1024	1233	1022	764	649	667
Second Year	275	367	330	350	303	336	368
Third Year	75	67	60	65	48	36	38
Honours	15	29	35	38	36	35	32
POSTGRADUATE RESEARCH STUDENTS							
MSc (Research) Program 2910	6	8	11	8	3	5	10
PhD Program 1870	88	78	88	106	116	157	145

Honours Enrolments

The following Honours students were enrolled during all or part of the 2017 reporting period.

Student	Supervisor
Chemistry Honours Students:	
Kathleen Djohari ($)	Dr. Neeraj Sharma
Lisa Djuandhi	Dr. Vinh Nguyen
Maximo Elias	Prof. Tim Schmidt
Eric Foley	Dr. Alex Donald
Xiaming Fu	Prof. Naresh Kumar
Kenny Liu	A/Prof. Jason Harper
Jordan Lovegrove	Prof. Martina Stenzel
Tara McDonnelll	Prof. Richard Tilley
Holly McEwen	Dr. Adam Martin
Surabhi Naik (*)	Prof. Les Field
Leanne Pak ($)	Dr. Graham Ball
Alexander Sulfaro	Dr. Luke Hunter
Bryan Tang	A/Prof. Chuan Zhao
Sunny Wang	Dr. Neeraj Sharma
Diana Zhang	Dr. Alex Donald

Student	Supervisor
Medicinal Chemistry Honours Students:	
Yen Cheng	Dr. Rob Chapman
Chelsea Forest	Prof. Naresh Kumar
Alice Katen	Prof. Naresh Kumar
Michael Lawler (*)	Prof. Pal Thordarson
Leo Lee	A/Prof. Shelli McAlpine
Francis Li ($)	King's College London (Dr. Leigh Aldous)
Zihao Li	Prof. Martina Stenzel
Kevin Luc ($)	Dr. Vinh Nguyen
Tess Mutton	A/Prof. Jonathan Morris
David Neale	A/Prof. Jonathan Morris
Alexander Rashleigh	Prof. Pall Thordarson
Nanotechnology Honours Students:	
King Foong	A/Prof. Chuan Zhao
Alain Lee ($)	Prof. Scott Kable
Mazin Abdullah Al Maimani (*)	Prof. Richard Tilley
Timothy Snailham	Prof. Richard Tilley
Jimmy Wu	Dr. Neeraj Sharma

* Mid-year entry, July 2016-June 2017

$ Mid-year entry, July 2017-June 2018

Postgraduate Research Enrolments

The following postgraduate research students were enrolled during all or part of the reporting period for 2017

Master of Science by Research (Program MSc2910 & MPhil 2475)

Candidate	Research Area	Supervisor
Mushi HE	NMR Studies of organic photochemical reactive intermediates	Dr G.E. Ball
Precilia HERMANTO	Medicinal Chemisytry	Dr L. Hunter
Yuantao HUO	Medicinal chemistry	A/Prof S.R. McAlpine
Liang JIANG	Surface selective ionization probes for the biochemical analysis on single cells by mass spectrometry	Dr W.A. Donald
Ponhatai KANKAEW	The purity assessment of organic compound by mass balance method compare to quantitative Nuclear Magnetic Resonance (QNMR) method	Dr W.A. Donald
Kecheng LI	Conduction block copolymer for protein delivery	Scientia Prof. M.H. Stenzel
Jordan MASTELLONE	Ion Mobility Mass Spectrometry for Chiral Separations	Dr W.A. Donald
Vidia Afina NURAINI	New heterocyclic systems related to biologically active natural products	Prof. D. Black
Jiaying SU	Investigation into the cellular uptake of soft and hard nano particles	Scientia Prof. M.H. Stenzel
Panthipa SUANNAKOT	Ion Mobility Mass Spectrometry	Dr W.A. Donald

Doctor of Philosophy, Chemistry (Program 1870)

The following postgraduate research students were enrolled during all or part of the reporting period for 2017 and who have not completed or submitted their thesis in 2017

Candidate	Research Area	Supervisor
Jane JUNG	Novel Cytotoxic Agents as DNA-targeted Cancer Therapy"	Dr G.E.Ball
Christopher PRACEY	Studies of drug-DNA interactions using molecular modelling and NMR spectroscopy	Dr G.E.Ball
Thomas MacDONALD	Supramolecular chemistry	Dr J. Beves
Aaron KENNEDY	Metallosupramolecular chemistry	Dr J. Beves
Ena Thea LUIS	Supramolecular chemistry	Dr J. Beves
Hasti IRANMANESH	Photo-gated supramolecular interactions	Dr J. Beves
Neil MALLO	Supramolecular chemistry	Dr J. Beves
Vina Rizki ALDILLA	New heterocyclic systems related to biologically active natural products	Prof. D. Black
Matthew MUDGE	Transition metal chemistry and catalysis	A/Prof. S.B. Colbran
James McPHERSON	Transition metal and lanthanoid chemistry of dipyridylpyrrolato ligands	A/Prof. S.B. Colbran
Timothy ELTON	Small molecule activation organo-transition metal complexes	A/Prof. S.B. Colbran
Lida EEZZEDINLOO	A bio-mimetic approach to chemical reduction	A/Prof. S.B. Colbran
Christopher BARNETT	Development of tools for the predictive application of catalysts	A/Prof. M.L. Cole
Vera DIACHENKO	Heavy metal hydrides.	A/Prof. M.L. Cole

Candidate	Research Area	Supervisor
Anthony LEVERETT	Heavy main group organohydride chemistry	A/Prof. M.L. Cole
Ezaz AHMED	Portable ion detection devices	Dr W.A. Donald
Giang NGUYEN	Protein mass spectrometry and hydrogen deuterium exchange	Dr W.A. Donald
Muhammad BIN ZENAIDEE	Top down protein mass spectroscopy; biophysical chemistry	Dr W.A. Donald
Laura JEFFRESS	Single cell mass spectrometry	Dr W.A. Donald
Huixin WANG	Top - down protein mass spectrometry	Dr W.A. Donald
Peter JURD	Organometallic activation of CO2. Developing new metal complexes for binding, activating and enhancing reactivity of CO2.	Prof. D.L. Field
Seyedyousef ARMAN	Synthesis, Surface Modification and characterization of Magnetic Nano particles for Sensitized Sensors	Scientia Prof. J.J. Gooding
Simone BONACCORSI	Visualising where nanoparticles go in cells	Scientia Prof. J.J. Gooding
Hsiang-Sheng CHEN	Effective Bimetallic Nano-Electrocatalyst: Synthesis and Applications	Scientia Prof. J.J. Gooding
Sharmin HOQUE	Electron transfer studies at electrode surfaces	Scientia Prof. J.J. Gooding
Peter O'MARA	Silicon Nanocrystals for In Vivo Monitoring	Scientia Prof. J.J. Gooding
Wenxian TANG	Biosensor research	Scientia Prof. J.J. Gooding
Thanh VU	Visualising where Nanoparticles go in Cells	Scientia Prof. J.J. Gooding
Yong LU	Developing Nanofabricated Surfaces for Cell Biology and Cell-based Biosensors	Scientia Prof. J.J. Gooding
Fan HAN	Nanomedicine	Scientia Prof. J.J. Gooding
Fida'A ALSHAWAWREH	Immunosensors	Scientia Prof. J.J. Gooding
Manish SRIRAM	Single molecule sensors	Scientia Prof. J.J. Gooding
Ranjana PIYA	Silicon Biosensors	Scientia Prof. J.J. Gooding
Duyen NGUYEN	3D printing of cells	Scientia Prof. J.J. Gooding
Saimon MORAES SILVA	Biosensors	Scientia Prof. J.J. Gooding
Kelly ZONG	Polymeric extracellular matrix	Scientia Prof. J.J. Gooding
Vincent TAN	3D printing of cells	Scientia Prof. J.J. Gooding
Lachlan CARTER	Developing an Quantitative Super Resolution Microscopy Technique	Scientia Prof. J.J. Gooding
Leila ZAREI	Biosensors	Scientia Prof. J.J. Gooding
Manchen ZHAO	Nanomedicine.	Scientia Prof. J.J. Gooding
Sanjun FAN	Modified electrodes	Scientia Prof. J.J. Gooding
Bijan POURYOUSEFIMARKHALI	Comprehensive assessment of graphene - based modified electrochemical sensors for pharmaceutical drugs	Scientia Prof. J.J. Gooding
Raheleh PARDEHKHORRAM	Developing an optical filter (based on Modified Porous Silicon) for detection of phosphoinositide kinases and phosphatases activities	Scientia Prof. J.J. Gooding
Abu SADAT Md. SAYEM RAHMAN	Synthesis of Cu-Au Alloy Nanoparticles for Electrochemical Reduction of CO2	Scientia Prof. J.J. Gooding
Yanfang WU	Surface modification	Scientia Prof. J.J. Gooding
Mehran BOLOURIAN KASHI	Light-activated electrochemistry: Understanding the important variables	Scientia Prof. J.J. Gooding
Mohaddeseh KAHRAM	Electrically switchable polymers	Scientia Prof. J.J. Gooding
Alyssa GILBERT	Investigating the effects of ionic liquids as solvents on reactions involving carbocation intermediates	A/Prof J.B. Harper
Karin SHAFFARCZYK McHALE	Ionic liquid solvent effects	A/Prof J.B. Harper
Nicholas KONSTANDARIS	Correlating structure and reactivity. Electronic and strain effects in a range of systems.	A/Prof J.B. Harper

Candidate	Research Area	Supervisor
Benjamin Boon Yuen LAU	Extraction and depolymerisation of lignin from rice husk using partially hydrated hydroxides.	A/Prof J.B. Harper
Rebecca HAWKER	Controlling reaction outcome through rational selection of the components of an ionic liquid solvent	A/Prof J.B. Harper
William HART	Synthesis and simulation of ionic liquids for biomass applications.	A/Prof J.B. Harper
Jeffrey BLACK	Thermoelectrochemical cells for harvesting waste heat	A/Prof J.B. Harper
Nicole RICHARDSON	Prolyl Hydroxylase Inhibitors: Exploiting the Hypoxia Response for the Treatment of Stroke	Dr L. Hunter
Glen SURJADINATA	Polyfluorinated compounds and their applications in drug development and 18F-radiolabelling	Dr L. Hunter
Gabriella MARCOLIN	Radiolabelled RGD peptides	Dr L. Hunter
Flora MANSOUR	Fluorinated bioactive peptides	Dr L. Hunter
Yuvixza LIZARME SALAS	Towards a treatment for stroke	Dr L. Hunter
Ahmed AHMED	Fluorinated heterocyclic surfactants	Dr L. Hunter
Yun LEUNG	Synthetic organofluorine chemistry	Dr L. Hunter
Catherine Kin Tung AU	Fluorinated analogues of guanidine-containing natural products	Dr L. Hunter
Rasha Saad JWAD	Towards functionalized fluorinated molecules with applications in biology and materials science	Dr L. Hunter
Alexandra ARIAWAN	Fluorinated RGD peptides for tumour imaging and treatment	Dr L. Hunter
Blair WELSH	Vibrationally excited products of roaming reactions in the atmosphere as a novel source of hydroxyl radicals	Prof. S.H. Kable
Callan WILCOX	Contribute to the scientific understanding of Secondary Organic Aerosol aggregation from Volatile Organic Compounds.	Prof. S.H. Kable
Keiran RWOELL	Reaction dynamics of hot roaming products in the atmosphere	Prof. S.H. Kable
Alireza KHARAZMI	Atmospheric chemistry	Prof. S.H. Kable
Tsz YU	Development of new antimicrobial agents	Prof. N. Kumar
Daniel WENJOLZ	Discovery and Development of Novel Bacterial RNA Polymerase Holoenzyme Formation Inhibitors	Prof. N. Kumar
Basmah ALMOHAYWI	Disrupting Chemical Communication in Bacteria: Design and synthesis of Quorum Sensing inhibitors	Prof. N. Kumar
Jeremy DOBROWOLSKI	Novel OCT3 analogues for potential treatment and diagnosis of depression	Prof. N. Kumar
Rajesh KUPPUASMY	Novel peptide mimics for the disruption of chemical communication in bacteria	Prof. N. Kumar
Shashidhar NIZALAPUR	Exploitation of bacterial transcription initiation as a target for new antimicrobials	Prof. N. Kumar
Ming Han Eugene YEE	Synthesis of Novel Flavonoid Hybrids and Development of their Delivery Systems.	Prof. N. Kumar
Samantha ZAITER	Synthesis of heat shock protein inhibitors	A/Prof. S.R. McAlpine
Jessica KHO	Synthesis of heat shock protein inhibitors	A/Prof. S.R. McAlpine
Marwa RAHIMI	Synthesis and biological analysis of Hsp90 C-terminal inhibitors	A/Prof. S.R. McAlpine
Laura BUCKTON	Medicinal chemistry: organic synthesis and evaluation of biological assays	A/Prof. S.R. McAlpine
Yuqi ZHANG	Design, synthesis and biological activity evaluation of novel anti-tumour heterocycle containing cyclic peptide: Marthiapeptide A.	A/Prof. S.R. McAlpine

Candidate	Research Area	Supervisor
Adrian PIETKIEWICZ	Synthesizing macrocyclic peptides from the sanguinamide b and marthiapeptide classes	A/Prof. S.R. McAlpine
Jack DUNCAN	The design of novel RNA splicing kinase inhibitors through computational docking and organic synthetic chemistry.	A/Prof. J.C. Morris
Sunhwa LEE	Synthesis of biologically active natural products	A/Prof. J.C. Morris
Benjamin PETERSON	Organometallic Chemistry and Catalysis	A/Prof. J.C. Morris
Iliya DRAGUTINOVIC	Design of small molecule kinase inhibitors	A/Prof. J.C. Morris
Stephen BUTLER	Synthesis & Biology of PRP4 Kinase Inhibitors	A/Prof. J.C. Morris
Tom HAWTREY	Synthesis of Kinase Inhibitors.	A/Prof. J.C. Morris
Elysha TAYLOR	Synthesis of Biologically Active Compounds	A/Prof. J.C. Morris
Jonathon RYAN	Total synthesis of biologically active natural products	A/Prof. J.C. Morris
Joana Elisa Da ROCHA	Design of kinase inhibitors	A/Prof. J.C. Morris
Stephen WEARMOUTH	Total Synthesis of Natural Products	A/Prof. J.C. Morris
Giulia OSS	Organocatalytic chemistry	Dr V. Nguyen
Mohanad Abdulameer HUSSEIN	Organic Chemistry: Catalytic synthesis and biological activity of polycyclic compounds	Dr V. Nguyen
Demelza LYONS	Organic Chemistry: Organocatalysis and Synthesis of Bioactive Compounds	Dr V. Nguyen
Reece CROCKER	Organic Chemistry: Organocatalysis and Synthesis of Bioactive Compounds	Dr V. Nguyen
Uyen Phuoc Nhat TRAN	Synthetic organic chemistry	Dr V. Nguyen
Cameron DOVER	Exciton dynamics in multiple chromophore materials	Prof. T.W. Schmidt
Elham MORTEZA GHOLIZADEH	Optimisation of interdigitated back contact prototype crystalline silicon solar cells	Prof. T.W. Schmidt
Yu LIU	Spectroscopy and quantum chemistry	Prof. T.W. Schmidt
Emily CHEUNG	Diffusion in Solid Ionic Conductors for Sodium-ion Battery Applications: Structure and Dynamics	Dr N. Sharma
Conrad GILLARD	The development of high performance sodium ion batteries	Dr N. Sharma
Jennifer STANSBY	Solid State Chemistry	Dr N. Sharma
Divya SEHRAWAT	Electrode materials for lithium and sodium ion batteries	Dr N. Sharma
Damian GOONETILLEKE	In situ studies of electrode materials and lithium lanthanum zirconium oxides as solid state electrolytes	Dr N. Sharma
Junnan LIU	New electrode materials for lithium and sodium-ion batteries	Dr N. Sharma
James CHRISTIAN	Carbon-based materials for sodium and magnesium-ion batteries.	Dr N. Sharma
Sylvia GANDA	The synthesis and development of biocompatible and biodegradable carbohydrate-based nanoparticles	Scientia Prof. M.H. Stenzel
Nidhi JOSHI	Study of Nucleic acid based novel polymeric nanostructures for Cancer treatment	Scientia Prof. M.H. Stenzel
Yimeng LI	Nanomaterial for drug delivery	Scientia Prof. M.H. Stenzel
Ahmed MUSTAFA	Light-activated release of anti-cancer drugs	Scientia Prof. M.H. Stenzel
Yiping WANG	Self-assembled block copolymers and their interaction with cells in 2D and 3D	Scientia Prof. M.H. Stenzel
Sandy WONG	Sugar induced self-assembly	Scientia Prof. M.H. Stenzel
You XU	Albumin nanoparticles	Scientia Prof. M.H. Stenzel
Jeaniffer ELIEZAR	Origami with triblock copolymers	Scientia Prof. M.H. Stenzel

Candidate	Research Area	Supervisor
Janina NOY	Development of polymeric nanoparticles for the co - delivery of two anti - cancer drugs for the treatment of sarcoma	Scientia Prof. M.H. Stenzel
Fan CHEN	Development of drug delivery systems for proteins as anti-cancer drugs	Scientia Prof. M.H. Stenzel
Guannan WANG	3D printing of hydrophilic scaffolds via novel photoinitiators	Scientia Prof. M.H. Stenzel
Russul Ridha MAMDOOH	Drug loaded nanoparticles for the treatment of cancer	Scientia Prof. M.H. Stenzel
Mingxia LU	Sugar coated particles for the delivery of ruthenium drugs	Scientia Prof. M.H. Stenzel
Alberto PILONI	Fluorine containing nanoparticles for imaging	Scientia Prof. M.H. Stenzel
Haiwang LAI	Polymer coated nanodiamonds for drug delivery	Scientia Prof. M.H. Stenzel
Cheng CAO	Scattering analysis of Block copolymers	Scientia Prof. M.H. Stenzel
Yee Yee KHINE	Nanoparticles for drug delivery	Scientia Prof. M.H. Stenzel
Catherine ONIE	Gemini surfactants and Janus particles - introducing light-sensitive functionalities	A/Prof. J.A. Stride
Eric DU	Supramolecular chemistry	Prof. P. Thordarson
Genevieve DUCHE	Nanomedicine, self-assembly and peptides	Prof. P. Thordarson
Jonathan WOJCIECHOWSKIi	Supramolecular Chemistry	Prof. P. Thordarson
Chin Ken WONG	Self-assembled FRET-able multifunctional nanocarriers for drug delivery investigations	Prof. P. Thordarson
Andrew ROBINSON	Therapeutic Peptides and Peptide Hydrogelators for Medical Application	Prof. P. Thordarson
Abbas DARESTANI FARAHANI	Self assembled peptide hydrogels for biomedical applications	Prof. P. Thordarson
Kristel TJANDRA	Self-assembly and peptide synthesis	Prof. P. Thordarson
Ali ALINEZHAD CHAMAZKETI	Synthesis of size and shape controlled nanoparticles for steam reforming reaction: Effect of nanoparticles size and shape on catalytic activity	Prof. R. Tilley
Jiaxin LIAN	The solution synthesis and cell capture applications of nanoparticles	Prof. R. Tilley
Munkhshur MYEKHLAI	Ruthenium nanoparticles that mimic enzyme structure for the oxygen evolution reaction (OER).	Prof. R. Tilley
Agus PPERWOPRAJITNO	Ruthenium nanoparticle for oxygen evolution reaction (OER) fuel cell catalysts.	Prof. R. Tilley
Cameron KELLY	Synthesis, characterisation and catalytic properties of Au-Pd nanoparticles	Prof. R. Tilley
William ADAMSON	Hydrogen Fuel Generation from Water Splitting and Fuel Cells	A/Prof. C. Zhao
Karin CHING	Synthesis and Application of Two-Dimensional Materials as Smart Membranes	A/Prof. C. Zhao
Kamran DASTAFKAN	Gadolinium and europium nanophosphors anchored onto gold nanorods / graphene oxide architectures as photoelectrocatalysts for efficient water splitting	A/Prof. C. Zhao
Chen JIA	Electrochemical reduction of carbon dioxide	A/Prof. C. Zhao
Tim FANG	Elctrochemical energy systems	A/Prof. C. Zhao
Xin BO	Electrochemical energy systems	A/Prof. C. Zhao
Richard GONDOSISWANTO	Microfabrication and Understanding of Miniaturised Ionic Liquid Systems for gas sensing.	A/Prof. C. Zhao
Wanfeng YANG	Electrochemical energy conversion and storage	A/Prof. C. Zhao
Mengchen GE	Electro Chemical Energy and Sensors	A/Prof. C. Zhao

Publications & Patents

Dr Graham Edwin Ball

Waterman, M. J.; Nugraha, A. S.; Hendra, R.; Ball, G. E.; Robinson, S. A.; Keller, P. A., "Antarctic Moss Biflavonoids Show High Antioxidant and Ultraviolet-Screening Activity." *J. Nat. Prod.* 2017, *80*, 2224-2231.

Rahaman, A.; Gimbert-Surinach, C.; Ficks, A.; Ball, G. E.; Bhadbhade, M.; Haukka, M.; Higham, L.; Nordlander, E.; Colbran, S. B. "Bridgehead isomer effects in bis(phosphido)-bridged diiron hexacarbonyl proton reduction electrocatalysts" *Dalton Trans*. 2017, *46*, 3207-3222.

Dr Jonathon Beves

S. V. F. Beddoe, A. J. Fitzpatrick, J. R. Price, N. Mallo, J. E. Beves, G. G. Morgan, J. A. Kitchen and T. D. Keene*, A Bridge Too Far: Testing the Limits of Polypyridyl Ligands in Bridging Soluble Subunits of a Coordination Polymer, *Cryst. Grow. Des*., 2017, *17*, 6603–6612.

Y. Zhao, V. Mandadapu, H. Iranmanesh, J. E. Beves and A. I. Day*, The Inheritance Angle: A Determinant for the Number of Members in the Substituted Cucurbit[n]uril Family, *Org. Lett*., 2017, *19*, 4034-4037.

S. Chao, A. D. W. Kennedy, W. A. Donald, A. M. Torres, W. S. Price, J. E. Beves* Self-assembled supramolecular cages containing dinuclear ruthenium(II) polypyridyl complexes, *Inorg. Chim. Acta*, 2017, *458*, 122-128

H. Iranmanesh, K. S. A. Arachchige, W. A. Donald, N. Kyriacou, C. Shen, J. R. Price, J. E. Beves*, Rage against conformity: ruthenium(II) bisterpyridine complexes respond to crystal engineering instructions with whelming results *Aust. J. Chem*., 2017, *70*, 529-537.

Emeritus Professor Roger Bishop

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Professor David St Clair Black

Biswas, N. N., Yu, T. T., Kimyon, Ö., Nizalapur, S., Gardner, C. R., Manefield, M., Griffith, R., Black, D. StC. and Kumar, N., Synthesis of antimicrobial glucosamides as bacterial quorum sensing mechanism inhibitors, *Bioorganic and Medicinal Chemistry,* 25, 1183-1194 (2017).

Nizalapur, S., Kimyon, O., Yee, E., Ho, K., Berry, T., Manefield, M., Cranfield, C. G., Willcox, M., Black, D. StC. and Kumar, N., Amphipathic guanidine-embedded glyoxamide-based peptidomimetics as novel antibacterial agents and biofilm disruptors, *Org. Biomol. Chem.,* 15, 2033-2051 (2017). DOI: 10.1039/c7ob00053g.

Yee, E. M. H., Hook, J. M., Bhadbhade, M., Vittorio, O., Kuchel, R. P., Brandl, M. B., Tilley, R. D., Black, D. StC. and Kumar, N., Preparation, characterization and in vitro biological evaluation of (1:2) phenoxodiol-b-cyclodextrin complex, *Carbohydrate Polymers* 165, 444-454 (2017).

Suryanti, V., Bhadbhade, M., Black, D. StC. and Kumar, N., N-Acetylglyoxylic amide bearing a nitrophenyl group as anion receptors: NMR and X-ray investigations of anion binding and selectivity. *J. Mol. Structure*, 1146, 571-576 (2017).

Nizalapur, S., Ho, K. K. K., Kimyon, O., Yee, E., Bhadbhade, M. T., Manefield, M., Willcox, M. D. P., Black, D. StC. and Kumar, N., (2017) Synthesis and biological evaluation of novel acyclic and cyclic glyoxamide based derivatives as bacterial quorum sensing and biofilm inhibitors, *Org. Biomol. Chem*., 15, 5743-5755 (2017).

Yu, T. T., Nizalapur, S., Ho, K. K. K., Yee, E. M. H., Berry, T., Cranfield, C. G., Willcox, M. D. P., Black, D. StC. and Kumar, N., Design, synthesis and biological evaluation of N-sulfonylphenyl glyoxamide-based antimicrobial peptide mimics as novel antimicrobial agents, *Chemistry Select*, 2, 3452-3461 (2017).

Yee, E. M. H., Brandl, M. B., Black, D. StC., Orazio, V. and Kumar, N., Synthesis of isoflavene-thiosemicarbazole hybrids and evaluation of their anti-tumour activity, *Bioorganic & Medicinal Chemistry Letters*, 27, 2454-2458 (2017).

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Dobrowolski, J., Somphol, K., Santoso, M., Duong, H., Gardner, C. R., Kumar, N. and Black, D. StC., Methanal extrusion in *ipso*-substitution reactions of hydroxymethylindoles, *Aust. J. Chem*., 70, 1188-1195 (2017).

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Dr Robert Chapman, VC Fellow

Chapman R,* Melodia D, Qu JB, Stenzel MH, *Controlled poly(olefin)s via decarboxylation of poly(acrylic acid)*, Polymer Chemistry, 2017, 8, 6636-6643.

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Associate Professor Stephen Boyd Colbran

Das, B., Ezzedinloo, L., Bhadbhade, M., Bucknall, M. P., & Colbran, S. B. (2017). Strategic design of a ruthenium catalyst for both CO2 reduction and H2O oxidation: The electronic influence of the co-ligands. *Chemical Communications*, *53*(72), 10006-10009. doi:10.1039/c7cc06294j

Rahaman, A., Gimbert-Surinach, C., Ficks, A., Ball, G. E., Bhadbhade, M., Haukka, Colbran, S. B. (2017). Bridgehead isomer effects in bis(phosphido)-bridged diiron hexacarbonyl proton reduction electrocatalysts. *Dalton Transactions*, *46*(10), 3207-3222. doi:10.1039/c6dt01494a

Mudge, M., Patel, A. R., Bingul, M., Bhadbhade, M., & Colbran, S. B. (2017). An aryl-bridged dixanthene scaffold for building multinucleating ligands and supramolecular assemblies: Syntheses and structures. *Tetrahedron*, *73*(45), 6401-6409. doi:10.1016/j.tet.2017.09.026

Dr William Alexander Donald

Zenaidee, M. A.; Leeming, M. G.; Zhang, F.; Funston, T. T.; Donald, W. A. Highly charged protein ions: The strongest organic acids to date, Angewandte Chemie International Edition, 2017, 56, 8522-6.

Kabir, K. M. M.; Donald, W. A. Microscale differential ion mobility spectrometry for field deployable chemical analysis, Trends in Analytical Chemistry, 2017, 97, 399-427.

Donor, M. T.; Ewing, S. A.; Zenaidee, M. A.; Donald, W. A.; Prell, J. S.† Extended protein ions are formed by the chain ejection model in chemical supercharging electrospray ionization, Analytical Chemistry, 2017, 89, 5107-14.

Leeming, M. G.; Donald, W. A.; O'Hair, R. A. J. Nontargeted identification of reactive metabolite protein adducts, Analytical Chemistry, 2017, 89, 5748-56.

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Wegeberg, C.; Donald, W. A.; McKenzie, C. J. Noncovalent halogen bonding as a mechanism for gas-phase clustering, Journal of the American Society for Mass Spectrometry, 2017, 28, 2209-16.

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Holly McEwen, Eric Y. Du, Jitendra P. Mata, Pall Thordarson and Adam D. Martin, Tuning hydrogels through metal-based gelation, *Journal of Materials Chemistry B*, 2017, *5*, 9412-9417.

Xiaoyu Cheng, Benjamin F. P. McVey, Andrew B. Robinson, Guillaume Longatte, Peter B. O'Mara, Vincent T. G. Tan, Pall Thordarson, Richard D. Tilley, Katharina Gaus, J. Justin Gooding, Protease sensing using nontoxic silicon dots, *Journal of Biomedical Optics*, 2017, *22*, 087002.

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Associate Professor Chuan Zhao

Book Chapters:

Chuan Zhao, Richard Gondosiswanto, D Brynn Hibbert, Smart Ionic Liquids-based (Editor Ali Eftekhari) "Ionic Liquid Devices", The Royal Society of Chemistry, 2017, Chapter 13, 337-364.

Chuan Zhao, Christian Gunawan, Mengchen Ge, Richard Gondosiswanto, Leigh Aldous, Recent advances in ionic liquid-based gas sensors, (Editor: Mihkel Koel) "Analytical Applications of Ionic Liquids", 2017, Chapter 6, 287-338

Journal Papers:

(2) Jiashen Meng, Xiong Liu, Jiantao Li, Qi Li, Chuan Zhao, Linhan Xu, Xuanpeng Wang, Fang Liu, Wei Yang, Xiaoming Xu, Ziang Liu, Chaojiang Niu, and Liqiang Mai. General oriented synthesis of precise carbon-confined nanostructures by low-pressure vapor superassembly and controlled pyrolysis, Nano Letters, 2017, 17 (12), 7773–7781.

(3) Richard Gondosiswanto, David B Hibbert, Yu Fang, Chuan Zhao*, Ionic Liquid Microstrips Impregnated with Magnetic Nano-stirrers for Sensitive Gas Sensors, ACS Appl. Mater. Interfaces, 2017, 9(49), 43377-43385.

(4) Xin Bo, Yibing Li, Rosalie Hocking, Chuan Zhao*, NiFeCr Hydroxide Holey Nanosheet as Advanced Electrocatalyst for Water Oxidation, ACS Appl. Mater. Interfaces, 2017, 9(47), 41239-41245.

(5) Jingjing Duan, Sheng Chen, Chuan Zhao*, Ultrathin metal-organic framework array for efficient electrocatalytic water splitting. Nature Commun. 2017, 8, 15341. (highlight in MRS Bulletin, 2017, 42(8), 550-551, DOI: https://doi.org/10.1557/mrs.2017.170).

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(9) Jingjing Bai, Qiangqiang Sun, Zenglin Wang, Chuan Zhao*, Electrodeposition of Cobalt Nickel Hydroxide Composite as a High-Efficiency Catalyst for Hydrogen Evolution Reactions, J. Electrochem. Soc., 2017, 164 (9), H587-H592.

(10) Zhanwu Lei, Jingjing Bai, Yibing Li, Zenglin Wang and Chuan Zhao*, Fabrication of Nanoporous Nickel–Iron Hydroxylphosphate Composite as Bifunctional and Reversible Catalyst for Highly Efficient Intermittent Water Splitting, ACS Appl. Mater. Interfaces, 2017, 9 (41), 35837–35846.

(11) Asim Khan, Christian Gunawan, Chuan Zhao*, Oxygen Reduction Reaction in Ionic Liquids: Fundamentals and Applications in Energy and Sensors. ACS Sustainable Chem. Eng., 2017, 5 (5), 3698–3715.

(12) Majid Asnavandi and Chuan Zhao*, Hydrogen bubbles-assisted electrodeposition of metal nanoparticles from protic ionic liquids for electrocatalysis, ACS Sustainable Chem. Eng., 2017, 5(1), 85-89.

(13) Alexander Weremfo, Clara Fong, Asim Khan, D. Brynn Hibber, Chuan Zhao*, Electrochemically roughened nanoporous platinum electrodes for non-enzymatic glucose sensors, Electrochim. Acta, 2017, 231, 20-26.

(14) Moinul H. Choudhury, Simone Ciampi, Xunyu Lu, Mehran Bolourian, Chuan Zhao and J. Justin Gooding, Spatially confined electrochemical activity at a non-patterned semiconductor electrode, Electrochim Acta, 2017, 242, 240–246.

(15) Huiyun Xia, Guanyu Liu, Chuan Zhao, Xiaojuan Meng, Fangfang Li, Fengyan Wang, Li Duan and Huaxin Chen, Fluorescence sensing of amine vapours based on ZnS-supramolecular organogel hybrid films, RSC Adv., 2017, 7, 17264-17270.

(16) Li Han, Xin-Ge Jiang, Tian-Liang Lu, Bai-Shun Wang, Jun Xu, Yu-Zhong Zhan, Jian-Feng Wang, Aditya Rawal, Chuan Zhao, Preparation of composite zeolites in polymer hydrogels and their catalytic performances in the methanol-to-olefin reaction. Fuel Process. Technol., 2017, 165, 87–93.

(17) Xin Bo, Feng Wang, Chuan Zhao*, Template-free bipotentiostatic deposition of thermoelectric BixTey nano arrays, J. Mater. Sci. & Chem. Eng., 2017, 5, 1-7.

(18) Yibing Li, Chuan Zhao*, Two-dimensional NiTe nanosheets anchored on three-dimensional nickel foam as high-performance catalyst for electrochemical water oxidation, Adv. Mater. Lett., 2017, 8(9), 916-921.

Grants and Research Fellowships

AUSTRALIAN RESESARCH COUNCIL

Investigator(s)	$	Project
Discovery Projects		
Prof. SH. Kable, Prof. TW. Schmidt	165,300	Reactive Intermediates in Atmospheric and Combustion Chemistry
Scientia Prof. JJ. Gooding, Prof Ciampi	170,000	Light Activated Electrochemistry: Microelectrode Arrays with just one wire
A/Prof. C. Zhao, Prof. D.B. Hibbert	133,300	Miniaturised Ionic liquid Systems: Design, Electrochemistry and Application
Dr J. Beves, Dr. E. Moore	151,500	Light-driven Supramolecular Reactors
Prof M. Stenzel; Dr A. Walther; Dr C. Garvey	136,800	Origami with triblock copolymers
A/Prof. SB Colbran, Prof. LD Field, Dr GE Ball, Prof. E. Norlander	144,500	Adding hydride punch to transition metal complexes for CO2 electroreduction
Dr W. Alex Donald	100,000	Rapid ultra-sensitive protein structure information by mass spectrometry
A/Prof. C. Zhao	120,000	Three-dimensional, precious-metal-free electrolysis of water
Prof. SH. Kable, A/Prof. M. Jordan, Prof. YP. Lee	170,500	Atmospheric Photochemistry – it's a lot more complicated than we thought
Prof. M Willcox, Prof N. Kumar; Dr C. Cranfield	26,300	Effect of a novel immobilised antimicrobial peptide on bacteria
Prof. MH Stenzel, Dr R Chapman	111,000	Polymeric nanoparticles for enzyme stabilisation **(New)**
Dr GE. Ball, Prof. LD. Field	107,000	Charging transition metals with the task of activating alkanes **(New)**
A/Prof. JC. Morris	120,000	Diene Regenerative Diels-Alder Reactions to Access Chemical Scaffolds **(New)**
Dr N. Sharma	126,000	Scaffolding layered structures to dramatically improve insertion electrodes **(New)**
ARC Laureate Fellowship		
Scientia Prof. JJ. Gooding	260,186	The first generation of single entity measurement tools for analysis
Future Fellowship		
Prof. P. Thordarson,	102,857	Moving Supramolecular Assembly of Functional Systems into Water
Prof. TW. Schmidt	206,244	Nanostructured upconvertors for advanced solar energy harvesting
Dr J. Beves	$762,504	**(New)**
Dr S. Neville	$748,904	**(New)**
A/Prof. C. Zhao	$60, 000	Nanoconfined Ionic Liquids for Electrochemical Reduction of Carbon Dioxide **(New)** **(New)**
ARC Centre of Excellence		
Scientia Prof. JJ. Gooding, Prof. P. Thordarson, et al	318,200	ARC Centre of Excellence in Convergent Bio-Nano Science and Technology
Prof. TW. Schmidt	185,000	ARC Centre of Excellence in Exciton Science
ARC Linkage Program		
M. Willcox, Prof. N. Kumar, N. Cole, N. James	137,150	Novel antimicrobial surface coatings for Cochlear implants
Scientia Prof. JJ. Gooding, Prof. T.P. Davis, Prof. M. Kavallaris	80,000	The development of tuneable materials to allow the three-dimensional printing of cells
Scientia Prof. JJ. Gooding, Prof. R. Tilley	333,000	A gold-coated magnetic nanoparticle biosensor for detecting microRNA
Prof. P. Thordarson, Prof. TW. Schmidt, Prof. R. Tilley, Dr JM. Hodgkiss Dr A. Falber	110,000	Precision luminescent solar concentrators from robust quantum dot arrays
Prof. R. Nordon, Prof P. Thordarson, Prof. L. Bilston	76,000	Scaling manufacture of three-dimensional microstructures for the medical devices industry
Dr N. Sharma	295,000	Instrumentation for Powder X-ray Diffraction under Extreme Conditions

Investigator(s)	$	Project
ARC LIEF: Linkage Infrastructure, Equipment and Facilities Funding		
Dr A. Martin	300,000	An x-ray scattering facility for bulk and interfacial nanostructure
ARC DECRA: Discovery Early Career Researcher Award		
Dr H. Lu	115,000	Nanoparticle uptaking of cell culture grown on micropatterned surfaces
Dr V. Nguyen	120,000	Organocatalysis: A new horizon for synthesis of organic structures
Dr P. Xiao	129,425	Surface coated nanodiamonds as drug delivery carriers and simultaneous imaging
Dr N. Sharma	130,000	A new method to realise zero thermal expansion materials
Dr R. Chapman	142,000	Combinatorial design of multivalent polymers for cell receptor clustering
Dr X. Chen	122,815	**(New)**
Dr C. Medcraft	117,900	**(New)**
Dr Y. Zhong	120,815	**(New)**
ARC Training Centre for Chemical Industries		
A/Prof. SR. McAlpine, et al	42,000	
Dr V. Nguyen	47,000	

NATIONAL HEALTH & MEDICAL RESEARCH COUNCIL

Investigator(s)	$	Project
Dr AH. Soeriyadi	77,359	Peter Doherty Fellowship: Photonic Crystals for Probing Enzyme Activity: Single cells vs Bulk Measurement.
Scientia Prof. JJ. Gooding	185,854	HbA1c biosensor
Scientia Prof. JJ. Gooding, Prof. M. Kavallaris, Prof. T. Davis, Prof. Lock	318,983	Precision nanomedicine-based diagnostics and therapeutics for refractory malignancies
Dr AD. Martin	117,940	NHMRC-ARC Dementia Research Fellowship: Self-assembled hydrogels as a model for neurodegeneration
A/Prof. JC. Morris	125,000	New Drugs to Counteract the Side Effects and Premature Aging Caused by Chemotherapy
Scientia Prof. JJ. Gooding, Prof. M. Kavallaris, Prof. B. Davis et al	1,417,704	Precision nanomedicine-based diagnostics and therapeutics for refractory malignancies
A/Prof. JC. Morris	200,000	Understanding sphingolipid mediators of insulin resistance
A/Prof. JC. Morris	200,000	Targeting nicotinamide adenine dinucleotide biosynthesis to improve metabolism

UNIVERSITY OF NEW SOUTH WALES GRANTS

Investigator(s)	$	Project
Science Faculty Research Grant		
A/Prof. JB. Harper	15,000	Designer solvents to control reaction outcome
Dr L. Hunter	20,000	New selectively-halogenated motifs for drug design
A/Prof. SR. McAlpine	25,000	Designing molecules that impact protein folding: producing new tools to investigate protein folding diseases ranging from Alzheimer's to cancer
Scientia Education Investment Grant Fund		
A/Prof. JB. Harper	45,000	STEM for school teachers
UNSW Research Infrastructure System		
Scientia Prof. MH. Stenzel	115,000	Nanoparticle characterization
A/Prof. C. Zhao	98,884	Hyphenated Nanocarbon Fabrication and Characterisation Facilities
Dr V. Nguyen	146,000	Flow facility for synthesis of bioactive materials
UNSW internal SEIF grant		
Dr SA. Sulway	50,000	STEM for Schools
UNSW Torch Project		
A/Prof. C. Zhao	543,000	3D oxygen electrodes

AUSTRALIAN GRANTS

Investigator(s)	$	Project	Source
Scientia Prof. JJ. Gooding, Chaffey (Panorama Synergy)	88,655	Development of a MEMS based Hydrogen Detector using LumiMEMS	Research Connections Grant
Prof. N. Kumar	25,000	Bone substitute	Australian Industry
Dr N. Sharma	26,288	Electrodes for new battery systems - Phd scholarship	Australian Institute of Nuclear Science and Engineering
A/Prof. JA. Stride	142,509	Environmentally friendly surfactants	Research Connections
Dr N. Sharma	3,000	Structural evolution of positive electrodes in sodium-ion batteries under extreme electrochemical conditions	International Synchrotron Access Program
A/Prof. JA. Stride	50,097	Solving the Energy Roadblock	Science and Industry Endowment Fund
Scientia Prof. JJ. Gooding, Prof B. Eggleton (USyd)	312,500	New South Wales Smart Sensing Network (NSSN)	New South Wales State Government
Prof. N. Kumar	30,000	Cochlear implants	Australian Industry
Prof. N. Kumar	50,000	Novel isoflavone analogues	Australian Pharmaceutical Industry
A/Prof. JC. Morris	59,960	Targeting ceramide synthesis in skeletal muscle to treat insulin resistance - a novel pharmacological approach	Diabetes Australia Research Trust

INTERNATIONAL GRANTS

Investigator(s)	$	Project	Source
A/Prof. JC. Morris	70,000	Design of SRPK1 Inhibitors	EXONATE LTD (UK)
A/Prof. C. Zhao	675,316	3D Oxygen Electrodes	Torch Project
Dr VR. Goncales		Design of multi-metal nanoarrays for optical sensors	Sao Paulo Research Foundation Joint Program (with UNSW)

Industry and Community Interaction

Listed below are the companies, government authorities, societies and educational institutions that academic staff interacted with in 2017.

- Abdul Wali Khan University Mardan, Pakistan
- Allegra Orthopaedics
- ANSTO
- Arizona State University, USA
- Australian Academy of Science
- Australian National University
- Australian Synchrotron
- Australasian Society for Biomaterials and Tissue Engineering
- Australian Wool Testing Authority
- Bannisters Lawyers
- Bragg Institute
- Cambridge University, UK
- Cenre for Marine Bio-Innovations
- Children's Cancer Institute Australia
- CICenergigune, Spain
- Cochlear
- CSIRO
- Curtin University
- Dalhousie University, Canada
- Deakin University
- Department of Customs & Immigration
- Diamond Light Source, UK
- Durham University, UK
- Ettason Pyt Ltd.
- Exonate Pty Ltd
- Fay Rose Legal
- Ferranova Pty Ltd
- Freie University, Germany
- Greyhound Racing (Vic / Tas / NSW)
- Harvard University
- Heriot Watt University
- Institute of Clothing & Textiles, Hong Kong Polytechnic University
- Inventia Life Sciences
- Juelich, Germany
- Killen Lawyers
- King Fahd University of Petroleum and Minerals, Saudi Arabia
- Kohodo Sunshine Energy Pty Ltd.
- Kyoto University, Japan
- Lleaf Pty Ltd.
- Lowy Cancer Research Centre
- Luminoscity Innovations Pty Ltd
- Lund University: Chemicentrum
- Macquarie University
- Manchester University
- Maribor University, Slovenia
- Mark Wainwright Analytical Centre
- McCabes Lawyers
- Metrobiotech UNSW
- Mills Oakley
- Mochtar Riady Institute for Nanotechnology
- Monash University
- National Research Foundation of South Africa
- National Taiwan University
- National University of Singapore
- Northwestern University, USA
- Noxopharm Ltd
- PLuS Alliance
- Prince of Wales Clinical School
- Princeton University, USA
- Qingdao University, China
- Quaid-i-Azam University, Pakistan
- Rodda Lawyers
- Royal Australian Chemical Institute
- RR Medsciences Pty Ltd.
- RWTH Aachen University, Germany
- Salim Agrochemical
- School of Built Environment, UNSW
- School of Chemical Engineering UNSW
- School of Medicine, UNSW
- School of Physics, UNSW
- Shanghai Jiaotong University
- Siloam Hospital
- Stanford University
- Strasbourg University
- Strathclyde University, Glasgow, UK
- Swiss Federal Institute of Technology
- Technical University, Liberec, Czech Republic
- Tokyo Institute of Technology
- University of Adelaide
- University of California, Davis, USA
- University of Kentucky
- University of Leeds
- University of Melbourne
- University of Nancy, France
- University of Newcastle
- University of Oxford, UK
- University of Parma, Italy
- University of Sao Paulo, Brazil
- University of Sydney
- University of Technology, Jordan
- University of Technology, Sydney
- University of Western Australia
- University of Wollongong
- UNSW Torch Precent
- Valance Technologies
- Volvo Group
- Work Integrated Community of Practice
- Xinova
- Yale University
- Yigitaku

EXTERNAL ADVISORY COMMITTEE

External Advisory Committee 2017

The Committee has representatives from our key stakeholder organisations – industry, government, schools and government research institutes. The terms of reference for the committee are as follows:

1. **To appraise the School programs in light of the needs of the School stakeholders (industry, government, schools and research institutions).**
2. **To provide advice about the direction that the School should take to best enhance future interactions with our stakeholders.**
3. **To provide advice about the changing needs of industry, research and government organisations to best prepare the School's graduates for future opportunities.**
4. **To receive and discuss the School of Chemistry's Annual Report.**
5. **To aid the development of the School in any other way possible.**

External Representatives from Industry, Government and Education

Dr. Christopher Armstrong (Chair)
Director, Office of the NSW Chief Scientist and Engineer

Ms Natalie Chapman
Managing Director, genmaker

Mr Dave Sammut
Principal, DCS Technical

Emeritus Prof. Bruce Sutton
Honorary Professor (Agronomy), The University of Sydney

Mr Luke Hanson
Head of Science, SCEGGS Darlinghurst

Ex Officio Members

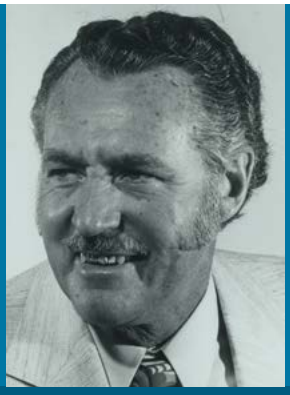
Professor Scott Henderson Kable
Head, School of Chemistry

Professor Pall Thordarson
Director of Research, School of Chemistry

Scientia Prof. Martina Stenzel
Director of Postgraduate Research, School of Chemistry

Associate Professor Jason Harper
Director of Teaching, School of Chemistry

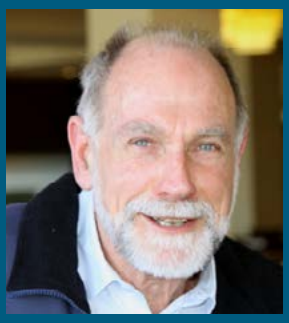
OBITUARIES



Professor Stanley Edward Livingstone

10th October 1920 – 21st June 2017

Professor Stanley Edward Livingstone was Professor of Chemistry at the University of New South Wales 1968-85 and published widely on metal complex (co-ordination) compounds and their physical properties.



Professor Alan Norman Buckley

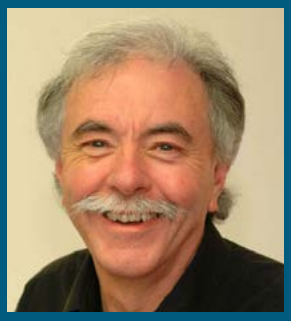
20th February 1944 – 23rd September 2017

After obtaining a PhD in solid-state physics in 1971, Alan carried out research using X-ray photoelectron spectroscopy (XPS) whilst working as a senior Teaching Fellow in Chemistry at Monash University.

On joining CSIRO in 1975, he continued researching applied surface science utilising XPS, and began a long-standing collaboration with electrochemist (and flotation Living Legend) Ron Woods, then at CSIRO in Melbourne, focusing on sulphide mineral processing research. By 1998, Alan had moved from CSIRO to UNSW, where he continued his work on sulphide mineral characterisation by means of XPS.

With a small group of colleagues, Alan was instrumental in the establishment of a soft X-ray spectroscopy facility at the Australian Synchrotron.

Alan leaves a legacy with the School with his partner, Margaret Dalkin establishing the Alan Norman Buckley Prize for Analytical Chemistry to be presented annually to a 2nd year undergraduate student to encourage them to continue a path in chemistry.



Professor Peter John Derrick

7th June 1945 – April 2017

Professor Derrick was a world-renowned expert in mass spectrometry. After being awarded his PhD from Kings College London, Peter commenced his academic career at KTH Royal Institute of Technology in Stockholm, moving on to the University of California, Berkley, Kings College London and La Trobe University in Melbourne before joining UNSW in 1981 as the youngest ever full professor.

He was appointed Professor and Head of Physical Chemistry (1981 – 1987) and later Head of School, School of Chemistry (1985 – 1987). Peter returned to his home country to join the University of Warwick in 1987 as Krastos Research Professor of Mass Spectrometry. After two decades at Warwick Peter moved to New Zealand spending five years at Massey University and four years at the University of Auckland.

Peter was President of the New Zealand Institute of Physics, and a Fellow of theRoyal Society of New Zealand, The New Zealand Institute of Chemistry, The Institute of Physics (UK), The Royal Society of Chemistry (UK), the Royal Australian Chemical Institute (RACI) and the Australian and New Zealand Society for Mass Spectrometry. He was also a member of the American Society for mass Spectrometry.