

## **SCHOOL OF CHEMISTRY – 2022 START OF YEAR NEWSLETTER**

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### **1. MESSAGE FROM HEAD OF SCHOOL**

Dear Alumni,

Happy New Year! 2021 was a challenging year for all of us. The University implemented the Pandemic Reset Program, which has resulted in the loss of valued colleagues. All of this was happening while we introduced a revamped 1st year curriculum for both semester 1 and 2! I want to thank all of our academic and professional staff for working heroically to navigate the challenges of going into lockdowns at short notice. Their dedication to our students has been outstanding. I am proud of the resilience of our staff and students, and this newsletter highlights some of their achievements.

Our teaching and research programs require funding, and staff have continued to seek new opportunities. We have received funding for much needed infrastructure from the faculty and the Australian Research Council, that will benefit a wide range of staff and students within the school. An example highlighted below is the new Chemistry NMR in the Masson building.

Our researchers have received other key funding that underpins their individual research programs. I am delighted that Paul Donnelly, Stacey Rudd, Megan Maher, Gavin Reid, Frances Separovic and Georgie Such were successful in the recent NHMRC Ideas grants round, and Colette Boskovic, Megan Maher and Mark Rizzacasa received funding as part of the ARC Discovery Projects Program. Also impressive is Tash Polyzos' success as part of an ARC Research Hub proposal for Advanced Manufacturing with 2D Materials.

There is plenty of evidence that the research carried out in our School has impact. A powerful example is the chemistry that Paul Donnelly has developed that has recently been licenced to Clarity Pharmaceuticals. It is noteworthy that the launch of Clarity Pharmaceuticals on the ASX this year was the largest biotech launch in the history of the ASX.

I wish you all the best for 2022.

Richard O'Hair

## 2. KEY NEWS STORIES

### Promotions

#### To Full Professor:

Associate Professor Colette Boskovic is a much valued colleague with a deep connection to the School of Chemistry. She was a former undergraduate, Honours and PhD student. Not only is she an outstanding researcher and teacher, but she has shown effective leadership in the promotion of Women in Chemistry. Her presence contributes positively to the School's culture, particularly as a role model for young women. It is worth noting that Colette is only the third female Professor of Chemistry in our School, and the first from the Discipline area of Inorganic Chemistry. Colette's research interests broadly lie in the area of the design, preparation and measurement of the properties of metal-based inorganic molecular materials.

#### To Associate Professor:

**David Jones:** Developing high performance organic electronic materials for large area printed solar cells and other high performance materials.

**Georgina Such:** Blending polymer and materials science and biology with the aim of developing nanomaterials that find applications in biomedicine (e.g. delivery of drugs and vaccines).

**Wallace Wong:** Addresses fundamental scientific problems in the development of materials for emerging technologies in particular the design and synthesis of organic materials with applications in light harvesting and solar energy.

#### Confirmation:

**Associate Professor** Guy Jameson has been confirmed.

#### NHMRC Ideas grants Funding:

Professor Paul Donnelly, Dr. Stacey Rudd

Illumination of Immune Checkpoint Therapy of Cancer: Molecular Imaging of Immunity with Copper Radiopharmaceuticals

Professor Chris McDevitt, Associate Professor Megan Maher, Dr Thorben Cordes, Dr Simon Newstead

Harnessing structural insights to block pneumococcal manganese uptake

Professor Mibel Aguilar, Professor Gavin Reid, Emeritus Professor Frances Separovic, Professor Irene Yarovsky

Pathogenic membranes as therapeutic drug targets

A/Prof Angus Johnston, Dr Georgina Such

Improving therapeutic delivery of RNA

**ARC Discovery Projects funded**

A/Prof Colette Boskovic

Molecular Spin Switching with Earth Abundant Metals

A/Prof Megan Maher

Mechanisms maintaining mitochondrial copper homeostasis

Prof Mark Rizzacasa

Lessons From Nature: Late Stage Oxidation in Total Synthesis

**ARC Research Hub proposal**

Congratulations to Dr Tash Polyzos in gaining an ARC Research Hub proposal for Advanced Manufacturing with 2D Materials (AM2D), funded by the ARC (\$4,379,165.00).

Congratulations to **Paul Donnelly** for his on-going collaboration that has seen several patents licenced to Clarity Pharmaceuticals, that recently listed on the ASX <https://about.unimelb.edu.au/newsroom/news/2021/august/university-welcomes-largest-pure-biotech-ipo-in-asx-history>)

**New Equipment in The Masson Building**

**Chemistry NMR spectrometer (Bruker Ascend 400 MHz ) in Operation**

We are happy to announce the full installation and operation of a new Chemistry NMR in the Masson building. The NMR Bruker Ascend™ 400 MHz Spectrometer equipped with iProbe SmartProbe offers rapid and fully automated acquisition of routine 1D and 2D NMR experiments. This Spectrometer provides solutions for a wide range of research problems and is mainly dedicated to chemistry and chemical engineering researchers. It is also equipped with a control temperature unit to enable measurements at variable temperatures. The autosampler SampleCase has 60 sample holder positions and allows fully automated operation of NMR during the day, night and even weekend. Experiments include 1D:  $^1\text{H}$ ,  $^{11}\text{B}$ ,  $^{13}\text{C}$ ,  $^{19}\text{F}$ ,  $^{31}\text{P}$  and 2D: COSY, HSQC, HMBC.

**3. ARRIVING AND DEPARTING STAFF**

**Departing and Arriving Academic Staff**

[Dr Ivanhoe Leung](#) joined the School of Chemistry as a 'Driving Research Momentum'(DRM) hire in June 2020. Ivanhoe is a Senior Lecturer in Biological Chemistry.



**Dr Christopher Hall** was awarded an Australian Research Council Future Fellowship for his project titled “Electronic-vibrational spectroscopy: A new probe for structure and function”



**Dr John Karas** was awarded an Australian Research Council Discovery Early Career Researcher Award (DECRA). Dr Karas’ project seeks to develop enhanced methods for the chemical assembly of peptides and proteins



**Dr Carol Hua** has successfully completed her McKenzie fellowship and has taken up a continuing position at Deakin University. We wish her all the best for her research and teaching.



**Dr Dan Priebbenow** has taken up a continuing position at the Monash Institute of Pharmaceutical Sciences. We wish him all the best for his research and teaching.



#### **Departing and Arriving Professional Staff**

2021 has certainly been a year of change, with several professional staff members that have arrived and departed this year. It is particularly important to acknowledge the colleagues that have left the School as a result of the Pandemic Reset Program. **Liz Mills** (Client Services Officer), **Rob Ennis-Thomas** (Manager, Teaching Laboratories) and **Greg Ellis** (Technical Officer) have supported the School for many years and their departure has had a significant impact on the School. Other colleagues, such as **Barbara Johnson** (Executive Assistant), have moved to other permanent positions within the University.

As we acknowledge the staff members that have left the School, we also welcome new colleagues that have recently joined us, including **Rosie Tran** (Academic Support Officer) and **Yuliia Velichenko** (Laboratory Technician). We look forward to working with them for years to come.

#### **4. AWARDS, PRIZES and CAREER RECOGNITION**

##### **Royal Australian Chemical Institute HG Smith Memorial Award**

Professor Spencer Williams has been awarded the 2021 HG Smith Memorial Award from the Royal Australian Chemical Institute (RACI). The award recognises 'contribution to the development of some branch of chemical science.' You can watch Spencer describe his award winning research: <https://www.youtube.com/watch?v=JHbtyqBmbg8>

##### **Australian and New Zealand Society for Mass Spectrometry Morrison Medal**

Professor Gavin Reid has been awarded the 2021 Morrison Medal from the Australian and New Zealand Society for Mass Spectrometry ([ANZSMS](#)). The Morrison Medal honours the contributions of Professor Jim Morrison to the development of mass spectrometry in Australia, and is awarded in recognition of 'significant achievements in an area of mass spectrometry'.

##### **Australian and New Zealand Society for Mass Spectrometry ANZSMS Medal**

Professor Richard O'Hair is the recipient of the 2021 ANZSMS Medal from the Australian and New Zealand Society for Mass Spectrometry ([ANZSMS](#)), its highest award. The

ANZSMS medal honours individuals deserving special recognition by reason of their outstanding contributions to knowledge in the biological, chemical, engineering, mathematical, medical, or physical sciences relating directly to the exploitation, application or development of mass spectrometry.

#### **Kaye Merlin Brutton award.**

Dr Stacey Rudd from the Paul Donnelly research group received the Kaye Merlin Brutton award (\$26,186). The Kaye Merlin Brutton Award supports research into cancer, diseases of the liver, ophthalmic diseases (and in particular the neurological aspects of vision) and angina pectoris.

#### **Grimwade Prize in Industrial Chemistry**

Maria (Ines) Gameiro De Sa Almeida (School of Chemistry) and Gabe Da Silva (Chemical Engineering) were jointly awarded the 2020 Grimwade Prize for Industrial Chemistry (\$7,500 each).

#### **Dr Dan Priebbenow nominated by the journal *RSC Medicinal Chemistry* to be a part of their *Emerging Investigators* themed issue**

Dr Dan Priebbenow was recently nominated by the journal *RSC Medicinal Chemistry* to be a part of their *Emerging Investigators* themed issue - a collection of articles which highlights the excellent work carried out by **upcoming members and tomorrow's leaders in the field** of the medicinal chemistry research community. The article he published as part of this issue, which details efforts to develop improved therapeutics for treating multi-drug resistant tuberculosis, can be found

here: <https://pubs.rsc.org/en/content/articlelanding/2021/md/d1md00063b#!divAbstract>

**Dr Lars Goerigk recognised in “Young Investigators” collection.** Dr Lars Goerigk and his group's contributions have been highlighted with an invitation to contribute to Theoretical Chemistry Account's new "Young Investigators" Topical Collection. In their published paper, PhD student Dominique Wappett demonstrated the dos and don'ts in identifying suitable quantum-chemical methods for applications to enzymatically-catalyzed reactions. Hopes are that those new guidelines will inform and improve future applications in this area. <https://link.springer.com/article/10.1007/s00214-021-02770-9#article-info>

#### **2022 Pople Medal awarded to Dr Lars Goerigk**

The Asia-Pacific Association of Theoretical & Computational Chemists (APATCC) awards the 2022 Pople Medal to Dr Lars Goerigk for his contributions to the accurate treatment of ground and excited states with Density Functional Theory and the development of accurate and robust time-dependent double-hybrid density functionals for electronic excitation energies. The Pople Medal—named after the 1998 Nobel Prize in Chemistry laureate, late Sir John A. Pople—is the highest award for a theoretical or computational chemist in the Asia-Pacific under the age of 45. Dr Goerigk is only the third Australian to win this award. He will be formally presented the medal during a plenary lecture at the next APATCC meeting in Vietnam in 2023.

## 5. EXAMPLES OF KEY PUBLICATIONS

Staff and students have continued to be busy during lockdowns, publishing their research. The following papers will give you a flavour of the research being done in the School:

Prof Ken Ghiggino and Dr Fei Zheng's paper on solar efficiency challenges has been featured by several media outlets like PV Magazine and AZO Materials. See news story: <https://excitonscience.com/news/scientists-take-bite-out-solar-efficiency-challenge-sandwich-model>.

Associate Professor Megan Maher had a recent paper published in the Journal Science Advances (<https://pubmed.ncbi.nlm.nih.gov/34362732/>). There was an article in Pursuit and in the Herald sun about this work: <https://pursuit.unimelb.edu.au/articles/starving-the-bacterium-that-causes-pneumonia> and was also highlighted by the Stanford Linear Accelerator Centre, where the X-ray data was collected <https://www6.slac.stanford.edu/news/2021-08-30-closing-gate-manganese-could-open-doors-new-drugs-treat-pneumonia.aspx>

Professor Trevor Smith's group published a paper in Nature Materials. W. Mao, C.R. Hall, S. Bernardi, A. Widmer-Cooper, T.A. Smith and U. Bach, "Light-Induced Reversal of Ion-Segregation in Mixed-Halide Perovskites", Nature Materials, 20, 55–61 (2021) <https://www.nature.com/articles/s41563-020-00826-y>

A paper published by Professor Gavin Reid's group was selected as the cover article for the Oct. 2021 issue of the Journal of the American Society for Mass Spectrometry. West, H., Fitzgerald, J., Hopkins, K., Li, E., Clark, N., Tzanetis, S., Greene, S.L., Reid, G.E. (2021) Early Warning System for Illicit Drug Use at Large Public Events: Trace Residue Analysis of Discarded Drug Packaging Samples. *J. Am. Soc. Mass Spectrom.* 32, 2604-2614. <https://pubs.acs.org/doi/10.1021/jasms.1c00232>

## 6. ARC ITTC Update

The [ARC Training Centre for the Chemical Industries](#) is led by the School of Chemistry, in collaboration with the University of NSW and Swinburne. The Training Centre aims to foster opportunities for researchers and post-graduate candidates to engage deeply with industry.

The major vehicle for achieving great engagement is the [Master of Industrial Research](#) – a research training programme which involves 12 to 18 months conducting an R&D project led by the industry partner, typically performed at the industry site, and coursework designed to enhance graduate's employability. We are very proud of our 25 students, 5 of whom have completed to date, and grateful to our 16 industry partners for the opportunities that they provide.



Subharthe Samandra is one example of our Masters candidates. Subha, under the supervision of [Dr Brad Clarke](#), and working at [Eurofins](#), has developed a [robust methodology for measuring microplastics from environmental samples](#). It's difficult to manage microplastics in the environment when there is no scientific consensus on measurement methods. The team hope that this work will help standardise the approach to this global problem.

## 7. STUDENT SUCCESSES

### **Student Awards Night:**

The Annual School of Chemistry Student Awards ceremony was held online, on Thursday 21<sup>st</sup> October, hosted by HoS, Prof Richard O'Hair, Dr. Brad Clarke, Cat Thomson and Madie Nuske. Students, staff, and donors from Dulux, Agilent and Indorama joined in to celebrate the outstanding achievements of the School of Chemistry students and staff in 2020. Congratulations to all the recipients below:

**Jiyuan YU** - The Dwight Prize

**Julia Dam** - Exhibition Prize in 1st Year Chemistry

**Raelynn Tong** - The Charles Anthony Taylor Prize and The Indorama Ventures Prize

**Janelle Spinks** - The J.S. Anderson Prize and The James Cuming Memorial Scholarship

**Adam Stewart** - The James Cuming Memorial Scholarship, Agilent Award for Excellence and Dulux Prize

**Fan Yang** - Dr Rex Williamson and Family Scholarship and The Fred Walker Scholarship

**Edgar White Buengar** - The Ronald Riseborough Prize

**Hannah Ryan and Yijun Xiong** - The Dixson Research Scholarship

**Jett Janetzki** - The Professor Kernot Research Scholarship & The Stanley Harvey and Prize and Best First Year Demonstrator

**Nikolai Rossouw** - The Andrew Kirby Award for Research Excellence

**Sadegh Shabani** – The Monica Elizabeth Reum Memorial Prize

**Sioe See Volaric** - Laboratory Professional Staff Award

**Howard Ha** - Best Second Year Demonstrator



**Maya Dunstan** - Best Third Year Demonstrator

### **RACI Inorganic Chemistry Division Conference**

The RACI Inorganic Division meeting was held the week of July 5<sup>th</sup> and three students from the School of Chemistry won awards. Congratulations to PhD student **Maja Dunstan** from the Boskovic Group, who won a prestigious Don Stranks Award; MSc students **Shannon Thoonen** from the Hua Group and **Vincent Nadurata** from the Boskovic Group, who won poster prizes.

## **8. PHD STUDENT COMPLETIONS**

Congratulations to the following students for passing the examinations and successfully completing all requirements for the PhD degree.

**Martin van Koeeverden** (Abrahams Group) for submitting his thesis entitled “The Synthesis, Structure and Properties of Anionic Metal–Tetraoxolene Coordination Polymers”.

**Lee Chong** (White Group) for submitting his thesis entitled “ Synthesis and Testing of diaryl sulphide based Fluorine-18 Radiotracers for Positron Emission Tomography of Hypoxic Tumours.

**Giel Muller** (Bieske Group), for submitting his thesis entitled “Electronic spectroscopy of small carbocations” and recently passing the examinations and successfully completing all requirements for the PhD degree.

**Fidelis Nitti** (Kolev Group), for submitting his thesis entitled “Development of flow-through devices for passive sampling of zinc(II) in aquatic systems free from environmental effects” and recently passing the examinations successfully.

**Tyra Horngren** (Polyzos Group), for submitting her thesis entitled “C-H and C=C Bond Functionalisation Mediated by Visible Light Catalysis”.

**Jared Ashtree** (Soncini Group), for submitting their thesis entitled “Magnetisation & Transport Dynamics of Nanomagnets with Toroidal Ground States”.

**Rachana Pathak** (Ashok’s Group), for submitting their thesis entitled “The effects of ultrasound on the molecular, structural and nutritional aspects of dairy proteins”.

**Thomas Fellows** (White Group) for submitting their thesis entitled “Investigations into Chalcogen Bonding”.

**Asim Najibi** (Goerigk Group) for submitting his thesis entitled “Finding the Best Ingredients of Density Functional Approximations for Ground-state Molecular Chemistry”.

**Reza Tondfekr** (Wedd Group) for submitting their thesis entitled “Molecular characterization of the ATP7A protein and selected mutants”.

**Shiying Zhu** (Separovic Group) for submitting their thesis entitled “In-cell Structure Determination of an Antimicrobial Peptide by DNP solid-state NMR”.

**Nisha Mehta** (Goerigk group) for submitting their thesis entitled “Exploring the applicability of Density Functional Theory approximations”.

**Marcos Casanova Pérez** (Goerigk group) for submitting their thesis entitled “Development and Assessment of new Time-Dependent Long-Range Corrected Double-Hybrid Density Functionals for Excited States”.

**Riley O'Shea** (Wong Group) for submitting their thesis entitled “Triplet-triplet annihilation with polymer emitters”.

**Jose Firni** (Polyzos Group) for submitting their thesis entitled “Visible-Light Promoted Carbonylation of Unactivated Alkyl Halides and Inert C(sp<sup>3</sup>)-H Bonds in Continuous Flow”.

**Heyou Zhang** (Mulvaney Group) for submitting their thesis entitled “Direct Assembly of Single Nanocrystal Arrays”.

## 9. THE MASSON FUND FOR CHEMISTRY

The Masson Fund was launched in 2018. Since its inception we have received a total of nearly \$160,000 in donations. The School thanks all of the donors including those who have wished to remain anonymous.

Through the Masson Fund, you can support research, teaching and engagement activities in chemistry. Whether by supporting scholarships, positions, research projects, or the purchase of equipment, you can advance the cause of the chemical sciences.

An example of how we will use the income generated from this fund is via the Masson Prize for the best PhD thesis, which will be awarded for the first time in 2022.

[Learn more and support](#)

## 10. IN MEMORIAM

**The School of Chemistry remembers staff and other people that have passed away in recent years and had significant impact on the school.**

**Jennifer Scott (July, 2018)**

It was with great sadness that the School lost Jennifer Scott in 2018. Jenny joined the School in 1976 as a teaching laboratory technician, managed the inorganic and analytical teaching laboratories for several years from 1988, and then in 1998 was appointed to manage and coordinate general staff in all the teaching laboratories as well as run the student work experience program.

We remember Jennifer for her enormous contributions to our teaching program, the loyalty and affection she had for her colleagues, her straightforward manner, and her good humour. Jennifer retired from the School in 2016, leaving full of energy and optimism.

The School has been given approval to name our the first-year teaching laboratory in Chemistry, the “Jennifer Scott Laboratory” and we will have an opening ceremony in 2022 to celebrate her many contributions to the School.

#### **Dr Robert Craig (March, 2020)**

It was with sadness that we heard about the passing of a former member of the School, Robert (Bob) Craig in March 2020. Bob was appointed in 1950 as a Senior Demonstrator in Physical and Inorganic Chemistry, formally retired 1992 as a Senior Lecturer but was an Honorary in the School for many years after that. He was Chair of the Department of Physical Chemistry in 1980-81. Bob was a meticulous lecturer, and a generous and supportive colleague who was closely involved in developing our on-line learning resources. Bob will be remembered as a smart, kind man with a persistent curiosity and dry sense of humour.

#### **Richard Harcourt (April, 2020)**

It was with sadness that we heard about the passing of a former member of the School, Richard (Dick) Harcourt, in April 2020. Dick was a long-time member of the School, having been a student and then a member of the academic staff since 1963. He commenced his PhD studies at Melbourne, then transferred with his supervisor Professor Ron Brown when Ron became the Foundation Professor of Chemistry at Monash University. His PhD thesis, awarded in 1963, was on topic “Molecular Orbital Studies of Heterocyclic and Inorganic Systems” and required him to use the C.S.I.R.A.C. computer, which was Australia's first digital computer, and the fifth stored program computer in the world. He was the first student to be awarded the PhD degree from Monash University. It was a distinction of which he was very proud.

Dick became one of the world's experts on valence bond theory, having published more than 200 papers in international journals. His book “Bonding in Electron-Rich Molecules” was published in 2 editions, the most recent appearing in 2016. Dick retired from the School of Chemistry in 1993 but remained active with his research and continued to publish as an Honorary. Overall, he was a productive contributor to chemistry, publishing articles from 1959 until 2018 – a remarkable span of 60 years! Dick's expertise in theory assisted generations of students and he was well known for his anecdotes on sport, weather and life in general. Dick was a passionate supporter of the St Kilda football club

and confessed that his tense attachment almost prevented him from watching or listening to games.

Dick was a fan of “Dame Edna” – I remember him returning to the School from one of her visits to Melbourne, where she regaled the crowd at the townhall. Dick was beaming and clutching a gladioli - he was one of the chosen few.

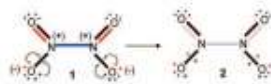
### Richard (Dick) David Harcourt (1931–2020)

#### Developer of increased valence bond theory

It is a great, though sad, honour to write an obituary for Dr Richard David Harcourt, School of Chemistry, University of Melbourne. He passed away at Epworth Hospital in Richmond, Victoria, on Thursday 8 April 2020. He was 88.

In 1953, Dick gained a PhD from Monash University, becoming Monash University's first PhD graduate. From 1962 to 1964, he was a postdoctoral fellow in the School of Chemistry at the University of Melbourne, before moving to the Department of Physical Chemistry in 1965, where he was first a lecturer (until 1968) and then senior lecturer.

Late in 1959, Dr Brown (subsequently Foundation Professor of Chemistry at Monash University) suggested that Dick should test a theory proposed by others to explain why the chemical bond between the two nitrogen atoms of  $\text{D}_2\text{N}-\text{ND}_2$  (dinitrogen tetroxide) was long and weak. From that day onwards,  $\text{ND}_2$  and its dimer  $\text{N}_2\text{D}_4$  became Dick's favourite molecules, and with which he worked on and off for nearly 60 years:



I had been following Dick's scientific work in theoretical chemistry before we met personally for the first time in Glasgow, UK, in 1996. I subsequently visited him in 1998 at the University of Melbourne for six weeks, where I stayed for a substantial as a William fellow. During these six weeks, I learned a lot about theoretical chemistry from Dick in a very productive and enjoyable time. In the following years, we also published approximately 30 scientific papers together, and a book on quantum chemistry – *Quantum chemical methods in main-group chemistry* (Wiley, 1998).

Theoretical quantum chemistry can be divided into molecular orbital theory and valence bond theory. Although the two methods in their parent and absolute form produce identical results when describing the chemical bond, the first one is more popular among computational chemists nowadays because of the easier mathematical algorithms. Despite this, Dick developed valence bond theory further and introduced the theory of increased valence bond (‘increased valence theory’ or ‘increased valence bond theory’). This novel theory within the valence bond concept offers chemists a theoretically sound concept to understand chemical bonding qualitatively and quantitatively. The beauty of increased valence bond theory is that it offers both a pictorial approach to the complex world of the chemical bond (one could say: ‘a picture is worth a thousand words’) and a physically correct description of the electronic structures of molecules in terms of wave-functions.



Portrait of Dr R.D. Harcourt, drawn by his granddaughter Alex.

This new concept was developed and introduced by Dick and he often referred to it as the ‘primitive patterns of understanding’. His work has been published in numerous peer-reviewed publications, including international scientific journals, a book (*Qualitative valence-bond descriptions of electron-rich molecules*) and several book chapters (e.g. doi.org/10.1016/S1380-7323(07)80015-9).

Dick's increased valence bond theory has also found its way into many general chemistry textbooks (e.g. E. Hecht, *Modern Atomistische Chemie*, 3rd edn, de Gruyter, 2007) and undergraduate teaching. At my university (Ludwig-Maximilians-University of Munich), we teach increased valence bond theory both at undergraduate (‘primitive patterns of understanding’) and graduate levels (wavefunctions for increased valence bond structures).

In addition to Dick's outstanding contribution to valence bond theory, he also contributed Bohr-Orbit descriptions and electronic energy transfer studies to modern physical/theoretical chemistry.

Dick published more than 175 peer-reviewed papers in international scientific journals, many as the sole author. Australia in general and the University of Melbourne in particular are fortunate to have had Dick for so many years as a great and world-wide known scientist. Dick's contributions to physical sciences, particularly his life-time achievement of the development of increased valence bond theory will continue to benefit generations to come.

Dick will be missed by all of us.

Professor Dr Thomas N. Hoepfner, Melbourne, Ohio (June 2020)

### Dr Alan Casey passed (May, 2020)

It was with sadness that we heard about the passing of another former staff member of the School, Allan Casey in May 2020.

Allan was appointed as a Senior Demonstrator (Inorganic and Physical Chemistry) in 1958, promoted to Senior Lecturer in 1962, and retired in 1992. Allan was a graduate of the University of Manitoba (BSc) and University of British Columbia (MSc), and completed a PhD in Cambridge with the radiochemist Alfred Maddock. Allan's research interests included transition metal compounds, magnetic susceptibility measurements, and electrochemical synthesis of coordination compounds. He is remembered as an enthusiastic and conscientious teacher and research supervisor.

Allan's rather remarkable road to a career in Chemistry, which included chemistry experiments in the basement at home and a job with the Canadian government that

involved measuring the earth's magnetic field in the Arctic while living in an ionospheric radio station can be read in a recent interview (see: <https://www.graduatehouse.com.au/wp-content/uploads/2018/12/The-Melbourne-Graduate-December-2018-online-version.pdf>).

**Dr Ian Bassett (August, 2021)**

Ian Bassett, the grandson of Professor Sir David Orme Masson, passed away on 27<sup>th</sup> August 2021. From Selleck's book "Finding Home: The Masson Family" we learn that:

*"Ian, who was four years younger than Jenny, followed a different course. He was educated at Geelong Grammar School at Corio, Victoria. After completing his schooling and attending the National Gallery of Victoria Art School, he studied science at the University of Melbourne, majoring as was appropriate for a grandson of Orme Masson, in chemistry. In 1959 he completed a PhD in that field of study.*

*Ian took his family with him when we went to the United States to do post-doctoral work at the University of Illinois. They then moved to New York where he worked at the IBM Watson laboratory at Columbia University. In the early 1960s Ian was awarded a Nuffield Dominion Traveling Fellowship which enable him to research for three years in the Physics Department and the University of Bristol, which had attracted a distinguished group of research scientists including Robert Hanbury Brown Bernard Mills (radio astronomy), and Robert May (chaos theory). In the 1970's and 1980's Ian's research in thermodynamics and optics led to his election to a Fellowship in the Optical Society of America."*