

Celebrating RACI and Academy of Science Awards

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Since 2013, *Aust. J. Chem.* has published an annual issue of invited papers showcasing the winners of awards, prizes, and medals from the Royal Australian Chemical Institute (RACI) and the Australian Academy of Science. In this November issue, we are pleased to publish 10 such papers from the 2016–2017 awardees.

Mark Buntine (Curtin University), a past president of the RACI, was awarded the prestigious Leighton Memorial Medal. In a paper written with co-workers at Curtin, including Max Massi, the winner of the Organometallic Chemistry Award, the laser-based formation of copper nanoparticles (CuNPs) is described. The presence of N-donor ligands results in changes in the nanoparticle optical properties and particle size distributions, depending upon the nature of the donor ligands. The kinetics of formation of the CuNPs are found to be independent of the nature of the donor ligand.^[1]

Joe Shapter (Flinders University) received the Fensham Medal for Outstanding Contribution to Chemical Education, and reports with co-workers at Flinders and Queensland University of Technology on applications of new hole transporting materials as the interlayer in graphene oxide/single-wall carbon nanotube heterojunctions, resulting in better performance of solar cells.^[2]

W. Alexander Donald (UNSW), the recipient of the 2016 RACI Physical Chemistry Division Lectureship and the 2016 RACI Analytical and Environmental Chemistry Division Peter W. Alexander Medal, reports with colleagues at The University of Melbourne and Accurate Mass Scientific, Victoria, that the portable dielectric barrier discharge ionisation in a plasma-based ion source for mass spectrometry is significantly softer than in more widely-used plasma-based ionisation sources. This is important for the detection of intact molecules with thermolabile bonds, such as many explosives, and some chemical weapons and organic pollutants.^[3]

Jason L. Dutton (La Trobe University) was the recipient of the Inorganic Division's 2016 Alan Sargeson Lectureship. With M. Albayer, he describes reactions of classic iridium and rhodium complexes with iodine(III) oxidants, which result in two-electron oxidation. Ligand exchange and anion scrambling were observed in monodentate ligand-containing complexes, but I^{III} reagents reacted with chelating ligand-containing complexes without scrambling, so well-defined complexes could be isolated.^[4]

Deanna D'Alessandro (The University of Sydney) is the recipient of the 2017 Australian Academy of Science Le Fèvre Memorial Prize as well as the Inorganic Division's 2017 Alan Sargeson Lectureship. She reports on a coordination framework containing the novel photoactive azobenzene derivative, 5-((4-*tert*-butyl)phenylazo)isophthalic acid, which displays light-dependent spectroscopic properties.^[5]

Carol Hua, formerly a Ph.D. student at the University of Sydney and now a post-doc at Northwestern University, USA, won the 2016 RACI Cornforth Award for the best Ph.D. thesis. The paper on redox-state dependent spectral properties of porous organic polymers containing furan, thiophene, and selenophene is based on her Ph.D. work with Deanna D'Alessandro. Redox-active porous organic polymers with heterocyclic linkers (furan, thiophene, and selenophene) were synthesised, and their electronic and spectral properties investigated as a function of redox state. Through the use of electron paramagnetic resonance (EPR) spectro-electrochemistry, it was found that the distinct redox states in these polymers could be accessed reversibly.^[6]

Tom Davis (Monash University and University of Warwick, UK) was awarded the Polymer Division's Batteard-Jordan Australian Polymer Medal for 2016. He reports on the synthesis of star polymers by RAFT polymerisation and their use as versatile nanoparticles with an emphasis on biomedical applications.^[7]



Curt Wentrup was educated at the University of Copenhagen (Cand. Scient. 1966; D.Sc. 1976) and the Australian National University (Ph.D. 1969). After post-doctoral periods with Hans Dahn (Lausanne), W. M. Jones (Gainesville, FL) and Maitland Jones, Jr (Princeton), he held junior positions at the Université de Lausanne, Switzerland, and a professorship at the Universität Marburg, Germany, before returning to Australia in 1985 as Professor and Chair of Organic Chemistry and head of the organic chemistry section at the University of Queensland, where he is now Emeritus Professor. He has published nearly 500 research papers, reviews, and books on reactive intermediates and unusual molecules, and is still highly active in international research collaborations. He is a Fellow of the Australian Academy of Science and a recipient of the Centenary Medal of the Australian Commonwealth for research in organic and physical chemistry, the David Craig Medal of the Australian Academy of Science for research in chemistry, the Arthur Birch Medal of the Royal Australian Chemical Institute for excellence in organic chemistry, and an honorary doctorate from the Université de Pau, France.

David StC. Black (UNSW) is the 2017 winner of the David Craig Medal of the Australian Academy of Science and contributes two research papers, the first on 3-hydroxymethylindoles, which undergo acid-catalysed reactions involving *ipso*-electrophilic substitution with the extrusion of formaldehyde and the formation of diindolylmethanes. Both inter- and intramolecular processes lead to macrocyclic compounds.^[8] The second paper describes the construction of 21-membered macro-heterocycles containing three indole units linked through imine and amine moieties.^[9]

Michela Mitchell (Monash University) won an Early Career Investigator Award and best student oration at the 2016 RACI Peptide User Group Winter Symposium. Together with co-workers at Monash, The University of Queensland, and the Walter and Eliza Hall Institute of Research, she contributes a focus article on a new technique: the use of imaging mass spectrometry to study peptide toxin distribution in Australian sea anemones.^[10]

This collection of papers reflects both the calibre and the diversity of research in the authors' laboratories. We trust that you will enjoy reading these articles.

References

- [1] A. J. Mulder, R. D. Tilbury, P. J. Wright, T. Becker, M. Massi, M. A. Buntine, *Aust. J. Chem.* **2017**, *70*, 1212. doi:[10.1071/CH17363](https://doi.org/10.1071/CH17363)
- [2] L. Yu, T. Grace, H. D. Pham, M. Batmunkh, M. Dadkhah, C. Shearer, P. Sonar, J. Shapter, *Aust. J. Chem.* **2017**, *70*, 1202. doi:[10.1071/CH17380](https://doi.org/10.1071/CH17380)
- [3] M. Dumlao, G. N. Khairallah, W. A. Donald, *Aust. J. Chem.* **2017**, *70*, 1219. doi:[10.1071/CH17440](https://doi.org/10.1071/CH17440)
- [4] M. Albayer, J. L. Dutton, *Aust. J. Chem.* **2017**, *70*, 1180. doi:[10.1071/CH17173](https://doi.org/10.1071/CH17173)
- [5] J. S. Caddy, T. B. Faust, I. M. Walton, J. M. Cox, J. B. Benedict, M. B. Solomon, P. D. Southon, C. J. Kepert, D. M. D'Alessandro, *Aust. J. Chem.* **2017**, *70*, 1171. doi:[10.1071/CH17215](https://doi.org/10.1071/CH17215)
- [6] C. Hua, S. Woo, A. Rawal, F. Tuna, J. M. Hook, D. Collison, D. M. D'Alessandro, *Aust. J. Chem.* **2017**, *70*, 1227. doi:[10.1071/CH17335](https://doi.org/10.1071/CH17335)
- [7] J. Hu, R. Qiao, M. R. Whittaker, J. F. Quinn, T. P. Davis, *Aust. J. Chem.* **2017**, *70*, 1161. doi:[10.1071/CH17391](https://doi.org/10.1071/CH17391)
- [8] J. C. Dobrowolski, K. Somphol, M. Santoso, H. Duong, C. R. Gardner, N. Kumar, D. StC. Black, *Aust. J. Chem.* **2017**, *70*, 1188. doi:[10.1071/CH17257](https://doi.org/10.1071/CH17257)
- [9] H. Kandemir, I. F. Sengul, N. Kumar, D. StC. Black, *Aust. J. Chem.* **2017**, *70*, 1196. doi:[10.1071/CH17264](https://doi.org/10.1071/CH17264)
- [10] M. L. Mitchell, B. R. Hamilton, B. Madio, R. A. V. Morales, G. Q. Tonkin-Hill, A. T. Papenfuss, A. W. Purcell, G. F. King, E. A. B. Undheim, R. S. Norton, *Aust. J. Chem.* **2017**, *70*, 1235. doi:[10.1071/CH17228](https://doi.org/10.1071/CH17228)