CSIRO PUBLISHING

RESEARCH FRONT

*Aust. J. Chem.* **2013**, *66*, 284–285
http://dx.doi.org/10.1071/CH13085

Foreword

# Beckwith Memorial Symposium on Free Radical Chemistry

*Chris J. Easton*

Australian Research Council Centre of Excellence for Free Radical Chemistry and Biotechnology, Research School of Chemistry, Australian National University, Canberra, ACT 0200, Australia. Email: easton@rsc.anu.edu.au

The Beckwith Memorial Symposium on Free Radical Chemistry was held in Philadelphia, USA, on 19 August 2012, as part of the 244th American Chemical Society National Meeting and Exposition, 'Materials for Health and Medicine'. It was organised by Professor Derek Pratt of the University of Ottawa and Professor Igor Alabugin of Florida State University, as part of the program of the Organic Chemistry Division, at the invitation of the American Chemical Society. It follows other international meetings dedicated to the memory of Professor Athelstan (Athel) L. J. Beckwith, including the 11th International Symposium on Organic Free Radicals (ISOFR-11) held in Bern, Switzerland, in July 2012. Athel's outstanding contributions to chemistry have also been acknowledged in many other ways, including through his election to the Fellowship of the Australian Academy of Science (1973) and the Royal Society of London (1989), and Membership of the Order of Australia (2004); with a special issue of *Aust. J. Chem.* celebrating his 65th birthday[1] and posthumous issues of *Aust. J. Chem.*[2] and *Organic and Biomolecular Chemistry*[3]; and in obituaries published in *Historical Records of Australian Science*[4] and *Biographical Memoirs of Fellows of the Royal Society*.[5] These are all a reflection of a quite remarkable man and his chemistry, but the Beckwith Symposium stood out as an opportunity for some of his close friends to reflect on their memories of Athel, sufficiently after his untimely, accidental death in May 2010 for some of the raw emotions to have passed.

Invited lectures were presented at the symposium by Professor Carl Schiesser (University of Melbourne – 'Building Bridges Using Homolytic Substitution Chemistry'), Professor Curt Wentrup (University of Queensland – 'Rearrangement of Triplet Nitrenes and Carbenes to Triplet 1,5-Biradicals'), Professor Leo Radom (University of Sydney – 'Influence of Connector Groups on the Stabilities of Radicals'), Professor Wes Borden (University of North Texas – 'Effects of Tunnelling by Carbon on the Ring Opening of Cyclopropylcarbinyl Radicals'), Professor David Crich (Wayne State University – 'Lessons from Radical Chemistry and their Application to Glycochemistry'), Dr Chrys Chatgilialoglu (Consiglio Nazionale delle Richerche (Bologna) – 'Bio-Inspired Synthetic Strategies of Purine 5′,8-Cyclonucleoside Derivatives'), Professor Chris Easton (Australian National University – 'Effect of Radical Modifications of Amino Acids on Protein Synthesis, Structure and Function'), Professor John Murphy (University of Strathclyde – 'Super-Electron Donors (SEDs): New Frontiers'), Professor Michelle Coote (Australian National University – 'New Insights into the Catalytic Cycle of Nitroxide Activation and Regeneration'), Professor Marc Greenberg (Johns Hopkins University – 'Free Radical Mediated Nucleic Acid Damage'), Professor Louis Fensterbank (Université Pierre et Marie Curie (Paris) – 'New Developments in Tin-Free Radical Chemistry'), Professor Armido Studer (Westfälische Wilhelms-Universität Münster – 'Applications of Nitroxides and Quinones as Mild Oxidants in Catalysis'), Professor David Procter (University of Manchester – '$SmI_2$-Mediated Cyclisation Cascades: An Approach to Pleuromutilin'), Professor Robert Flowers (Lehigh University – 'Unravelling the Mechanism of Single-Electron Oxidation and Reduction in Important Synthetic Reactions'), Professor Dennis Curran (University of Pittsburgh – 'Radical Reactions of N-Heterocyclic Carbene Boranes') and Professor Philippe Renaud (University of Bern – 'Boron: A Unique Element in Radical Chemistry'). Following the scientific program, many of the symposium participants adjourned to Zahav, a nearby Israeli restaurant, and following that to a local bar. As when Athel was present, the social interactions were as important as, and inseparable from, the science.

This issue of *Aust. J. Chem.* contains a selection of papers authored by Athel's ex-students, colleagues, and friends who attended the Beckwith Symposium. They cover new methods for the generation of radicals in 'Convenient Ambient Temperature Generation of Sulfonyl Radicals' by I. V. Alabugin et al.[6] and 'New Elements on the Behaviour of a Bissulfinylmethyl Radical' by L. Fensterbank and co-workers,[7] as well as studies that establish new fundamental principles of free radical chemistry reported in articles by C. H. Schiesser and his

*Chris Easton carried out his Ph.D. studies with Professor Athel Beckwith at the University of Adelaide and, after post-doctoral work at Harvard University, he took up a position as Research Fellow with the Beckwith group that had by then moved to the Australian National University. After subsequent academic appointments at the University of Canterbury in New Zealand and the University of Adelaide, he returned to the Australian National University as one of Athel's colleagues, where he is now Professor of Chemistry and Deputy Director of the Australian Research Council Centre of Excellence for Free Radical Chemistry and Biotechnology.*

collaborators[8] ('Rate Coefficients for Intramolecular Homolytic Substitution of Oxyacyl Radicals at Sulfur'), K. Weidner and P. Renaud[9] ('Kinetic Study of the Radical Azidation with Sulfonyl Azides'), and C. Wentrup and D. Kvaskoff[10] ('1,5-(1,7)-Biradicals and Nitrenes Formed by Ring Opening of Hetarylnitrenes'). These papers reflect the philosophy Athel had of applying both theory and experiment to establish fundamental principles of free radical chemistry, so that they could be understood and used by the general practitioner. The consequence of this approach is that free radical chemistry has had, and continues to have, a large impact on many other areas of science, as is reflected in a number of the other papers. In 'Computational Evaluation of the Sulfonyl Radical as a Universal Leaving Group for RAFT Polymerisation', M. L. Coote et al.[11] report an application of free radical chemistry to advance polymer science; M. A. Terzidis and C. Chatgilialoglu[12] use radicals in chemical synthesis in 'Radical Cascade Protocol for the Synthesis of (5′*S*)- and (5′*R*)-5′,8-Cyclo-2′-deoxyguanosine Derivatives'; J. A. Murphy and co-workers[13] explore radicals as organic reducing agents in 'A Novel Organic Electron Donor Derived from *N*-Methylisatin'; and F. Cao and C. J. Easton[14] review the 'Production and Regulation of Levels of Amidated Peptide Hormones', fundamental physiological processes where free radicals are intimately involved.

## References


[1] Issue dedicated to A. L. J. Beckwith: *Aust. J. Chem.* **1995**, *48*, 153.

[2] A dedication to Professor Athelstan L. J. Beckwith: *Aust. J. Chem.* **2011**, *64*, 355.

[3] Free Radical Chemistry special themed issue in memory of Athel Beckwith: *Org. Biomol. Chem.* **2011**, *9*, 3142.

[4] I. D. Rae, *Hist. Rec. Aust. Sci.* **2012**, *23*, 55. doi:10.1071/HR12001

[5] I. D. Rae, *Biogr. Mem. Fellows R. Soc.* **2012**, *58*, 3. doi:10.1098/RSBM.2011.0022

[6] K. Gilmore, B. Gold, R. J. Clark, I. V. Alabugin, *Aust. J. Chem.* **2013**, *66*, 336. doi:DOI:10.1071/CH12499

[7] R. M. Mallorquin, G. Vincent, E. Derat, M. Malacria, J.-P. Goddard, L. Fensterbank, *Aust. J. Chem.* **2013**, *66*, 346. doi:10.1071/CH12545

[8] H. M. Aitken, S. M. Horvat, M. L. Coote, C. Y. Lin, C. H. Schiesser, *Aust. J. Chem.* **2013**, *66*, 323. doi:10.1071/CH12477

[9] K. Weidner, P. Renaud, *Aust. J. Chem.* **2013**, *66*, 341. doi:10.1071/CH12523

[10] C. Wentrup, D. Kvaskoff, *Aust. J. Chem.* **2013**, *66*, 286. doi:10.1071/CH12502

[11] G. Gryn'ova, T. Guliashvili, K. Matyjaszewski, M. L. Coote, *Aust. J. Chem.* **2013**, *66*, 308. doi:10.1071/CH12452

[12] M. A. Terzidis, C. Chatgilialoglu, *Aust. J. Chem.* **2013**, *66*, 330. doi:10.1071/CH12494

[13] R. Sword, S. O'Sullivan, J. A. Murphy, *Aust. J. Chem.* **2013**, *66*, 314. doi:10.1071/CH12480

[14] F. Cao, C. J. Easton, *Aust. J. Chem.* **2013**, *66*, 297. doi:10.1071/CH12546