be held in Wellington 7-11 February next (see *www.macdiarmid.ac.nz/amn-5/*) for further details. His PhD student *Kathryn* ***Graham*** spent a couple of months overseas, firstly at the Pacific Northwest National Laboratory (Washington State) to carry out some synthesis and high field solid state NMR studies of native and deuterated versions of methyl ammonium borohydride containing all ^{11}B. The samples are then to be transferred to Oxford, where she will carry out neutron beam experiments at the Rutherford Appleton Laboratory to examine various aspects of structural and chemical interest. The project has some relevance to hydrogen storage applications, although it is aimed primarily at studying some fascinating chemistry. New MSc student *Rachael* ***Linklater*** is studying the factors controlling the incorporation of Al doping in ZnO sol-gel films, controlling film texturing and alignment, and optimising conductivity. The project is aimed at making transparent conductive films for photovoltaic applications. Finally, Tim is completing a joint NIWA/IRL/JamesCookUni project to use photocatalysis for marine antifouling that is showing great promise. This will renew his interest in photocatalysis after some years of low key involvement following his pioneering work in the 1990s.

Neil ***Milestone*** has returned to NZ after seven years at the University of Sheffield where he was Director of the Immobilisation Science Laboratory. Much of his work there involved the use of cements for waste stabilization and in gaining an understanding of the reactions that occur between cements and various types of wastes, including nuclear materials. He is now working with *Carl* ***Bigley*** at IRLs Cementing Systems research unit investigating reactions used in geothermal applications for cementing steam wells.

The Banwell Symposium: From Small Rings to Big Things

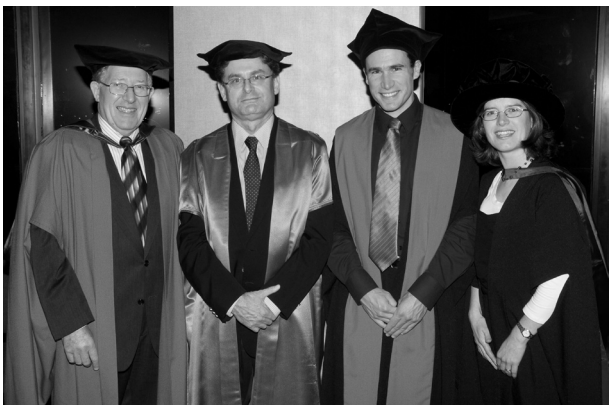
Russell J. Hewitt and Robert A. Keyzers

School of Chemical & Physical Sciences, Victoria University, PO Box 600, Wellington 6140
(e-mail: *rob.keyzers@vuw.ac.nz*)

May 18, 2010 was a particularly significant day in the annals of Victoria University of Wellington (VUW) and its division of chemistry. The day marked the graduation ceremony at which Prof. Martin Banwell [Director of the Research School of Chemistry (RSC) at the Australian National University (ANU)], was awarded the degree of Doctor of Science, *honoris causa* by the University. Prof. Banwell has an outstanding research record that has led to his recognition as one of the greatest organic chemists in the Southern Hemisphere, further exemplified by VUW judging him worthy of an honorary DSc after only 31 years since obtaining his PhD from the same institution.

The significance of this ceremony was not only due to Prof. Banwell's award but also for the multiple generations of related chemists present. Emeritus Professor Brian Halton, Prof. Banwell's VUW PhD supervisor was on-stage as was Dr. Joanne Harvey, a VUW graduate, now staff member and former ANU PhD student of Banwell's. Finally, Mr. Russell Hewitt, a student of Dr. Harvey's, had his PhD conferred at the same ceremony. Consequently, four generations of PhD researchers of the Halton Dynasty were on-stage at once, with two having doctoral degrees conferred in the same ceremony. Moreover, all four generations have made significant contributions to the same area of chemistry, namely, the formation and practical application of fused cyclopropane ring systems. This gathering of four generations of chemists, of which two were awarded doctorates, is believed to be unprecedented in New Zealand chemical history.

In recognition of Prof. Banwell's remarkable achievements and to celebrate his award of his Hon. DSc, the School of Chemical and Physical Sciences (SPCS) at VUW held a symposium entitled *From Small Rings to Big Things* on May 20 May in his honour. This symposium marked another noteworthy day, as the meeting was the first official function hosted by SCPS in the new Alan MacDiarmid Building, a multi-million dollar investment for Science and Engineering, named after VUW's 2000 Nobel Laureate. The Banwell Symposium showcased the excellent teaching and research facilities now available to the school.



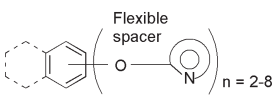
From left: Professors Brian Halton and Martin Banwell, Drs Russell Hewitt and Joanne Harvey. Photography by Woolf.

The symposium itself was opened by fellow chemist and Dean of Science, Prof. David Bibby, who described Martin Banwell as the *...most outstanding chemist of his generation in Australasia* and it was obvious to all just how much of a pleasure this gave the Dean. The symposium included local speakers from VUW and Industrial Research Limited (IRL) with invited lectures from by Profs. Peter Steel (Canterbury University) and Martin Banwell.

The day's event focused on organic chemistry in the broadest possible sense as a wide range of topics was

Professor Peter Steel

covered. Prof. Steel began the presentations with an enthralling lecture entitled *The Power of Weak Interactions in Constructing New Metallosupramolecular Assemblies*, in which the syntheses of such assemblies from various metals and ligands was shown to give a wide range of geometrical structures. Peter spoke about the ability to construct desired geometries by using different metal centres coupled with ligands containing specific binding angles within flexible spacer groups as depicted by **1**. Typically, these were obtained by coupling bisphenols to nitrogen heterocycles. He also described the specific use of π-π, Ag-Ag or Ag-alkene interactions in the construction of the different metal complexes. Peter first met Martin at Canterbury University when he (Martin) went to Christchurch to record some ^{13}C NMR spectra in their facility, the only one available at the time. Since then they have had the opportunity to meet many times, with Banwell describing Steel as a magnificent host during his Erskine Fellowship - even though Peter was distracted from his duties when Bob Grubbs, also an Erskine Fellow, was advised of his receipt of the 2005 Nobel Prize in Chemistry.



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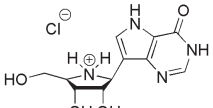

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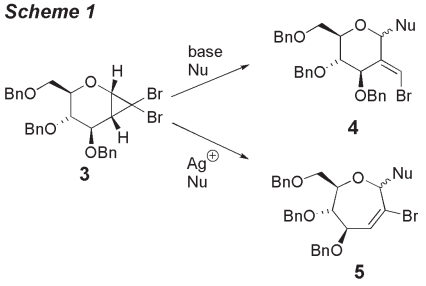
Another former Halton PhD student, Andy Kay of IRL, gave a fascinating discourse on his team's work to produce new chromophoric molecules that can be used in non-linear optics. In particular, he described the photophysics of such materials and the fundamental results they have generated by optimizing *right-hand side* chromophores, a niche area of such research, which may find use in optical data transmission (see *This Journal*, **2010**, *74*, 72).

Both Richard Furneaux (IRL) and Mattie Timmer (VUW) gave interesting accounts of the syntheses of aza-sugars that have been produced for the treatment of specific diseases. Furneaux's team, in collaboration with Schramm (Albert Einstein College of Medicine, New York) have developed drugs such as Forodesine (Immucillin-H) **2**, which mimic the transition state during an enzymatic transformation, rather than the actual substrate, which leads to permanent inhibition. Forodesine analogue, BCX-4208 is in clinical trials to treat gout and is a potent inhibitor (K_i = 16 pm) of Purine Nucleoside Phosphorylase (PNP).

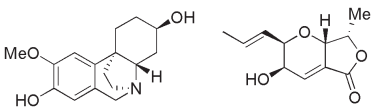
The Timmer/Stocker group, on the other hand, have developed a protecting-group free strategy for the synthesis of aza-sugars. This talk, *Synthesis of Aza-Sugars* contained their latest results towards a combined Vasella reductive amination/carbamate annulation strategy for the formation of a variety of aza-sugars (see: *This Journal*, **2010**, *74*, 57). The seminar also presented the latest attempts to probe the probable mechanism at play in the formation of these important drug leads, which may act as glycosidase inhibitors.

The newly graduated Dr. Russell Hewitt described part of his PhD research, a fascinating introduction into the use of cyclopropanated carbohydrates. He focused on his correction of the ring-opening product of cyclopropanated carbohydrate **3** as C-2 substituted **4** and not the seven-membered oxepine **5**. (Scheme 1) He also demonstrated how the desired oxepine **5** can be formed from use of suitable silver salts.

Scheme 1



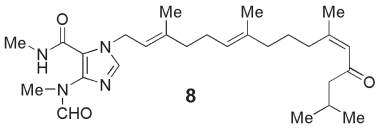
Joanne Harvey then presented an insightful and detailed account of two natural product syntheses using *gem*-dihalocyclopropanes. The first concerned the synthesis of maritinamine **6** during her doctoral studies, a target whose similarity in its name to that of her supervisor was but incidental. The second part described an attempt to synthesize the fungal natural product (-)-TAN-2482B **7**. Although unsuccessful in making **7**, the Harvey team came tantalizingly close and are confident that they will complete the total synthesis of this challenging target in the near future.



6 **7**

Two natural products seminars were also presented, the first by recently appointed VUW academic Rob Keyzers. He described postdoctoral work involving the isolation and structural elucidation of the tetraprenyl alkaloid malonganenone B, **8**. Keyzers then went on to discuss his group's work focused upon the synthesis of analogues of **8** that are designed to explore novel H/D exchange within the natural product. In an entertaining discussion, Dr. Peter Northcote described in detail his group's methodology, historical and on-going, to use NMR spectroscopy

to guide the isolation of natural products. The work dates from the late 1990s and has evolved from simple ^{1}H NMR spectral analysis of sponge extracts to comprehensive 2D-NMR-based screening using sophisticated in-house software for spectral manipulation.



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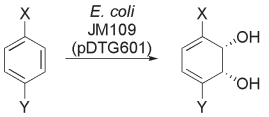
9 **10**

The final session of the day, purposefully chaired by Russell Hewitt, saw Halton himself provide a *...hysterical/historical account...* of Martin's time in the laboratory during his research days at VUW. One point Brian noted was that Martin's PhD research to synthesize angular **9** and linear **10** bis-cycloproparenes was *...singularly unsuccessful...* in its aim, yet produced some wonderful results. Martin's great enthusiasm during this time was a sure indicator of his future success; few PhD students submit and defend their thesis, and then depart for a postdoctoral fellowship within 30 months! Brian also highlighted the difficulties in ordering chemicals during that era - orders could only be put through once or twice a year. Today's younger generation tend to purchase anything listed in the Aldrich catalogue if needed, whereas Brian stated *if the chemical was in the Aldrich Catalogue then it could be made!*. Martin replied *that was the curse of the Aldrich Catalogue. If it was in the catalogue you could make it, and if it's not there then you HAD to make it!*

Dr Russell Hewitt

Martin then provided the final seminar of the day entitled *Chemoenzymatic Methods for the Assembly of Biologically Active Natural Products*. Through use of an enzymatic asymmetric dihydroxylation process, Banwell has shown that the *cis*-1,2-dihydrocatechol products obtained, *e.g.* **12** from **11**, are versatile intermediates for the synthesis of various alkaloids. His group has utilized the enantiospecific formation of the catechols in a number of total syntheses of natural products including (-)-panepophenanthrin. Moreover, Martin presented several insightful strategies to take the single enantiomer of the catechol produced and use an enantiomeric switching technique to make natural products with each possible absolute configuration, a wonderful feat. Once again the seminar highlighted Martin's inspiring and elegant synthetic ventures incorporating the total synthesis of a very impressive number of natural products, providing a magnificent *tour de force*.



11 **12**

Student posters were also presented throughout the day that showcased the variety and quality of VUW research. Profs. Banwell and Steel awarded the Dean's prize to Mark Bartlett for his poster *A Novel Palladium-Catalysed Allylic Alkylation Cascade for the Synthesis of Furanopyrones* from his first year of doctoral research.

The day concluded with drinks and a symposium dinner in the staff club where SCPS Head Prof. John Spencer presented Martin with a commemorative bound copy of the symposium programme.

Professor Martin Banwell

Martin Banwell has made enormous contributions to chemistry with over 260 papers, patents and book chapters that describe chemical methods and syntheses at the forefront of modern organic research. As director of ANUs RSC, he heads the most prominent school of chemical research in the southern hemisphere. He maintains one of the more productive research groups in natural product synthesis and has supervised over 100 graduate students. He is an Honorary Fellow of the Royal Society of New Zealand, a fellow of the Australian Academy of Science and a Fellow of Royal Australian Chemical Institute. His honorary doctorate exemplifies his impact as a research chemist, and he remains an inspirational figure to younger chemists.