

UFS CHEMISTRY CELEBRATES 100 YEARS AS AN INDEPENDENT SUBJECT – 2009

Brief History of Chemistry at the UFS

Introduction

The UFS started from humble beginnings as the Grey University College (GUC), founded on 28 January 1904 as an extension of Grey in Bloemfontein. It was known by this name until 1935 when a bill was accepted by parliament which changed the name of the university from 'Het Grey Universiteitskollege' to 'Die Universiteitskollege van die Oranje-Vrystaat' (UKOVS, the acronym from which 'Kovsie' was derived).

The first lecturer in Physics, J.S. Lyle, responsible for the teaching of Physics as well as Chemistry, was appointed in 1904. Infrastructure to house the scientific subjects was added to GUC when two corrugated and wooden laboratories were erected as far back as 1905. In 1909, Physics and Chemistry became independent subjects, with W.A.D. Rudge as Professor in Physics and Max Rindl as Professor in Chemistry and Geology.

In 1918 the first two faculties, i.e. Science and the Arts, were founded. The Faculty of Science comprised the Departments of Mathematics, Applied Mathematics, Physics, Chemistry, Zoology, Botany, and Geology.

Although the founding date of the Department of Chemistry (as well as Physics) at the UFS is generally accepted as 28 January 1904, Chemistry was taught by the Physics professor. Chemistry and Physics only became recognised departments when the Faculty of Science was founded in 1918, although Prof M. Rindl, as indicated above, was the first professor in Chemistry as an independent subject as far back as 1909.

The first paper published by Chemistry was in 1913: M. Rindl, *Journal of the Chemical Society, Transactions*, 103, pp 1911-1917. Prof Max Rindl (after whom the Rindl Lecture Hall in Chemistry was named) guided the department until 1942.

Four heads of department in UFS Chemistry:



M Rindl (1909-1942)



F Zweertz (1939-1951)



P Groenewoud (1949-1959)



C van der Merwe Brink (1959-1967)

Department of Chemistry in its own building

Up to 1949, the Departments of Chemistry and Physics were housed in a few rooms in the southern part of the present historical Main Building on the Bloemfontein Campus. In 1949, two new double-storied buildings were completed for both, with Chemistry being housed in the Moerdyk Building (named after the architects Gerhard Moerdyk and Watson); the corner stone dated 1 May 1948, laid by the Chairman of the UKOVS board, Senator J.H.B. Reitz.

The Chemistry Building was expanded in 1965 with the aid of the Transvaal and Orange Free State Chamber of Mines, and research in radiochemistry was then housed in the south-eastern part of the current complex. The building was again expanded in 1976 when the south-western section, currently housing the NMR unit and the Chemistry library, was completed. Upgrading of the current building commenced in 2006.

Well-known individuals:

Prof PWG (Flippie) Groenewoud (1949-59), appointed from the Fuel Research Institute in Pretoria in 1942, later became Vice-Chancellor and Rector of the UOVS, after whom the Flippie Groenewoud Building was named.

Louis Bok (1953-1980) obtained his PhD in Leipzig in Germany just before World War 2, and following visits to Cambridge in 1949-1950, initiated research in reaction kinetics, powder X-ray crystallography, cyanide chemistry, and infrared spectroscopy.

Chris van der Merwe Brink (1959-1967), Professor in Organic Chemistry, later became president of the CSIR.

Dawie Roux (1968-1985) from Grahamstown was appointed in Organic Chemistry, and started research on the well-known natural product, flavonoid. He was also one of the founders of the Foundation for Research Development (FRD), the current National Research Foundation (NRF), and the first Foundation for Research Development (FRD) A-rated scientist in Chemistry.

Joe Leipoldt (Inorganic Chemistry, 1964-1994) further developed powder diffraction, and following a sabbatical to Philip Coppens in Buffalo, USA in 1972, initiated the research on single crystal X-ray crystallography. Together with Steve Basson, research on the platinum group metals as well as redox chemistry was also initiated, and the CSIR mainframe computer was utilised in the 70s for single crystal X-ray refinement.

Daneel Ferreira (Organic Chemistry, 1969-1998), second A-rated chemist in the Department of Chemistry, continued the flavonoid research, and retired from the UFS in 1998. He subsequently relocated to the University of Mississippi in the USA as professor in Pharmacognosy, and was awarded an honorary doctorate from the UFS in 2008 for his contributions to Chemistry.

Chemistry had the privilege of sculpting individuals such as Jan 'Tampan' Boeyens (Kovsie Cheerleader at Intervarsities), current emeritus professor at the University of Pretoria, previously professor in Theoretical Chemistry and Dean of Natural Sciences at Wits; Abie van Wyk, Kovsie cricket and tennis captain; Gerrie Rall, senior manager (retired) at Sasol; and Johan van Schalkwyk, senior manager at Chemical Services Ltd. during the 1980s. Pieter Hunt was involved as technical officer during the 80s to 90s.



1966: 57 years of Chemistry as independent subject. Well-known individuals: Front from the left: Steve Basson, Joe Leipoldt, Gerrie Rall, Prof Dawie Roux, Prof Louis Bok; and far right: Daneel Ferreira. Middle row: 3rd from left: Abie van Wyk. Back row: 3rd from right: Vincent Brandt, Koos van Staden, Gerhard Groenewoud.

Senior scientist alumni

Those from the Chemistry Department (list not complete), who graduated during the 1970s-1990s and currently at Sasol, include Johan Botha, Desmond Young, Jannie Steynberg, Ian Laubscher, Petrie Steynberg, LJ Botha, Esme Young, Ben Bezuidenhout, Karin Steynberg, Thys Botha, Cronje Grove, Hendrik van Rensburg, Tjaart vd Walt, Pieter van Heerden, Johan Coetzee, Reinier Nel, Jaap Smit, Llewellyn Damoense, Fanie Otto, Mattys van Vuuren, Riaan Bekker, Ronel Griffiths, Delanie Lamprecht, Irene Kamara, Hendrik vd Westhuizen, Werner Janse van Rensburg, Abri Augustyn, John Smit and Hardi Koortzen.



1983: 74 years of Chemistry as independent subject. Front from the left: Prof Daneel Ferreira, Doris de Waal, Prof Joe Leipoldt, Mrs Bruni Hundt, Prof Dawie Roux, Kotie du Toit, Prof Gert Lamprecht, Annegret Kolodzi, Dr Steve Basson. Middle from the left: Kobus Steenkamp, Ben Bezuidenhout, Philip Viviers, Esme Young, André Roodt, Karin Grobler, Dr Vincent Brandt, Johan Burger, Kallie van Biljon. Back from the left: Pieter Hundt, Desmond Young, Izak Potgieter, Herbert Kolodzji, Jannie Steynberg, Herman Meyer, Deon van Zyl, Nico Laubscher, Anneli Swanepoel.

1970s-1990s

Other senior Chemistry alumni (list not nearly complete) who graduated during this time, include Deon van Zyl, Herman Meyer and Deon Steyn (presently at Denel), with Hans Hundt (retired), Elfranco Malan (retired), Johan van Vollenhoven, Jan van Zyl, Mitzi Oberholzer, Alida du Plessis, Martiens Horak, Francois Volsteedt, Piet van der Merwe, Josef Steyn, Johan Engelbrecht, Piet Cilliers, Jaco Breytenbach, Jan Schlebusch, Izak Potgieter, Philip Viviers, Fanie van Heerden, At Pieterse, Neels du Preez, Gert Lamprecht (retired), Kobus Steenkamp (retired), Vincent Brandt (retired), Tommy Gerber, Johan Brits, Johan Nell, Danie Smit, Riaan Burger, Ferdie Zitske, Jannie Beetge, Elsophie Lombaard, Mark Rohwer, Barbie Schonees, Reinette Saunders, Wanda Rossouw, Hannes Malan, Cathy Bezuidenhout, Annelie Swanepoel, Johan Burger, Pierre Pretorius, Annemarie Cronje, Albert Ferreira, Jaco Erasmus, Alex Hundt, Jannie Marais, Charlene Marais, Hennie Mouton, Jeanetta Nel, Tinus van Aardt, Magrieta Bam, Michelle Marais, Hendrik Engelbrecht, Lynette Bennie, Callie van Biljon, Ina du Plessis, and Reinier Rabie at different private industries, larger corporations, academic institutions or self-employed.

Previous students of the Department of Chemistry, most of them spending time away from the UFS for shorter periods at other employers, but currently still as full-time teaching staff at UFS Chemistry, are: Robbie Dennis, Jannie Swarts, André Roodt, Jan van der Westhuizen, Walter Purcell, Deon Visser, Johan Venter, Jeanet Conradie, Karel von Eschwege, Ernie Langner, Gideon Steyl, Susan Bonnet, Ricky Versteeg, Anke Wilhelm, Thato Mtshali, Rabotsamang Shago, Tsietsie Tsotetsi, Mpondi Molefi, Lizette Erasmus, Eleanor Müller, Marietjie Schutte-Smith, and Alice Brink.



1989: 80 years of Chemistry as independent subject. Front from the left: Prof Vincent Brandt, Dr Deon van Zyl, Prof Steve Basson, Prof Joe Leipoldt, Prof Daneel Ferreira, Prof Gert Lamprecht, Dr Ben Bezuidenhout, Dr Kobus Steenkamp. Middle from the left: Marietjie Havenga, Susan Bonnet, Hannes Malan, Alex Hundt, Johan Burger, Johan Venter, Jeanet Conradie, Alet van Rooyen, Martie Smit. Back from the left: Hennie Mouton, Herman Preston, Walter Purcell, Petrie Steynberg, Dr André Roodt, Dr Izak Potgieter, Jannie Swarts, Deon Steyn, Pieter Hundt.

Key moments

Important dates in the history of the Department of Chemistry in terms of equipment acquired, include the first 60 MHz NMR in 1969; X-ray generator and single crystal X-ray camera in 1972; Stopped-flow spectrophotometer in 1976; 300 MHz NMR in 1980; first PC driven X-ray refinement in 1991; In situ infrared high-pressure reactors and single crystal X-ray Kappa diffractometer in 2005; 600 MHz NMR, ICP OES, advanced DSC and TGA equipment in 2006; LCMS, CG MS, Maldi Toff MS in 2007; XPS and Scanning Auger equipment (with Dept of Physics) end 2008-2009.



1995: 86 years of Chemistry as independent subject.

Successive heads of the Department of Chemistry.

M. Rindl (1909-1942), F. Zweertz (Physical Chemistry 1939-1951), P.W.G. Groenewoud (1949-1959), L.D.C. Bok (1953-1980), C.v.d.M. Brink (1959-1967), D.G. Roux (1968-1985), J.G. Leipoldt (1964-1994), D. Ferreira (1969-1998), S.S. Basson (1966-2006), A. Roodt (2007-2015), and W. Purcell (2016-current).

Other retired chairs in Chemistry include Gert Lamprecht (Physical Chemistry, 1980-1999) and Vincent Brandt (Organic Chemistry, 1968-2005).



1998: 90 years of Chemistry as independent subject.

The Department of Chemistry at present

Chemistry underwent a revival since 2005, sparked by new initiatives and efforts from especially Prof Jannie Swarts and Dr Des Young (Sasol), Profs André Roodt in Chemistry, Herman van Schalkwyk (Dean: Natural and Agricultural Sciences), and supported by Prof Frederick Fourie (Vice-Chancellor and Rector 2002-2008). This culminated in supporting investment by Sasol (Drs Chris Reinecke and Desmond Young) and the NRF, and ensured an upgrading of the Chemistry Building and infrastructure by more than R80 million, to a world-class facility.

From the first Chemistry laboratory, which was situated in a small room below ground level at the south-western end of the Main Building more than a century ago, teaching and research in Chemistry escalated to the current five disciplines, i.e. Analytical (W. Purcell), Physical (J.C. Swarts and J. Conradie), Organic (J.H. v.d. Westhuizen and B.C.B. Bezuidenhout (Sasol professor)), Inorganic Chemistry (A. Roodt and H.G. Visser), and Polymer Science (A.S. Luyt; Qwaqwa Campus).

The Department of Chemistry is also involved in the UFS Research Cluster initiative, and specifically the clusters on Materials and Nanosciences [A. Roodt: coordinator; H. Swart (Physics), J.C. Swarts and A.S. Luyt (Focus area leaders)] and Advanced Biomolecular Systems [J.H. van der Westhuizen (focus area leader)].

These disciplines are served by 20 permanent teaching and 15 support staff members, responsible for 30 MSc and 30 PhD students, and around 1 000 undergraduates on the Bloemfontein and Qwaqwa Campuses.

A complete list of the current staff, published papers, research groups, thrusts, and other detail of the Department of Chemistry can be found on the website of the university (www.ufs.ac.za/chem).