

“Do you prefer curtains in front of your windows or not? Wearing clothes or not? Using cosmetics or not? Do you need ink to read this article?”

This is the simplistic answer that Prof Ron Sanderson, who retires as director of the UNESCO Associated Centre for Macromolecules and Materials in the Department of Chemistry and Polymer Science gives when asked what impact polymer scientists have on everyday life.

People often use the term ‘polymer’ only for plastics but it actually refers to a large class of natural and synthetic materials made up of large molecules - or macromolecules - with various properties and purposes. “About 65% of everything on earth - both man-made and natural - is made from polymers,” Prof Sanderson says.

Polymers are tiny repeating structural units that typically connect through chemical bonds to form anything from rubber and wood to paints, paper, sealant and silly putty. The imagination, it seems, is the only limitation to their possible use.

Prof Sanderson is passionate about his discipline. It is, after all, what this internationally recognised scientist has dedicated the past four decades to.

When Prof Sanderson joined Stellenbosch University (SU) in the early 1970s, he was tasked with initiating polymer-science training courses. At the time, it was a virtually non-existent academic field at Stellenbosch - and in Africa, for that matter. Today, however, SU is the only South African academic institution to provide in-depth training in polymer science. Our postgraduate programmes attract students from around Africa and Europe alike and are endorsed by UNESCO. Graduates have risen through the ranks of local and international research institutions and companies or head up their own entrepreneurial concerns.

Prof Sanderson was promoter and co-promoter to 84 MSc and 47 PhD graduates and is still guiding another 13 MSc and 16 PhD students. His efforts to train and mentor black researchers and students successfully were recognised this year with a National Science and Technology Forum Award.

Human capacity building is not Prof Sanderson's only forte: he leaves a legacy of almost 200 publications, international ties in Europe, the USA and Far East, a significant funding base between SU and industry, advanced South African manufacturing techniques and 40-odd local and international patents.

Early research successes include the preparation of glass-fibre materials and rocket propellants for defence purposes. Stellenbosch polymer scientists have since developed thin films or membrane coatings that the paint and paper industries use for ‘green’ paper and packaging and mosquito-repellent paints. They have worked extensively in the polyolefin field to boost the petrochemical industry. Ground-breaking textile-fibre research has recently led to the SU licensing yarn production to a Czech producer.

Ongoing water-treatment research focuses on low fouling membranes, infrasonic back-pulsing and novel capillary membranes for conventional water treatment and desalination.

Prof Sanderson has recently received the prestigious 2008 Outstanding Alumni Award from his *alma mater*, the Polymer Science and Polymer Engineering Department of the University of Akron in the USA. Its programmes are ranked among those of the top American universities and its high-tech polymer-science building housing 400 students is the stuff of architectural dreams.

When comparing Akron with SU polymer research, Prof Sanderson starts pacing around his crowded office. “A resource-driven economy such as ours needs as many polymer scientists as possible. The SU doesn't have sufficient space to support a similar tremendous growth in student numbers but we do have world-class expertise and equipment to ensure top-quality training.”

Prof Sanderson has no doubt that the discipline will continue to grow. Succession plans include the appointment of world-class colleagues, such as A-rated scientist Prof Bert Klumperman, holder of the SARChI Research Chair in Advanced Macromolecular Architectures, and Prof Harold Pasch, holder of the Sasol Chair in Polymer Characterisation.

Retirement does not mean lazy days playing golf, however. As emeritus professor in the Department of Chemistry and Polymer Science, Prof Sanderson will help with a new flagship research programme using nanotechnology in water treatment and will drive a national initiative to recruit more women and black polymer scientists.

The recent 2008 International Union of Pure and Applied Chemistry Conference on Macromolecules and Materials in part honoured Prof Sanderson on the occasion of his 65th birthday. Plans are also underway to establish the Ronald Sanderson bursary for Polymer Science with industry support.

This is an appropriate acknowledgement by colleagues of a scientific life - sometimes unorthodox but always productive - well lived. **m**

Polymer pioneer retires (almost)

by Engela Duvenage

