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NEWS SECTION

PRESENTATION OF HTC AWARD TO PROFESSOR DR. IR. GERT DESMET, at the *8th International Symposium on Hyphenated Techniques in Chromatography and Hyphenated Chromatographic Analysers (HTC-8), Bruges, 4–6 February 2004*

Fig. 1. Professor Gert Desmet (left) receives the HTC Award from the Chairman of the Scientific Committee, Professor Pat Sandra.

During the HTC symposia a prestigious HTC Award, sponsored by Elsevier, is traditionally presented to the most innovative paper or poster contribution of the symposium. In 2004, the HTC Award was presented to Dr. Gert Desmet of the Free University Brussels (Vrije Universiteit Brussel, VUB), Belgium (Fig. 1). The Scientific Committee chaired by Professor Dr. P. Sandra considered his lecture ''Macromolecular flows and separations in nano-channel systems'' the most valuable and innovative contribution of the symposium.

Dr. Desmet reported on the potential advantages of shear-driven flows for performing rapid chemical analyses. The ultimate limits of channel miniaturisation for macro-molecular separations were explored. By using channels with a flat-rectangular cross-section of a few millimetres by 50–500 nm thickness, a flow system is created in which the radial channel dimensions are only 5 to 10 times larger than the diameter characteristic of biological macromolecules. A series of experiments were reported wherein the flow-rate was measured of nano-sized, fluorescently labelled polystyrene beads (with d_p 200, 500 and 1000 nm) in channels which were only a limited number of times thicker than the particles themselves. One of the most striking findings was that it is still possible to transport 200 nm sized particles through a 380 nm deep channel (particle-to-channel diameter ratio ca. 2) at approximately the same average velocity as a small-molecule tracer. The 200 nm particles could even be transported through a 240 nm channel (ratio ca. 1.2) at a velocity of about 60% that of the small-molecule value.

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These observations were exploited to induce size-sieving separation in stepwise tapered channels using the successive channel depth reductions as particle traps. This type of nano-sieving is radically different from other sieving techniques described in the literature. The present system exploits the fact that the depth of a channel can be controlled with high accuracy down to the 1 nm level. The features were illustrated with the analysis of latex particles. For neophytes in the field, we refer to two fundamental papers of the research group of Dr. Desmet: *Anal. Chem.* 72 (2000) 2160–2165 and *J. Chromatogr. A* 979 (2002) 33–42.

Professor Dr. Ir. Gert Desmet was born on 6 September 1967. He has a master's degree in Chemical Engineering (VUB, 1990) and a Ph.D. in Applied Sciences (VUB, 1996). Currently he is Assistant Professor at the Faculty of Sciences and the Faculty of Applied Sciences of the Vrije Universiteit Brussel (VUB), where he is leading a research group of eight scientists, who focus on the development of rapid and miniaturised chemical and biochemical methods of analysisa. He is the author of more than 20 peer-reviewed papers in international journals and of three patent applications.