

Foreword

Diethard Kurt Böhme

I must begin this tribute to Diethard Böhme by saying what a singular honor it is for me to have been asked to act as an editor for this special issue of the *International Journal of Mass Spectrometry* to mark his 65th birthday. I have now known Diethard for some 30 years both as a scientific colleague and personal friend and I am grateful to Elsevier and the Editorial Board of *IJMS* to have the opportunity to express my regard for Diethard publicly in this way.

Diethard Böhme was born in June 1941 in Boston, MA, where his father was a member of the German consular staff. His time in the U.S. was quite obviously short (although he has maintained his American citizenship and passport) but following the war Diethard's father's diplomatic mission brought him to Canada where he received the better part of his education culminating with B.Sc. (1962) and Ph.D. (1965) degrees from McGill University in Montreal. His Ph.D. work with John Goodings at McGill resulted in the construction of the first quadrupole mass spectrometer in Canada and introduced him to the world of gas phase ion chemistry. He continued his interest in the area as a post-doctoral Research Associate, first with John Hasted at the University of London and later with Eldon Ferguson at the Aeronomy Laboratory of the Environmental Sciences Service Administration in Boulder, Colorado. It was during this latter period that he began some of the first work on measurement of accurate gas phase acidities of organic molecules using the newly developed flowing afterglow technique. This seminal work, carried out in collaboration with Brewster Young, was reportedly regarded somewhat askance at the time however by the resident atmospheric physicists who were horrified at the possible consequences of pollution of their apparatus by organic compounds. Diethard's tenacity prevailed and resulted in the birth of a new and exciting era of thermochemistry and reaction mechanisms of gaseous anions.

In 1970 Diethard moved to York University in north Toronto where Harold Schiff was in the process of building a Chemistry Department and the Centre for Research in Experimental Space Science in this new university. The 35 plus years that he has spent at York have been extraordinarily productive and he has made important contributions to a number of areas of chemistry as well as contributing to significant instrumental developments associated with the flowing afterglow technique. The earliest of these contributions involved investigations of "textbook" organic reac-

tions, such as nucleophilic displacement, in the gas phase in which the sequential addition of solvent molecules to the reactant ion provided a bridge for understanding the transition from gas phase to solution phase reactivity. Among the many important developments from this work was the elucidation of the phenomenon of proton transport catalysis which is frequently invoked in current gas phase studies to explain tautomerism and isomerism of gas phase biological ions.

A major thrust of the Böhme group throughout the 1980s was the deduction of ion-molecule reaction mechanisms for synthesis of complex molecular species in the interstellar medium. The growth of polyacetylene and cyanoacetylene chains was demonstrated to be feasible *via* ion chemistry routes and this led to collaborations with astronomers in which his predictions of the existence of certain molecular species preceded their observation in the interstellar medium.

The interest in carbon rich materials led naturally to a foray into fullerene chemistry which was initiated during a sabbatical visit in the laboratory of Helmut Schwarz in Berlin. Their collaboration produced the first laboratory observation of an endohedral fullerene in the form of He@C₆₀. Subsequent work in the York laboratory elucidated fullerene ion chemistry as a function of charge state and produced novel exohedral fullerene species in which the exterior of C₆₀ and C₇₀ landscapes served as well-defined templates for surface chemistry.

The proximity of the mass spectrometer manufacturer, SCIEX, just a few kilometers from York led to natural employment opportunities for several of the graduates from Diethard's laboratory. But, what goes around comes around, and in the late 1990s two of Diethard's former students at SCIEX, Scott Tanner and Vladimir Baranov, collaborated once again with the York group to devise ion-molecule reactions of atomic species which could be implemented in ICP-MS instruments to dramatically enhance the analytical capability of the technique. This has led to a vigorous effort in recent years in the investigation of the ion chemistry of atomic metal ions with a wide range of molecules of interest. Most recently, an electrospray source has also been added to the powerful flowing afterglow instrument and a new program of investigation of ion chemistry of biologically interesting ions has been initiated.

Diethard Böhme's considerable research success has been acknowledged nationally and internationally through his sep-

arate awards as a Sloan, Killam and Humboldt Fellow, the Rutherford Medal in Chemistry of the Royal Society of Canada, the Noranda and Polanyi Awards of the Canadian Society for Chemistry, the Lossing Award of the Canadian Society for Mass Spectrometry, the Herzberg Award of the Canadian Society for Analytical Sciences and Spectroscopy, as a Fellow of the Royal Society of Canada and as a Canada Research Chair. York University has also named him as a Distinguished Research Professor.

Diethard's considerable abilities have extended beyond the laboratory to administration as well, and he has served as director of graduate studies and twice as Chemistry Department chair at York. As well he has been a member of the NSERC Canada Grant Selection Committee for Chemistry. He serves on the editorial boards of the *International Journal of Mass Spectrometry* and *Mass Spectrometry Reviews* and has edited four volumes of work in various areas of the field of gas phase ion chemistry.

On the personal side, Diethard is an enthusiastic outdoorsman. He is an avid canoeist, hiker and, most recently, mushroom hunter. As many of his friends and colleagues also know, at conferences taking place in any location close to a wine growing region, a wine tasting outing is to be relied upon.

Finally, as an editor of this volume, I feel that it is also my prerogative to recount some of my personal encounters with Diethard, beginning with the first. During my graduate student and post-doctoral days I knew Diethard's already considerable body of published work in gas phase ion chemistry and assumed that he was a much more senior scientist. The first time that I actually saw him in person was at an ASMS meeting in Philadelphia when I was a post-doctoral fellow and desperately in search of an academic job. Imagine my surprise then, when I discovered that we were on the same flight out of Philadelphia. Assuming, based on my evaluation of his scientific standing,

York should hire me to establish a complementary ion chemistry program using ion cyclotron resonance. It was only some years later that I discovered that, at that time, he was actually still an untenured Assistant Professor himself. When I actually did have an academic job I would meet Diethard regularly at scientific meetings and we could commiserate about some of the difficulties of doing science in Canada at the time. Some of the most memorable of these were the Canadian Gas Phase Ion Chemistry meetings started by Ray March at Trent University in 1977. A young Diethard can be seen in this photograph from this era together with members his early research group at York, Howard Rundle, Ron Hemsworth and Gervase Mackay. A more recent memorable celebratory occasion spent together was at the Lake Louise Tandem Mass Spectrometry Conference



in 2002 where Diethard received the F.P. Lossing Award of the Canadian Society for Mass Spectrometry. The accompanying photograph from the presentation of the Herzberg Award, which includes Paul and Beverly Kebarle, Orval Mamer and Helmut Schwarz, shows that Diethard has changed little in the past 30 years. In summary, I and all of the contributors to this volume, wish you a very Happy Birthday Diethard. I know we can expect an ongoing stream of good science and good times in the years to come.



that he must be practically running the Chemistry Department at York, I shamelessly set about trying to persuade him that

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