



## Foreword

## A personal foreword

It is a rare privilege to be able to write a brief foreword for this Special Issue in honor of Tino Gäumann. While I had only met Tino briefly in Europe in the early 80s, I was fortunate to be associated with him as a Visiting Professor (late 1989 to mid 1991) at the Institut de Chimie Physique (ICP) that he directed at the Ecole Polytechnique Fédérale of Lausanne (EPFL). Although these years coincided with a period close to his mandatory retirement (1993), his laboratory was still very active with some exciting and challenging projects and with a number of graduate students. During this time, I was able to learn and benefit from the instrument development in his lab and enjoy his critical analysis of new ideas and experiments.

Tino Gäumann started his scientific career at the ETH in Zürich where he first completed his Ph.D. degree and later obtained his Privat Dozent title. His early work was primarily concerned with the dielectric constant of solutions of polar molecules including those of the simpler amino-acids. This led him to the determination of dipole moments and to the study of the rotational spectra of simple molecules by microwave and millimeter wave spectroscopy. In 1965, he moved to Lausanne in what would officially become the EPFL in 1969 and became responsible for research and teaching in Physical Chemistry.

Tino's move to Lausanne marked the beginning of his interest in the radiolysis of simple hydrocarbons that was soon followed by mass spectrometric studies of similar hydrocarbons and olefins. The main focus of these studies was primarily concerned with mechanistic and kinetic aspects of fragmentation processes upon electron ionization and the structural characterization of the fragment ions. Several of these studies were carried out with extensive deuterium labeling of the neutral precursors. Yet, the most definitive structural and mechanistic information for several of these ions were obtained by detailed and painstaking labeling with  $^{13}\text{C}$ .

At the EPFL, and over the years, Tino assembled a superb infrastructure for high quality research. In 1989, he had in his mass spectrometry laboratories a reversed geometry ZAB-2F mass spectrometer, an FT-ICR spectrometer coupled to a Nicolet Data System with a SWIFT box, a trapped-ion ICR spectrometer, and a new superconductor FTMS instrument from Spectrospin (later Bruker). He had also recruited highly qualified people for the electronics shop, the machine shop and the synthesis lab, all of whom worked closely with students and staff at the ICP.

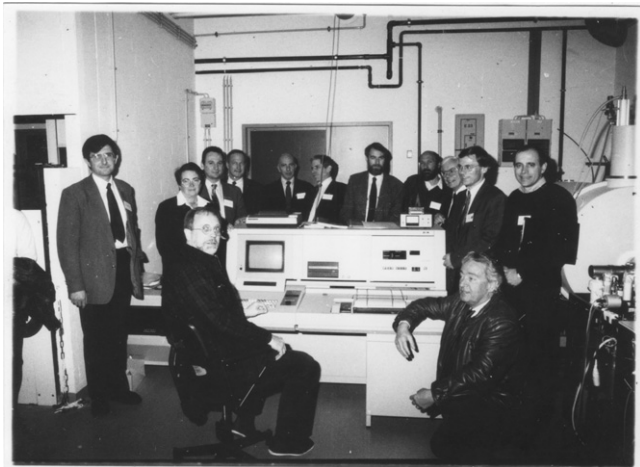
In the late 80s Tino began exploring the use of photofragmentation kinetics of molecular and fragment ions promoted by lasers operating in the visible and infrared region. This approach proved to be particularly useful in unraveling isomerization processes and in distinguishing isomeric ions. One of the most interesting problems under investigation in his lab in the late 80s, and one dear to classical mass spectrometry, had to do with the photofragmentation of the molecular ion of toluene,  $\text{C}_7\text{H}_8^{+\bullet}$  and its main fragment, the  $\text{C}_7\text{H}_7^+$  ion. A very thorough and careful set of experiments with non-linear regression analysis of the kinetics revealed a very complex situation involving three different molecular ion isomeric forms. The curve fittings of the kinetics were accomplished in those days by the use of Cricket Graph, a software that soon became the workhorse of the students in Tino's lab.

A similar approach was also used during my stay in Lausanne to elucidate the nature of the isomerization of the molecular ion of allyl bromide. We had previous evidence from ion-molecule reactivity that two isomers were present upon ionization of  $\text{BrCH}_2\text{CH}=\text{CH}_2$ . Tino became enthusiastic about the idea and assigned one of his graduate students, Z. Zhu, to work with a graduate student of mine, Marcia Kida, who came to Lausanne for 6 months to learn about FT-ICR. From the very beginning, the results proved to be exhilarating and Tino was at the same time very supportive and very critical of every aspect of the experiments. His analytical appraisal of the results and his suggestions regarding new experiments were crucial to the solving of this problem.

Tino held regular weekly group meetings that were held after lunch in Tino's office. He grilled every one of his students and he was very good at keeping them on their toes particularly on the interpretation of results. Tino was also exploring new waveforms to be used in Hadamard transform ICR and pioneered some basic ideas about 2-dimensional FT-ICR. Undergraduate students taking Physical Chemistry at the EPFL got their taste for FT-ICR in the undergraduate laboratory where they learned how to simulate the whole experiment using LabView. This was certainly ahead of its time!

Tino Gäumann was influential in starting the series of European Fourier Transform Mass Spectrometry Conferences and convinced Hans Grützmaier to organize the first EFTMS Conference in Bielefeld in 1991. The picture below shows Tino in the foreground with

Steen Hammerum at the console of the brand new Spectrospin-Bruker instrument at Bielefeld. The picture also includes, among others, G. Baykut, the late Chava Lifshitz, J. F. Muller, myself, Rob Dunbar, Hans Grützmaker, Dietmar Kuck and Evgenii Nicolaev.



Tino Gäumann also kept a usual set of visitors to his lab both from Europe and North America. He became famous for hosting most of his visitors at his house in Le Mont Sur-Lausanne where they were given the downstairs bedroom where a record was kept of all visitors (see attached photo). For those of us who had the benefit of staying at his house we were also treated to some fine music by Tino playing his harpsichord. His interest in music and acoustics continued beyond his retirement and remained as one of his favorite activities along with his journeys to his house in the Ticino area of Switzerland.

It was a pleasure to see Tino during the 9th EFTMS held in Lausanne in the early spring of 2010 and to see him follow every presentation with great interest and to know that he keeps himself active at the EPFL.



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