



## Biography of Heinz Oberhammer



Heinz Oberhammer was born on June 4th, 1939 in Innsbruck, Austria, where he attended school. After he graduated from high school in 1957 he studied physics and mathematics at the University of Innsbruck. He obtained his PhD in 1964 with a thesis on theoretical nuclear physics. Shortly after graduation he received an offer by a US government laboratory to continue working in the field of nuclear physics. The requirements for this job were an application for an immigration visa and commitment for at least 3 years. As everything was almost set and he was about to sign the contract, he received a notice from a friend that Prof. Simon Bauer at the Chemistry Department of the Cornell University was looking for a post-doc for doing electron diffraction. That was the first time Heinz had heard about electron diffraction. Luckily, he then applied for the post-doc position at Cornell since he wanted to go to an academic institution without commitment and restrictions. Thus, it was pure chance for him to get into electron diffraction.

Between 1965 and 1967 he worked with Prof. Bauer as a research associate and published his first papers in electron diffraction. In 1967 he moved to the University of Karlsruhe, Germany, where he joined the research group of Prof. Werner Zeil. There one of us (MD) was about to finish his doctoral thesis in electron diffraction, and met Heinz for the first time. In Karlsruhe he continued his research work in gas electron diffraction (GED) in collaboration with Dr. Jochen Haase who had just started to get some experimental results from the first GED commercial apparatus (Balzers Eldigraph KD-G2) which was designed by Werner Zeil and Jochen Haase in collaboration with Trüb-Täuber & Co. (later Balzers Instruments) in Switzerland. In 1967 the University of Ulm was founded as a research university for medicine and natural sciences and Prof. Zeil moved there with his group as he was one of the founding professors and head of the Institute for Physical Chemistry. Heinz Oberhammer received the position of assistant

professor for physical chemistry. After his habilitation in physical chemistry in 1971 he became associate professor and in 1972 he moved with Prof. Zeil to the University of Tübingen in Germany. In the same year he married Ute Wilhlem (who was born in Shanghai, China) from South Tirol. In 1973 and 1976 their son Clemens and daughter Verena were born. In 1979 he was appointed full professor.

He was guest professor at the University of Texas with Prof. Jim Boggs between 1978 and 1979. In 1986 and 1992 he was guest professor at the University of Melbourne, Australia and the Normal University of Nanjing, China, where he collaborated with Prof. Colin Marsden and Dr. Anding Jin to get their new electron diffraction units running.

Heinz was Vice Dean (1980–1982), Dean (1988–1990), and again Vice Dean (1990–1992) of the Faculty of Chemistry and Pharmacy at the University of Tübingen. In 2005 he retired from teaching. In 2004 he was awarded as Prof. h.c. at the Universidad Nacional de La Plata. In 2010 he will also receive the same honor from Universidad of Tucumán, Argentina.

Prof. Heinz Oberhammer published more than 340 papers in various refereed scientific journals and contributed to three scientific books. He also presented more than 90 papers at national and international meetings. More than 160 of his publications were devoted to inorganic and organic fluorine compounds. His contribution to a better and thorough understanding of fluorine chemistry by investigating the structures and conformations of a vast number of fluorine compounds by means of GED, MW spectroscopy and state-of-the-art quantum mechanical calculations is fundamental and profound. Among the exotic fluorine molecules he studied were  $F_2C=N-N=CF_2$ ,  $F_5Se-O-C\equiv N$ ,  $CF_3SSCF_3$ , and  $(CF_3)_2C=C(SCF_3)_2$ . In addition, he investigated the structural and conformational properties of some peroxides, phosphorus and Iminosulfur compounds. In 1992 he published an interesting paper on perfluorotriethylamine and for its unusual structure this compound was chosen for the cover page of the journal *Angewandte Chemie*.

His ambitious research interests and esteemed scientific activity in the field of electron diffraction were the reasons for continuous funding by the DFG for over 35 years. He also received financial support from various other sources and among them a generous grant by the Volkswagen Foundation for supporting his collaboration with Argentinian colleagues in La Plata, Córdoba, and Tucumán over 3 years. Until his retirement in 2005 Prof. Oberhammer was a member of the Bunsengesellschaft and the Fluorine Division of the Chemical American Society.

In collaboration with Prof. Dines Christen between 1993 and 2009, Prof. Oberhammer organized the European Gas Electron Diffraction Symposium in Blaubeuren (near Ulm, Germany) six times. He brought distinguished experts from various fields of structural chemistry together. The high and versatile scientific standard of this symposium in addition to its scenic location were highly appreciated by the electron diffraction community.

Heinz has participated and presented papers at the well-known Austin Symposium on Molecular Structure and Dynamics in Austin, Texas since 1970. He only missed two symposia, one in 1976 (birth of his daughter) and the other in 1986 (due to illness).

Two of us (JL and MD) and Heinz, along with Professor Ben van der Veken, organized the NATO Advanced Research Workshop on “Structures and Conformation of Non-Rigid Molecules”, which was held at the Castle Reisingburg and at the University of Ulm, Germany in 1992. This group also edited a book under the same title.

Heinz is the initiator of a successful cooperation program between the universities of Tübingen and Ulm (and recently also Bielefeld) from Germany and Lomonossov State University, Moscow (Prof. Lev Vilkov and his group), Russian Academy of Sciences in Moscow and Kazan, Ivanovo State University, Ivanovo (Prof. Georgiy

Girichev and his group) and Technological Institute St. Petersburg (Prof. Alexander Belyakov). This still ongoing cooperation, which is supported by the DFG on German side and by the Russian Foundation of Basic Research (RFBR) on the Russian side, started in 1996 and has resulted so far in 35 publications. In 1988 he also started a productive cooperation (supported by the DFG, DAAD and Fundación Antorchas) with Universidad Nacional de La Plata (in 1994 also with Universidad Nacional de Tucumán), Argentina. During this time he visited Argentina 13 times and published about 60 joint publications. He has had close ties to CDV there.

Not only in science but also in private life Prof. Heinz Oberhammer was determined to master barriers and voluntarily to accept challenges. At the age of six he started mountain climbing and skiing with his parents and two sisters. Later, these hobbies became increasingly important for him as a compensation for his hard work in science. Besides passionate skiing in wintertime he exercised intensive rock climbing with friends. Aside from climbing some peaks of the Alps, the mountaineer Heinz Oberhammer climbed mountains in Africa, South America and Asia (all of them are 6000 m and higher), e.g. Kilimanjaro, Mt. Kenya, Huascarán, Illimani (Bolivia), Cimbarozo, Cotopaxi (the highest active volcanoes in the world, both in Ecuador) and mountains in Pakistan. He never reached a summit in Pakistan because of the rescue operation of a friend.

In the field of electron diffraction Heinz and MD had a very close collaboration. This was mainly based on sort of “barter business”. He recorded the electron diffraction images in Tübingen for MD’s research work and MD traced the imaging plates on his fully computer controlled microdensitometer in Ulm. This kind of “trade exchange” was perfectly operating for more than 25 years and resulted in many joint papers.

As good friends Heinz and MD have shared other interests in common, including travel. Sometimes they utilized their joint presence in Austin to undertake discovery trips to wonderful places in the US immediately after the symposium was over. Once, in 1988, they flew from Austin to Albuquerque, NM, rented a car and headed towards the Monument Valley area to relish the fantastic scenic attractions of the totem pole formation and Navajo Tribal Park. While they were driving, somewhere between Gallup and Shiprock they started a never ending discussion about the  $(p \rightarrow d)\pi$  bond hypothesis. This remarkable and unforgettable “mobile” discussion (carried out while driving) lasted for about two days leading them to Kayenta (AZ), Mexican Hat (UT), Durango (CO), Taos, and Santa Fe (NM). It is difficult to judge the outcome of that odd discussion, but it was surely the reason why MD failed to truly appreciate all the natural wonder they passed by. Two Austin Symposia later, Heinz and MD made a trip to Chihuahua and Copper Canyon in north Mexico and which was evidently more harmonic and quite peaceful. At that time they finalized an application for a new mutual project sitting beside a chimney in a hotel room somewhere in the Mexican Copper Canyon.

Those who think that performing electron diffraction or spectroscopic work is harmless and free of chemical ventures are certainly mistaken. Prof. Oberhammer, as a physicist whose knowledge in chemistry is astonishingly considerable, and experienced some incidents proving this statement. One of the interesting electron diffraction studies which had been carried out by Heinz was that of dimethylperoxide. However, for a combined ED-MW study he and Prof. Dines Christen decided to re-visit the MW spectrum of this compound, which was earlier recorded by three other well-known MW groups but because of the internal rotations about both the O–O and C–O bonds the spectrum was very difficult to analyze. After about one year of doing the experimental work the peroxide sample exploded vigorously causing some damage. Fortunately, Heinz’s graduate student was standing far enough away so she was only hit by some glass splinters. That

was the end of the MW measurements on this compound. A similar spectacular explosion occurred as Heinz was warming up the sample of the inorganic azide  $\text{IN}_3$  which he received (in liquid nitrogen) from Prof. Klapötke (LM University, Munich, Germany). Luckily, again nothing serious happened except for some material damage and Heinz's deafness for two days.

Finally, it remains to mention that the legendary electron diffraction apparatus of Balzers-Zeil-Haase-Oberhammer era was transferred in 2005 to Prof. Norbert Mitzel laboratory in Münster (presently in Bielefeld), Germany, where it has been redesigned and equipped with new electron gun new inlet nozzles and recording system using imaging plates.

Prof. Heinz Oberhammer took the advantage of retirement from teaching to be scientifically more active than ever since he is still engaged in various research projects and some productive cooperations (Russia and Argentina).

This special issue is devoted to Prof. Heinz Oberhammer in recognition of his distinguished work in the field of structural chem-

istry in general and fluorine chemistry in particular. The editors of this issue all consider Heinz to be a good friend, and we wish him many years of enjoyment of structural research, skiing, mountaineering and our warmest belated congratulations for turning 70 on June 4th, 2009.

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