

Alfred Klemm on his 100th Birthday

After completing my studies in physics at the university in Frankfurt (Diplom), I started my PhD work in the group of Professor Alfred Klemm at the Max-Planck-Institut für Chemie in Mainz on November 1, 1958. In my thesis, I measured the difference in thermal conductivity between *o*- and *p*-H₂ at 20 K. Alfred Klemm's main area of research was molten salts; this subject, however, resulted from his cooperation with his colleague and friend Ludwig Waldmann, who was also a scientific member of the institute. He was a theoretical physicist and internationally well established in gas kinetics. Alfred Klemm's group thus consisted at that time of one postdoc and four PhD students, three working on molten salts and one on gas kinetics.

Alfred Klemm joined this institute – at that time the Kaiser-Wilhelm-Institut für Chemie in Berlin-Dahlem – about 75 years ago. He came together with Ludwig Waldmann from the Institute of Physical Chemistry of Munich University. Thus, both worked at the institute already when one of the most important discoveries in the first half of the last century was made: the nuclear fission by Otto Hahn and Fritz Straßmann. When the institute buildings in Berlin were destroyed during the Second World War, the staff had already (in 1944) been moved to Tailfingen, a small town in Southern Germany, close by to where the first nuclear reactor was under construction in a cellar in Haigerloch. The Kaiser-Wilhelm-Institut für Physik – at that time headed by Werner Heisenberg – was moved in the same way.

It has always been very interesting to listen to Alfred Klemm telling stories about these important events in the history of the institute, known to others only from the literature, his detailed recollections resurrecting the characters of the scientists active at that time and their – more or less – harmonic relationships with each other. Finally, the institute – now the Max-Planck-Institut für Chemie – was moved to Mainz in 1949 and positioned on the campus of the university – just reopened after having been closed during the French revolution 150 years earlier – now the



Fig. 1. In the institute in 1967 in front of the mass spectrometer M86.

Johannes-Gutenberg-Universität. In Mainz, he became professor at the university and a scientific member of the institute.

Already in the late thirties, the activities of the institute had been supplemented by the investigation of stable isotopes because of the increased interest in isotope separation. In this context, Josef Mattauch – well known for his contributions to the development of mass spectrometers – joined the institute coming from Vienna, while Alfred Klemm proposed to separate isotopes by electro-migration in molten salts. He was able to measure the different mobilities of the isotopes, but finally this method proved not to be useful for producing sufficient amounts of enriched isotopes. Although the more technical aspect of the investigations was not successful, he became internationally well known by employing the so called ‘mass effect’ for the investigation of several structural and dynamical properties of molten salts, which were not accessible by other experimental methods.

Before I came to the institute, Alfred Klemm had been invited to spend a longer period of time at Chalmers Technical University in Göteborg, Sweden. As a consequence of his visit, a very successful research group in molten salts has been established there, headed by Professors Lunden and Lodding. After his return to Mainz, the cooperation with this group continued for decades. Finally, he received an honorary doctor degree from this University.

Alfred Klemm was also very successful in especially one of his gas kinetic experiments: a ‘separation tube’, usually employed for the separation of isotopes by thermal diffusion, had been constructed in one of

our laboratories. It consisted of two concentric glass tubes, an outer one with a diameter of several centimeters and a thin and heated inner one, both reaching from the floor to the ceiling of the laboratory. With this tube, it could be demonstrated that not only isotopes could be separated, but also molecules with the same mass but different moments of inertia like D_2 and HT.

Finally, another achievement strikes us as important in Alfred Klemm's curriculum vitae. In 1945, there was an urgent need to establish again scientific journals in Germany. With his knowledge and experience as a descendant of publishing house owners, he had the courage to start the 'Zeitschrift für Naturforschung'. In

spite of all the problems in Germany immediately after the war, the first issue appeared already in January 1946. Originally the journal published articles from all kinds of science. As it had been very successful in the following years, it had to be split into three parts: A: Physics and Physical Chemistry, B: Chemistry, and C: Biology. Alfred Klemm is still owner of Zeitschrift für Naturforschung.

His former students, friends, and colleagues wish him the very best for all the years to come.

Karl Heinzinger