

Historical Landmarks

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The history of chemistry in Basel is long. The world's first chair of chemistry was founded in Basel in 1527 for *Théophraste Bombast de Hohenheim*, better known as *Paracelsus*. Although probably better categorized as an alchemist, *Paracelsus* was active in the preparation and investigation of new compounds and is viewed as the father of medicinal chemistry. The teaching of chemistry at the University began in 1685 with a course given by *Theodor Zwinger III*. As early as 1688, *Samuel Werenfels* published *Meditatio de atomis*, in which he presented mathematical and philosophical arguments regarding the existence of atoms. These arguments were crucial to *Dalton* in his later formulation of the atomic theory of matter. Other early studies in analytical and experimental chemistry were conducted by *Benedikt Staehelin* (1695–1750) and *Melchior Huber* (1779–1814).

A new chair of chemistry and physics was created in 1818 and the appointment of *Peter Merian* in 1820 perhaps marks the beginning of the next phase of chemistry in Basel. *Merian* established a chemical laboratory at the Falkensteinerhof in Münsterplatz in which he worked for 23 years. He was succeeded by *Christian Friedrich Schönbein* in 1835 who continued as professor of chemistry after the establishment of separate chairs of chemistry and physics in 1852. He was a multi-talented scientist and during his time in Basel, *Schönbein* discovered the oxygen allotrope, ozone, as well as gun cotton. The next chairholder was *Jules Piccard* who established a tradition of research into dyes that continued until very recently. *Piccard* was

also interested in the chemistry of foodstuffs, an area which can, perhaps, be seen as the genesis of biochemistry in Basel.

To a New Site and Three Institutes

In 1874, a chemical laboratory with places for 24 students was established in the *Bernoullianum*. In addition to *Piccard*, *Goppelsroeder* worked in Basel and developed new analytical methods based upon capillary electrophoresis. At the same time, a new chair of physical chemistry had been established and was first occupied by *Georg W.A. Kahlbaum*. Upon the retirement of *Piccard*, separate divisions of organic and inorganic chemistry were established, and *Friedrich Fichter* was appointed to inorganic and *Hans Rupe* to organic chemistry. The construction on the current site began in 1910 with the building on Spitalstrasse that is currently the Institute of Inorganic Chemistry. A new Institute of Physical Chemistry was built adjoining the Physics building on Klingelbergstrasse in 1925.

Following the earlier work of *Goppelsroeder*, *Fichter* was responsible for the development of an electrochemistry research school in Basel. In addition to his local work, he was also responsible for the establishment of *Helvetica Chimica Acta*. The chair of inorganic chemistry subsequently passed to *Hans Erlenmeyer* who established a field of research in coordination chemistry that continues within the Institute. *Erlenmeyer* was followed by *Silvio Fallab* who continued the tradition of coordination chemistry. The chair is presently occupied by *Edwin C. Constable* who succeeded *Fallab* in 1993 and whose research interests in supramolecular chemistry cross borders between organic, inorganic, biological, and materials chemistry.

Upon the retirement of *Kahlbaum*, the chair of physical chemistry passed to *August Leonhard Bernoulli* who was inter-

ested in reaction kinetics and thermochemistry. He was succeeded by *Werner Kuhn* whose interests in polymer chemistry and what would now be called biophysical chemistry are perpetuated in the Institute of Physical Chemistry to this day. Following the retirement of *Kuhn*, the chair was taken by *Edgar Heilbronner*, a number of whose doctoral students and habilitands are to be found in the Department today. The history of the Institute of Physical Chemistry is brought up to date with the appointment of *John P. Maier* to the chair in 1991, and the establishment of a strong research group with interests in gas-phase spectroscopy of carbon chains and ionic complexes.

In organic chemistry, *Rupe* studied natural products in the terpene series and studied, *inter alia*, their optical properties. After the retirement of *Rupe* in 1932, *Paul Ruggli* was appointed to the chair of organic chemistry and continued the tradition of studying dyestuffs established by *Piccard*. *Ruggli* had, however, wide-ranging research interests and was also deeply involved in the development of synthetic methods for heterocyclic compounds. His development of high-dilution methods for the synthesis of large rings made new classes of compounds accessible. The increasing importance of organic chemistry was marked in 1945, when, following the death of *Ruggli*, two chairs were established. One was occupied by *Tadeus Reichstein* who moved from a chair of pharmaceutical chemistry and the other by *Robert Wizinger*, who initiated the new Institute for Dyestuff Chemistry in St. Johanns-Vorstadt. The chair of dyestuff chemistry passed to *Heinz Balli* in 1966. Upon the retirement of *Balli* in 1993, the Institute for Dyestuff Chemistry was closed and the resources and personnel transferred, in part, to the new Department of Chemistry. The present Institute of Organic Chemistry was completed in 1952 under the guidance of *Reichstein*. Following his retirement in 1954, *Cyril A. Grob*

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took over the chair of organic chemistry, and he was complemented in 1966 by the appointment of *Christoph Tamm* to a new chair of organic chemistry. The Institute of Organic Chemistry was modernized and extended in 1968. The retirement of *Grob* led to the appointment of *Bernd Giese*, the current (1999) Head of Department. *Andreas Pfaltz* was appointed to the other chair of organic chemistry in 1993, following the retirement of *Tamm*. Between 1995 and 1998, *Pfaltz* was a director of the 'Max-Planck-Institut für Kohlenforschung' but returned to Basel in 1999 to reoccupy the chair. The wide remit and interdisciplinary nature of modern organic chemistry is seen in the research areas of *Giese* (bioorganic chemistry) and *Pfaltz* (catalysis).

The individual research interests of the Department members are presented in the pages that follow. However, these fall generally within the following sub-headings; bioinorganic or bioorganic chemistry, chemometrics, photochemistry, polymer chemistry, spectroscopy, supramolecular chemistry, synthesis, and theoretical chemistry.

The Department of Chemistry

The Department of Chemistry was established in 1989, with the three Institutes retained as functional units. The similar infrastructure needs of the Department are increasingly leading to joint applications for funding and pooling of resources. The current structural organisation is presented in the *Figure*.

The Department of Chemistry comprises 20 Professors, 8 Lecturers (Privatdozenten), and about 50 technical staff members. There are roughly 100 Ph.D.

students and 30 Postdoctoral fellows, many of whom are also active in teaching. At present, a number of professorial positions are vacant and the Department is actively discussing its future research wishes.

The day-to-day running of the Department is the responsibility of the Head of Department. This position is occupied for a period of two years by a candidate elected by the *Department Conference*. Although the *Department Conference* is the ultimate body within the Department, much of the decision-making is delegated to the *Executive Committee*, which consists of six members, including the Head of Department. Two other standing committees – the *Teaching Committee* and the *Research Committee* – report to the *Executive Committee*.

Neighbouring Institutions

The role of chemistry as a core subject in natural sciences implies that projects are increasingly becoming multidisciplinary. There are numerous formal and informal collaborations between the Department and neighbouring disciplines as well as with Universities and research institutes throughout the world. Interactions with the Biozentrum and the Department of Pharmacy have assumed a particular importance with the adoption of Life Sciences as a priority within the University. Ties with the Department of Pharmacy have always been close, and within the research profiles that follow, we have chosen to include Prof. *Beat Ernst* and Dr. *Alfons Hädener* as their interests are predominantly 'chemical'.

There are also strong links with the Department of Physics in the field of ma-

terials science, and a number of multidisciplinary projects in this area have recently been initiated.

Curriculum and Teaching

The Department of Chemistry is trying to offer a full-fledged curriculum in chemistry with analytical, inorganic, organic, and physical chemistry as diploma subjects. In addition, students majoring in chemistry have to opt for a moderate degree of specialisation by selecting from a choice of advanced chemical courses as well as taking courses and examinations in a non-chemical subject. Postgraduate study is an integral part of the Ph.D. program.

At the introductory level, students of chemistry are outnumbered by a factor of 20 by students of medicine, biology, pharmaceutical science, and others, who are trained in special lecture and laboratory courses.

The University in general and the Department of Chemistry in particular are currently actively investigating possible changes to the curriculum structure and the above overview is likely to change in the near future. In particular, the Department of Chemistry is keen to see a unified structure for the study of natural sciences in the first year.

Where to get further information about studying chemistry in Basel:

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