

Chemistry in Lausanne



Introduction

Chimia 50 (1996) 577–580
 © Neue Schweizerische Chemische Gesellschaft
 ISSN 0009–4293

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Historical Landmarks

The world's first chair of chemistry was created in Basel in 1527 for *Théophraste Bombast de Hohenheim*, alias *Paracelse*. It took however the *Schola*

Lausannensis (Academy of Lausanne), founded in 1537 and transformed into a university in 1890, a long time to open its doors to natural sciences, and particularly to chemistry. *Jean-Samuel-Rodolphe François*, professor of physics, mentioned

experimental and chemical theories for the first time in a speech given in Latin in 1778. Six years later, the Academy entrusted *Henri Struve* with the teaching of chemistry and granted him the title of honorary professor. In 1799, he was appointed full professor and he taught chem-

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Lausanne
 Le Château et l'Ecole de Chimie

Fig. 1. The School of Chemistry and Physics from 1893 beside the castle



Fig. 2. Forming a single site, 1) the new Chemistry building of the University and 2) the chemistry area of the Swiss Federal Institute of Technology (photo: A. Herzog)



Fig. 3. View of the common Chemistry and Pharmacy Library

istry, natural sciences and mineralogy until 1819. Starting in 1805, he was also appointed director of the salt mines in Bex, a small town in the Rhône valley, 60 km from Lausanne. In 1850, chemistry was definitely separated from physics and became closely related to pharmacy. *Henri Bischoff*, first director of the School of Pharmacy, occupied the Chair of Chemistry from 1851 to 1873. He was also one of the five engineers and professors who founded on November 7, 1853 the *Ecole spéciale de Lausanne* with the aim of educating engineers. First a semi-private enterprise, the special school was incorporated into the Academy in 1869 and into the University in 1890 under the name of Polytechnic School. In 1968, the school was transferred to the federal administration and became the *Ecole Polytechnique Fédérale de Lausanne* (Swiss Federal Institute of Technology, EPFL). The succes-

sor of *Bischoff, Henri Brunner*, was also professor of pharmacy and chemistry and he was the promoter of modern chemistry teaching in Lausanne. He played an important role in the design of the School of Chemistry and Physics located Place du Château (*Fig. 1*), behind the gothic cathedral, and opened on October 22, 1893. The building was occupied by chemists until autumn 1994 when the Chemistry Section of the University of Lausanne moved to the campus of Dorigny, next to the buildings of the Chemistry Department of the EPFL (*Fig. 2*).

Chemistry at the University and at the Swiss Federal Institute of Technology

In Lausanne, chemistry is split between the two institutions for higher education. The Chemistry Section of the University of Lausanne (UNIL) is comprised of two institutes, the Institute of Inorganic and Analytical Chemistry (ICMA, 8 professors) and the Institute of Organic Chemistry (ICO, 6 professors). At the Swiss Federal Institute of Technology, the Chemistry Department is also divided into two institutes, the Institute of Physical Chemistry (IPC, 5 professors) and the Institute of Chemical Engineering (IGC, 8 professors). Two professors of the latter are associated with one professor of biology from UNIL and affiliated to the Centre for Biotechnology common to EPFL and UNIL. The Institute of Biochemistry of the university belongs to the Faculty of Medicine. There is therefore no overlap between the various administrative chemistry units at EPFL and UNIL (*Scheme*).

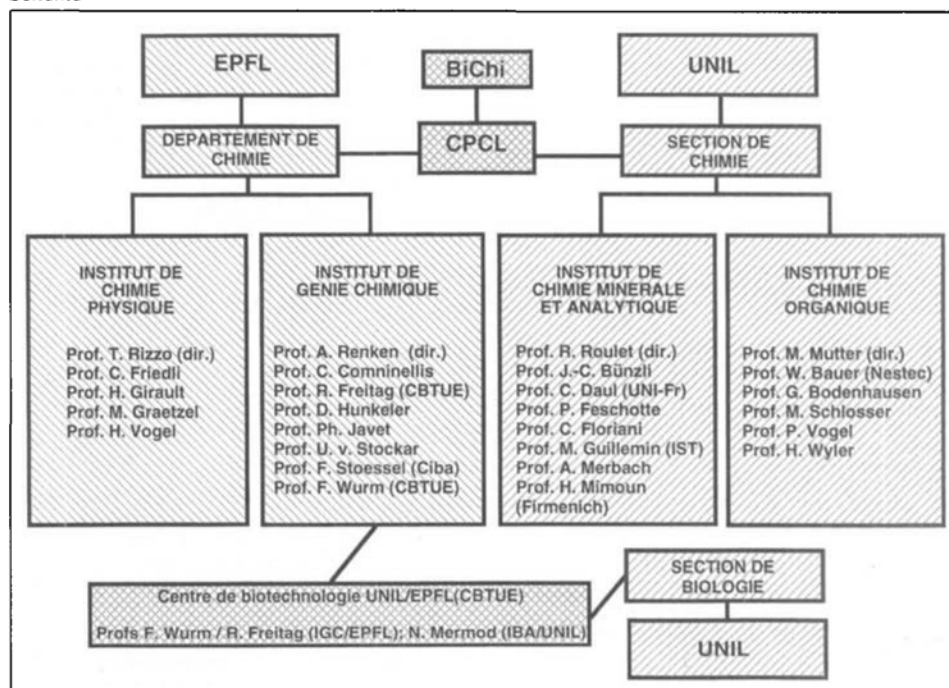
The coordination between UNIL and EPFL in chemistry is achieved by the joint Faculty of both institutions and by a Chemistry Faculty Board in which sit two professors and one member of the direction of each institution. The main fields of cooperation include the supervision of a common Chemistry Library (*Fig. 3*) located in the University building and including pharmacy titles, of a common *curriculum* for the first two years of undergraduate study and a close coordination of research themes and teaching staff profiles.

Chemistry Curricula

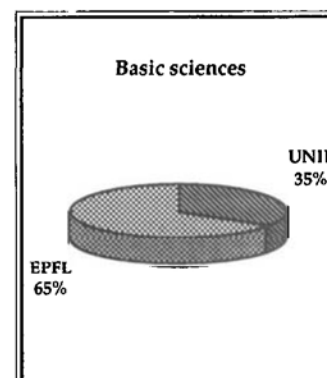
Undergraduate Level

The University offers a *curriculum* in basic chemistry (4 years, including diploma thesis) while EPFL educates chemical engineers in 4½ years (diploma thesis

Scheme



BASIC SCIENCES		
Mathematics		
UNIL	154 h	
EPFL	84 h	
Physics		
EPFL	182 h	
Biology		
UNIL	21 h	
EPFL	21 h	
Computer sciences		
EPFL	42 h	
TOTAL		
UNIL	175 h	
EPFL	329 h	



CHEMISTRY			
General and inorganic chemistry		Organic chemistry	
UNIL	195 h Courses	UNIL	140 h Courses
	308 h Practical		224 h Practical
Physical chemistry		Chemical engineering	
EPFL	238 h Courses	EPFL	56 h Courses
	168 h Practical		56 h Practical

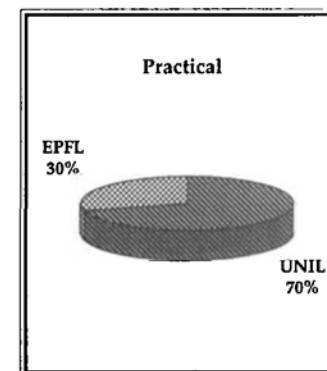
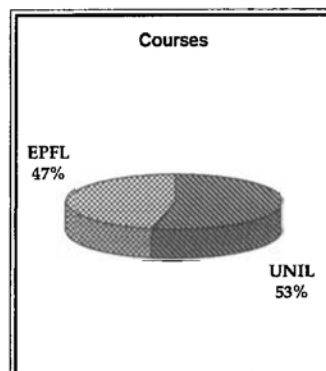


Fig. 4. Splitting of the teaching load for the common cycle of study between UNIL and EPFL professors

included). However, the first two years of study are strictly common and students may register at any one institution (Fig. 4). The third and fourth years differ substantially since students in engineering take more courses in technical domains while UNIL students are more directed towards natural sciences.

A system of options allows the student to go more closely into specific subjects such as biochemistry, food sciences (in collaboration with *Nestlé Inc.*), computational chemistry, environmental chemistry and biotechnology. Some of these teaching packages are organized jointly with the Department of Chemistry of the University of Geneva. The *curricula* end with a practical diploma thesis which can be directed by either one of the Lausanne chemistry professors. Even during the last two years, UNIL professors teach EPFL students and *vice versa*. The system works extremely well despite an overload of administrative work since two different bureaucracies rule the two half-chemistry departments... Several reports, even at the federal level [1] are calling for merging the two chemistry units into a single one, but apparently both federal and cantonal political authorities find it a difficult task.

Graduate Level

There is no compulsory graduate *curriculum*. However, both institutions participate in the *Diplôme d'études approfondies multinational de chimie moléculaire*, organized jointly with the Ecole Polytechnique de Palaiseau, Paris and the universities of Geneva, Bordeaux, Paris-Sud and Louvain. Another postgraduate program started this year, the *Diplôme d'études supérieures en chimie*, organized jointly by the universities of Lausanne and Geneva, and by the EPFL.

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Facts and Figures

The two chemistry departments in Lausanne are of about equal importance as demonstrated by the number of affiliates: there are 14 professors and 150 Ph.D. students and postdoctoral fellows at UNIL, 13 professors and 140 Ph.D. and postdoctoral fellows at EPFL. The number of students enrolling in the first year of the chemistry *curriculum* ranges between 80 and 100 (Fig. 5). All important research areas and technologies of modern analytical and synthetic chemistry are established in Lausanne, along with interdisciplinary fields. As far as the research productivity in chemistry is concerned the institutions of the Lausanne area rank second in Switzerland behind Zürich but ahead of Basel [2] and an international study has ranked Lausanne among the best European chemistry departments [3]. The high-field NMR center for French-speaking Switzerland is located in the Chemistry building at UNIL.

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Received: October 2, 1996

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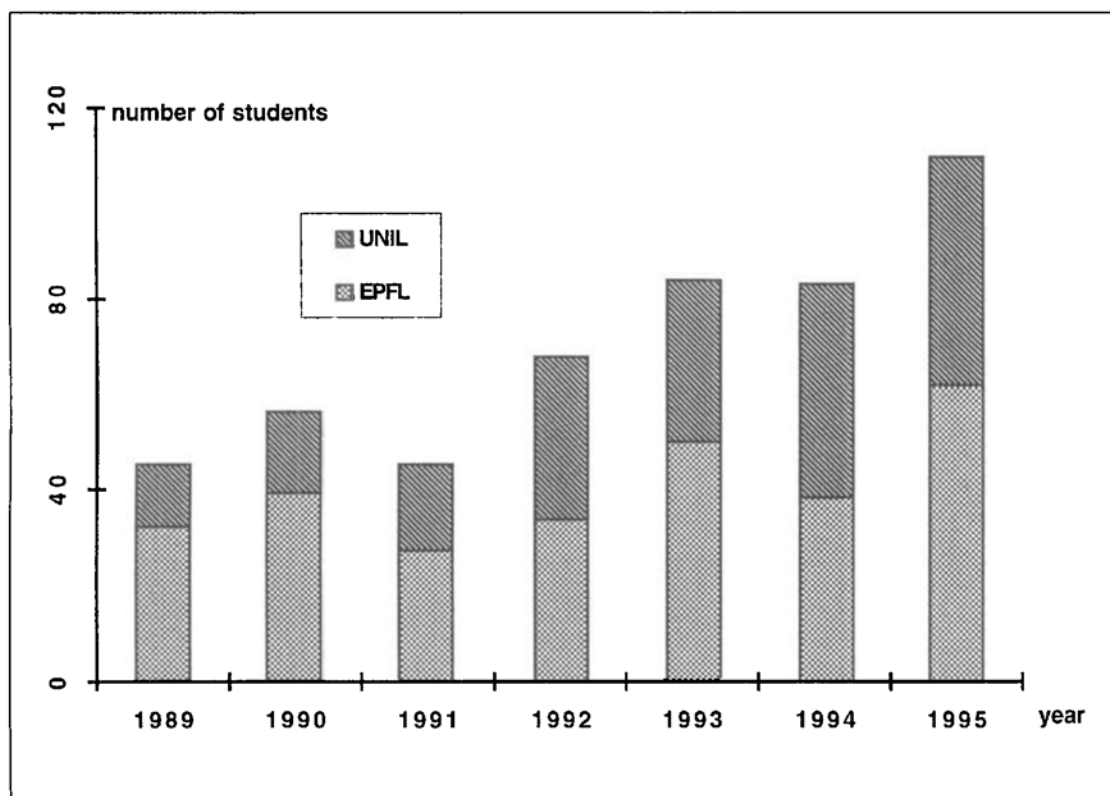


Fig. 5. Number of first year students enrolling at UNIL and at EPFL