

TO TEACH AND LEARN CHEMISTRY IS VITAL TO HUMAN DEVELOPMENT. WHAT ARE WE DOING TOWARD THIS END IN MEXICO?

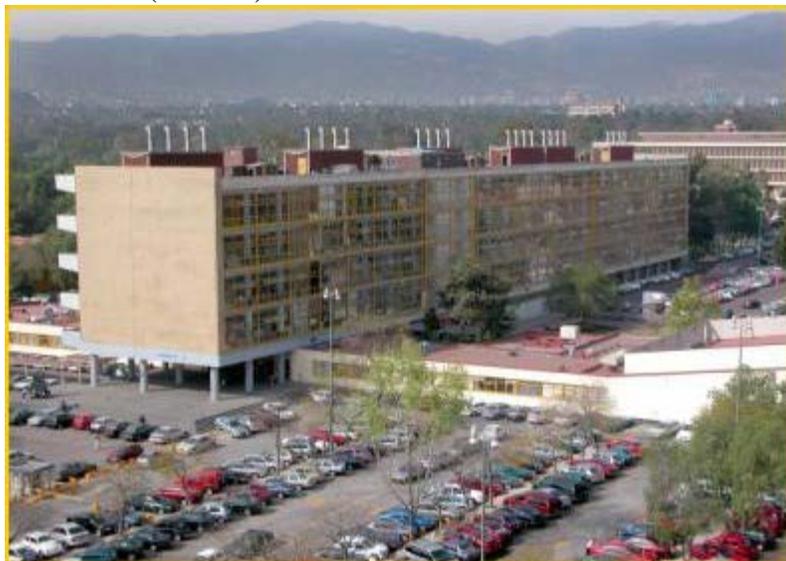
Adela Castillejos Salazar

as translated by Paul Kelter



Facultad de Química. Universidad Nacional Autónoma de México. adelac@servidor.unam.mx

In this paper I will talk about a book that I hope will be of interest to many of you, no matter what your native language; a Chemistry book we are about to publish for high-school students at the National Autonomous University of Mexico (UNAM).



This book is part of a collection entitled “Fundamental Knowledge,” which is being developed by Chemistry, Physics, Mathematics, Biology, Philosophy, Geography, Grammar/Literature, and History professors to be used by students at the UNAM high-school system, where these subjects are mandatory. With this collection, we want to think about, and have our students understand, the scientific contents of the 21 st Century and the accelerated rate of change in knowledge within the last few decades.

In the particular case of the Chemistry book, which I coordinated, I formed a group of 9 Chemistry professors with a vast experience in the subject who have essentially dedicated their professional lives to teaching at different educational levels, from high-school to post-graduate studies.

The first challenge we faced as authors was **deciding which chemistry concepts are the fundamental ones** that we really want high-school chemistry students to learn at 16 to 17 years of age, knowing that more than 96% of them will

TO TEACH AND LEARN CHEMISTRY IS VITAL TO HUMAN DEVELOPMENT. WHAT ARE WE DOING IN TOWARD THIS END IN MEXICO?
English ...

study careers which are *not* directly related to this science.

We reviewed the literature extensively, from the most varied and beautiful traditional books published primarily in English to many articles written by renowned professors. We decided to include five themes.

1. **the observable macroscopic world;**
2. **that which has to be imagined with the aid of models – the microscopic world;**
3. **the chemical language – so special and useful to communicate properly;**
4. **chemical bonding;**

5. chemical reactions and energy.

In the five modules of this book, we included only those concepts we considered as *fundamental*, yielding far fewer ideas than are normally included in traditional chemistry books and lectures.

In the book, we suggested many activities students can perform in the classroom, at home, or in the lab, in order to reinforce their knowledge and to develop activities such as research, group discussions, teamwork, observation, synthesis and analysis, amongst others.

We tried to make these activities relevant to students **in the context of Mexico**, their home country, highlighting our vast and valuable culture. We were very careful to ensure that themes were presented in a way that relates with topics that are of interest to students, such as love, friendship, sex, alcohol, tattoos, etc.

We seek to develop a scientific culture that enables them to better understand, care for, and improve the world they live in. We want to support the United Nations efforts in the [Decade of Education for a Sustained Development!](#)



Education for Sustainable Development

United Nations Decade (2005-2014)

Our collection of textbooks will be published this month in printed, both in digital and electronic form. After being published and introduced to all high school teachers, we hope to make a new and improved version, which will include the opinion of a larger number of teachers and students using the book.

We would be delighted if the students in the United States learn with our Chemistry book! In order to do so, they would have to learn Spanish, which will also be extremely useful for them. So, when they visit Mexico or any other Spanish-speaking country they will be able to better understand people, as well as to enjoy and learn even more from our customs and our culture.

The Study of Chemistry Among Mexican High School Students

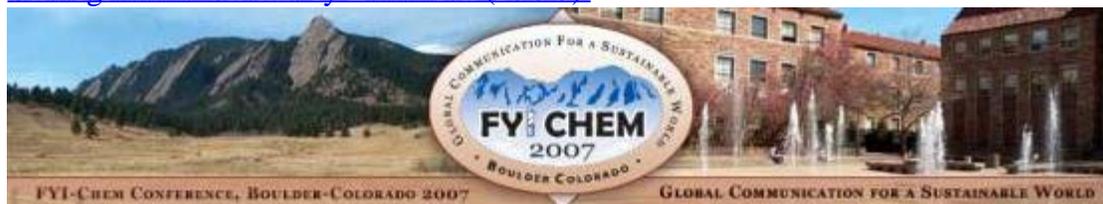
The majority of high school students in Mexico do not understand the large quantity of concepts they are expected to learn. They are not interested in this important science and they do not understand its enormous significance in their own daily lives. **Only about 4% of all high school students chooses to study toward degree related to chemistry, and we would like that to change.** We would like all high school students to get chemistry knowledge in order to make better decisions in their lives; and we also want many more students to pursue chemistry-related degrees, so that they can contribute with their intelligence and ability to improve the world we live in.

TO TEACH AND LEARN CHEMISTRY IS VITAL TO HUMAN DEVELOPMENT. WHAT ARE WE DOING IN TOWARD THIS END IN MEXICO?
English ...



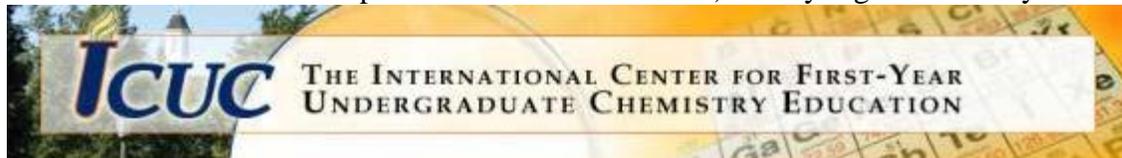
Finally, I am going to tell you that I work at the School of Chemistry at the National Autonomous University of Mexico (also known as UNAM). Those who study or work there are called “pumas,” because this beautiful animal is our mascot. The UNAM is one of the biggest universities in the world, with around 300,000 students enrolled, and we are proud to be internationally recognized as the best university of Latin America. I invite you to visit the university website at www.unam.mx and learn about all the opportunities we offer, and I also invite you to plan a trip to Mexico and visit this wonderful university in person. Something that calls the attention of most people that know the “pumas” is the great love we have for our institution and the pride we share in belonging to its community, be it as students, alumni, teachers or staff.

We are hosting the 2009 FYI-Chemistry conference at UNAM in Mexico City. This 3-day conference, in late May 2009, will follow a similar format to the [FYI-Chem 2007 conference](#), hosted by Margaret Asirvatham, Director of General Chemistry, at the University of Colorado at Boulder, on behalf of the [International Center for First-Year Undergraduate Chemistry Education \(ICUC\)](#).



[Header image](#)

Latin American membership in what we call “E-cook”) is very high from many of our countries.



In the School of Chemistry we have around 5,000 students majoring in 5 different degrees: chemical engineering, metallurgical/chemical engineering, chemistry, food chemistry, and pharmaceutical and biological chemistry. We also

TO TEACH AND LEARN CHEMISTRY IS VITAL TO HUMAN DEVELOPMENT. WHAT ARE WE DOING IN TOWARD THIS END IN MEXICO?
English ...

offer several postgraduate degrees along with other UNAM Schools. There are around 1,200 professors in this School

of Chemistry.



I teach General Chemistry and Science and Society, and both courses are offered during the first semester of all the degrees (which take 9 semesters to complete). During the first semester we have nearly 1,200 new students which are split in 18 groups, so that each group has around 60 to 70 students. There is an equal number of male and female students.

I hope you come and visit us!

CONFCEM on-line conferences are organized by the [ACS Division of Chemical Education's](#) Committee on Computers in Chemical Education ([CCCE](#)). Send additions or corrections for this page to John H. Penn at John.Penn@mail.wvu.edu
