

# Editorial

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# Editorial



People generally take it for granted that the items we use everyday work flawlessly and deliver superb performance. To name just a few current examples, the battery of a cell phone should never run out or the COVID vaccine is expected to provide maximum protection.

However, we do not realize that there is a whole story beyond every functional product and almost always an experienced chemist plays a crucial role in it. Most likely, we completely disregard the fact that such scientist had to be educated and trained. The entire process is rather lengthy, full of challenges and may well be initiated already in primary school. Upon igniting the first spark of interest in natural sciences or even chemistry itself, high school teachers face a challenging task to intertwine the macroscopic level represented by the properties of substances or materials with the microscopic level related to interactions between atoms, molecules, or ions. Simultaneously, pupils learn the language of chemistry, which might prove at least as challenging as acquiring any other language at this age (if not even more so). If the fire remains burning, their next steps may lead to university to encounter further challenges associated with detailed and complex theories, quantitative aspects, calculations or experimental aspects of a chemist's life.

A reader may ask, have they not noticed that the word CHALLENGE appears in some form in almost every sentence of the previous paragraph? Of course, I have, in fact, carefully placed them there. The reason is simple: as stated above chemistry education is challenging and I have not even mentioned other hurdles related to limited teaching time, reduced financial resources, or limited lab space.

Along these lines the Division of Chemical Education of the Swiss Chemical Society recently organized a short symposium entitled 'Challenges in Teaching Chemistry'. Five speakers (see the cover page) shared their experience in this regard and communicated their strategies to deal with a variety of challenges. Summaries of four of these talks laid the basis of this CHIMIA issue that you hold in your hands. The palette of contributors is as equally diversified as the line-up in Bern. It blends lecturers from universities with high school teachers, authors from Switzerland with those from abroad, and young blood with older experience resulting in this multifaceted issue, which opens with a foreword by Christian Bochet, the President of the Swiss Chemical Society. The reader is then set for a journey across a variety of reports dealing with experiences acquired in classrooms and lecture halls. It is interesting to see that some of the problems encountered at high schools are also (sometimes even strongly) present at the universities. This actuality sends a clear signal that those involved and interested in teaching chemistry should communicate and coordinate their efforts.

I would like to thank wholeheartedly everyone who on a daily basis tirelessly faces the challenges in teaching chemistry, introduces innovations in chemical education, or supports students and pupils in the learning process. Your work is essential to secure the next generations of chemists, who will take care of our future.

Jan Cvengros  
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**Jan Cvengros** was born in Slovakia and studied organic chemistry at Comenius University in Bratislava. After PhD thesis at University of Cologne and a postdoctoral stint at University of Milan, he moved to ETH Zurich as a postdoctoral fellow and an independent researcher before taking up his current position as a lecturer. In 2020 he became the President of the Division of Chemical Education of the Swiss Chemical Society.

**Cover image:** Speakers of the Future of Chemical Education Symposium 2023: Paul Wyatt (University of Bristol), Ilka Parchmann (Kiel University), Michel Rickhaus (University of Geneva), Stefan Dolder (Gymnasium/FMS Lerbermatt), Antonio Togni (ETH Zurich).