

# Conference Report

## The International Chemistry Olympiad 2023 – A Glimpse Behind the Scenes

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**Abstract:** For the first time an International Chemistry Olympiad was hosted in Switzerland. A look behind the scenes shows some of the various challenges the organizers faced in the preparation and running of this event.

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### The First Time in Switzerland

From 16–24<sup>th</sup> July 2023, the 55<sup>th</sup> International Chemistry Olympiad (IChO) took place, for the first time in the long history of this annual event, hosted in Switzerland.<sup>[1]</sup> Additionally, this year's IChO marked the long-awaited return to an in-person format after three years of remote competitions.<sup>[2–4]</sup> 348 students from 89 countries displayed their chemistry knowledge at ETH Zurich and gave their best to score one of the precious medals.<sup>[5]</sup>

A unique event like this comes with its own unique challenges. One motto of this year's IChO was 'Finding Solutions'. This clearly does not only apply to the problems the participants faced in the exams, but also to all the many aspects that had to go into the planning and preparation of an event of this magnitude.

### Years to Make – Five Hours to Take

The competition consisted of two five-hour examinations, one in theory (Fig. 1) and one testing the students' practical knowledge in a chemistry laboratory. The scope of topics spanned inorganic, physical, and organic chemistry and students got to show both their synthetic and analytical practical skills.

Author teams from several Swiss universities had been working on the creation of these problems ever since 2021 and created an accompanying set of preparatory materials.<sup>[6]</sup>

The exam and preparatory problems were iteratively curated and revised, as the content and format of IChO examinations is well regulated due to the competitive nature of the event. As such, the authors then also had to defend the content of their problems in front of the international jury constituted by the students' mentors from the participating delegations.

During the design of the problems, the possibility of a swift and easy translation into the various languages of the participants had to be accounted for. Along the same lines, all the grading of



Fig. 1. Students during the five-hour theoretical examination. © ETH Zurich / IChO 2023.

the students' answers, which had to happen within the timeframe of a single day, had to be anticipated. Ensuring that marking was fair across the board and that language differences would not be decisive were examples of many aspects to be considered.

The culmination of all these efforts, *i.e.*, the official IChO 2023 problems and their translations into over fifty languages are accessible online.<sup>[7]</sup>

### Many Gears – One Swiss Clockwork

The software *OlyExams*,<sup>[8]</sup> originally developed for the International Physics Olympiad in Switzerland in 2016, has been a valuable asset for the last few years of remote IChO competitions and was again critical in handling the complicated framework of exam logistics in this year's in-person format. Apart from allowing for collaborative work on the translation of exam questions, it would also streamline feedback during the reviewing and marking process.

Apart from the necessary IT infrastructure, aspects like printing and scanning of the exam papers, and the student supervision during the examinations also had to be considered. The logistics of assembly and disassembly of the lab spaces in over fourteen practical laboratories had to be managed to ensure equal working conditions and equipment for all participants.

The coordination of the various efforts mentioned above was led by the members of the Organizing and the Scientific Committees (Fig. 2).



Fig. 2. Most members of the Scientific and Organizing Committees for IChO 2023 during the Closing Ceremony. © ETH Zurich / IChO 2023.

Last but not least, none of this would have been possible without the tremendous amount of work by over 300 volunteers. Each of them was a gear working in unison with each other to ensure that IChO 2023 was running smoothly like a Swiss clockwork.

With many obstacles overcome, we are looking back to a successful IChO 2023 in Switzerland and are already looking forward to next year's IChO which will be held in Riyadh, Saudi-Arabia.<sup>[9]</sup>

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