

THEME 5: CHEMISTRY EDUCATION

Symposium 5: Chemistry Education

The Chemistry Education Symposium aims to mobilize all actors, researchers, decision-makers and practitioners, around a key issue: invent a 21st century of education in chemistry that fits to the evolution of society and student expectations, includes new research results in chemistry and chemistry education, and integrates the contributions of digital.

Numerous topics will be addresses through three different sessions: Relation between education and society, Tools in chemistry education, The development of education

Conveners/Organizers:

- *Jérôme RANDON (Université Claude Bernard, Lyon, FR)*
- *Jan APOTHEKER (RUG, Groningen, NL)*

Session 5.1: Relation between education and society.

Abstract:

Science and more specifically chemistry can play an important role in addressing the sustainable development goals formulated by the UN. The formidable challenges faces in the next 25 to 50 years need input from all sciences and specifically chemistry. How can students develop attitudes, and acquire skills, that highlight the relation between chemistry and society? How can chemistry education adapt to face these challenges? At the ICCE in 2018 Peter Mahaffy and Steve Matlin introduced a new development called systems thinking in chemistry education. Worldwide several initiatives have started up to include societal issues in chemistry education.

Keywords:

Education, science and society, responsible research and innovation, decision making, childhood education, nature of science, values in science education, teaching innovations, conceptional change in science

Speakers

- KN: Peter MAHAFFY (Kings University, Edmonton, CA)
- IL1: Ron BLONDER (Weizmann Institute, Rehovot, IL)
- IL2: Ingo EILKS (University of Bremen, DE)

Session 5.2: Tools in chemistry education

Abstract:

Traditionally lab work, hands on education in the laboratory, has been an important aspect of teaching and learning both in secondary and higher education. The role and scope of lab work especially in the first part of tertiary education has undergone quite some changes. The focus and learning goals and outcomes have become better defined. New technology has been introduced in the lab work. Not only analysing tools and tools for recording results have improved. Tools have been developed to assess students in an easier manner. What tools can be used in chemistry education, what is the role of lab work, how can new technology be used in improving chemistry education

Keywords:

Assessment of competence, attitudes, collaboration, computer supported learning, formative assessment, higher education, instructional design, laboratory work in science, new modes of assessments, science communication, scientific experimentation

Speakers

- KN: Marcy TOWNS (Purdue University, West Lafayette, USA)
- IL1: Mauro MOCERINO (Curtin University, Perth, AU)
- IL2: Michael SEERY (University of Edinburgh, UK)

Session 5.3: The development of education

Abstract:

There is a growing need of chemists. In order to recruit them chemistry education in secondary schools has to be attractive enough to attract new students. Both research in chemistry education as well as the development of attractive programs are important focal points for the renewal of chemistry education. Around the world experiments are carried out to improve the interest of students. Groups of teachers work together with researchers to find effective and evidence based ways to improve chemistry education and make it more attractive for students. This ranges from special context oriented programs, to small scale chemistry programs.

Keywords:

Benchmarks, context based learning, educational reform, evaluation, in-service teacher training, instructional design, learning communities, nature of science, educational research, professional development, society and environment education

Speakers

- KN : Sibel ERDURAN (University of Oxford, UK)
- IL1: Ilka PARCHMANN (University of Kiel, DE)
- IL2: Rachel MAMLOK-NAMAN (Weizmann Institute, Rehovot, IL)