The Chair of Chemistry Education was established in autumn 2007 along with the establishment of the Institute of Chemistry at University of Tartu. The main aim of the Chair of Chemistry Education is to coordinate training of chemistry teachers at University of Tartu.

Training of chemistry teachers was earlier managed by the Chair of Inorganic Chemistry of the Tartu State University (during the Soviet period), thereafter by the Chair of Chemistry Didactics at the Institute of Physical Chemistry at University of Tartu.

Training of chemistry teachers has been organised in various ways: teacher training was once obligatory for all students of the Institute of Chemistry, chemistry teachers have been trained through a separate curricula or as part of the Open University. A thorough review of the history of chemistry teacher training has been published in University of Tartu Institute of Chemistry yearbooks of 1988 and 2007.

In 2002 University of Tartu started admission to the new 3+2 curricula, according to which high school chemistry teachers are trained in the two-year Masters programme at the Institute of Chemistry.

Since the academic year 2010/2011, a new Masters programme “Secondary School Science Teacher” has been available for students. The programme is coordinated by the Science Education Centre at University of Tartu. The aim of the programme is to establish the conditions enabling high school and basic school biology, physics, geography and chemistry teachers to obtain the necessary knowhow and skills and to get to know the basics of didactic science. After graduating from the programme, the graduate can start working as a high school or basic school biology, physics, geography or chemistry teacher but also to continue with PhD studies in science education.
Staff of the Chair of Chemistry Education

Erika Jüriado, lecturer of inorganic chemistry (Candidate of Chemical Sciences)
Mare Taagepera, visiting professor (organic chemistry)
Jaak Nerut, research fellow (PhD in physical and electrochemistry)
Eneli Härk, assistant lecturer (PhD in physical chemistry and electrochemistry)
Aivar Vinne, assistant lecturer (physical chemistry, MSc in chemistry didactics)
Malle Moldau, senior laboratorian
Vladislav Ivanišťev (PhD in physical and electrochemistry)
Andero Vaarik, chemistry teacher in Nõmme Secondary School, PhD student in chemistry education at the Institute of Chemistry.

In terms of teacher training, the staff of the Chair is responsible for specialised didactics (ICT in Chemical Education, Chemistry Didactics and Practical Works in Didactics of Chemistry), coordination of teaching practice at schools and supervision of Masters theses.

However, high school chemistry teacher programme has not been popular among students. Since the group consists of only four to eight students and the number of subjects is limited, the staff of the Chair is also teaching inorganic, general, physical and electrochemistry for chemistry, biology, material science, pharmacy and medical students.

Graduates defend their theses at the Science Education Centre. The evaluation commission always includes 1-2 persons from the Chair of Chemistry Education. Between 2008 and 2012 thirty future chemistry teacher students have successfully defended their theses. Most of the graduates work at schools as chemistry teachers.

Employees of the Chair of Chemistry education have many years participated in the evaluation of chemistry state exams for high school graduates, in the expert commission of the exams as well as preparing the questions of the exams. A.Vinne took part in the preparation of the new basic school and high school chemistry curriculum (2009), as well as preparation and testing of computer-based chemistry exercises.
A. Vinne has been one of the main organisers of the chemistry quiz for basic and high school pupils during the last 10 years.

The staff of the Chair has been active in organizing the national chemistry Olympiad as well as training the Estonian team for the international chemistry Olympiads (J. Nerut, V. Ivaništšev).

The Chair of Chemistry Education and the Chair of Inorganic Chemistry have organized information days for chemistry teachers with assistance from the staff of Institute of Chemistry. The aim of the information days is to introduce the latest developments and achievements of chemistry to teachers, provide methodical advice and other information. Information days have attracted 60-100 participants from all over Estonia.

A lot of attention has been paid by the Chair on organizing life-long learning for teachers.

- In March 2010, training was organized for basic school chemistry teachers on chemistry Olympiad, with 30 participants. Teacher E. Viirsalu presented various ways of solving chemistry exercises, whereas research fellow J. Nerut provided information about organizing the regional stages of the chemistry Olympiad and problems related to solving exercises. Practical laboratory work was carried out on preparing acid solutions and acid-base titration. Visiting lecturer Prof. P. Holub (Carinthia University of Applied Sciences, Austria, in the framework of the TEWISE project) presented the newest ideas on laboratory work and integrated teaching of various natural sciences.
- Prof. P. Holub gave a lecture on teaching natural sciences in Austria to the whole Institute of Chemistry.
- In March 2011 a training event was organized for high school chemistry teachers. The programme contained a lecture on mechanisms of organic chemical reactions (A. Kipper), a seminar on chemistry exercises based on synthesis methods and mechanisms (E. Tempel) and laboratory work on ester synthesis (U. Mäeorg and S. Mäeorg).
- Continuing Education Programme (80 hours in total) “Principles of Chemical Processes” was designed to support teaching a voluntary high school subject under the same name. The training of the first group of teachers (30 participants) took place during the spring
term 2012. Another group of similar size started the programme in august 2012. The trainings are funded by the European Social Fund and Estonian Government.

- Lecturers and research fellows of the Chair of Chemistry Education teach in the two-year Retraining of Chemistry teachers programme for basic school chemistry teachers. The programme is designed for basic school teachers with higher education who are officially not qualified for teaching chemistry in basic schools but would like to acquire the necessary qualifications.
- Lecturers of the Chair of Chemistry Education teach high school chemistry teachers in the Open University at University of Tartu.

Employees of the Chair have participated as implementers in the research and development project “100 + chemical experiments”. Assistant lecturer A. Vinne participated in the pan-European project “Ingenious 2012” bringing together European schools and industry.

Chemistry as a scientific domain has been promoted among students of numerous schools, by organising lectures, experiments and information days. A long-lasting collaboration has been established with Nõo High School and Tartu Annelinna High School, with regular laboratory work organised for students.

Our PhD student A.Vaarik is a co-member of European Chemistry and Chemical Engineering Education Network in Workpackages 12 „Towards European Quality Labels for Teacher Education Programmes”. (Period of activity: October 2010 – September 2012)
A.Vaarik is a contact person in EC2E2N 2: European Chemistry and Chemical Engineering Education Network 2 project(s). ” (Period of activity: October 2012 – September 2015)

A.Vinne was nominated as Estonian Teacher of the year 2011.

Main research areas of the Chair of Chemistry Education comprise didactical problems of chemistry teaching. The staff of the Chair has prepared the materials for chemistry teachers to help the implementation of new chemistry curriculum (www.oppekava.ee).
The most important publications and conference papers of the Chair during the last five years are:


