



Chemical Society Annual Report to the EuCheMS Division of Chemical Education for 2020-2021

1. Abstract

In 2020/21, Division of Chemical Education of the Czech Chemical Society participated in chemical education activities in the Czech Republic and abroad.

The main activities were the organization of two conferences and one seminary; participation of our members in ten conferences abroad; cooperation with universities, secondary schools and primary schools; participation in the realization of chemistry teachers' courses.

Due to the epidemic situation related to the prevalence of CoViD 19, most of the listed events have been online.

2. National educational policy

Primary and secondary education

The framework of educational programme of science education on primary and secondary schools (Biology, Chemistry, Physics, Geography) came to schools 15 years ago. School educational programmes were prepared in the school years 2007/08-2011/12, so now almost all primary and secondary schools in Czech Republic teach based on these framework educational programmes. The problem is that these curricular documents are very general and don't bring necessary change in the majority of schools. A big revision of these programmes was supposed to start in 2020/21, but in January 2021 there was already a small revision based in increasing the number of informatics lessons, together with reduction of, among others, science subjects. Czech Chemical Society reacted to this situation with an open letter of critique towards the Ministry of Education, followed by participation in the discussion with the staff of the Ministry. It was promised that CChS will have the option of active participation in further revisions.

Tertiary education

Two-degree study programmes, i.e. split into bachelor (3 years) and master (2 years) degrees, for education of chemistry pre-service teachers in the Czech Republic is now in its 18th year. A PhD study programme (4 years) is designed to develop concept issues related to education in respective subjects in accordance with current European trends. In the school year 2020/21, 42 students continued their studies: 36 students at Charles University in Prague – Faculty of Science and 6 students at University of Hradec Králové – Faculty of Science.

All the study programmes are currently accredited by National Accreditation Bureau or university, accredited by this bureau, – this is the case for Charles University. This bureau has already published recommendations for new ways to acquire accreditation on Bc, Ms and PhD studies; it's already clear that this process is going to be many times more administratively complicated than before, without any increase in study quality.

3. Events in chemical education

72th Conference of Chemical Societies - Chemical Education and History Section

Organized by Association of Chemical Societies in Prague (Czech Republic) from the 6th to 9th of September 2020 (20 participants from the Czech Republic and Slovakia).

9th Market of Ideas of Chemistry Teachers – national conference

Organized by the upper-secondary school in Trutnov; was planned for October 2020, but didn't happen – it will presumably happen in October 2021.

18th International Student Conference: Project-based Education in Science Education

Organized by the Pedagogical Faculty Charles University in Prague from 5th to 6th of November 2020 (55 participants from Czech Republic, Slovakia and Poland and six other European countries).

16th International Seminary for PhD students

Organized by the Faculty of Science University of Hradec Králové from 27th to 28th of November 2020 (50 participants from Czech Republic, Slovakia and Poland).

DidSci Plus – International Conference on Research in Didactics of the Sciences

Organized by the Faculty of Science Masaryk University in Brno from 23th to 24th of June 2020 (60 participants from Czech Republic, Slovakia, Poland and other countries).

4. Activities of the National Chemical Society

The committee of Division has 11 members, chair is Prof. Hana Čtrnáctová, vicechair is Prof. Martin Bílek and secretary is Dr. Vladimír Sirotek. The activity of Division was appreciated by Czech Chemical Society very good. The members of Division worked in all mentioned above activities, it means new programme and new assessment of secondary school pupils, new programmes and credit system and PhD studies in tertiary education, organization of events in chemical education for in-service teachers and secondary school students, etc.

5. Publications

17th International Conference: Project-based education and other activating strategies in science education XVII (Conference Proceedings). Editors: Martin Rusek, Martina Tóthová & Karel Vojříř. Pedagogical Faculty Charles University, Prague 2020, 255 p. ISBN 978-80-7603-155-5.

18th International Conference: Project-Based Education and other Activating Strategies in Science Education XVIII (Conference proceedings). Editors: Martin Rusek, Martina Tóthová & Karel Vojříř. Pedagogical Faculty Charles University, Prague 2021, 257 p. ISSN 2695-0626.

Sadykov, T., Čtrnáctová, H.: Interactive Lessons with ICT in Chemistry Education. ERUDITIO – EDUCATIO, Vol. 15, No. 1, 2020, s. 95-110, ISSN 1336-8893.

Sadykov, T., Čtrnáctová, H.: Interactive Lessons in Chemistry Education with the Use ICT (ICT – Supported Interactive Lessons in Chemistry Education). LAP LAMBERT Academic Publishing, Berlin 2020, 108 p. ISBN 978-620-3-04135-4.

Special issue of ERUDITIO – EDUCATIO, Vol. 15, No. 1, 2020, 120 p., ISSN 1336-8893.

16th International seminar for PhD students of chemistry didactics and related doctoral study programs: Proceedings, Editor: Machková V., Gaudeamus Hradec Králové 2021, 113p. ISBN 978-80-7435-827-2.

Janoušková S., Teplý P., Fatka D., Teplá M., Cajthaml T., Hák T. (2020) Microplastics - how and what do university students know about the emerging environmental sustainability issue? Sustainability, 12(21), 9220.

Chalupa R., Babica J., Nesměrák K. (2020) Farmaceuti, chemie a Přírodovědecká fakulta Univerzity Karlovy. Chemické listy, 114(10), 635-643.

Chalupa R., Nesměrák K. (2020) Chemophobia versus the identity of chemists: heroes of chemistry as an effective communication strategy. Monatshefte für Chemie - Chemical Monthly, 151(8), 1193-1201.

6. Liaison with the chemical industry

In the school year 2020/2021, we continued our cooperation with companies oriented to scholastic products. This included resellers of products of AV-media, Pasco, Profimedia, Smart Technologies, Vernier etc. There is also a collaboration with Czech producing companies in Plzeň (beer production) and in Prague (Veolia Water, Veolia Environment (PVK, Museum of water treatment), SÚRAO – State institution for treatment of radioactive waste repository, National technical museum and iQLANDIA Liberec – knowledge support, discussions, IBSE resources and concepts.

7. International and European initiatives

In 2020/21, the members of the Division of Chemical Education in the Czech Chemical Society participated in solving the projects:

Project of the institutional plan of Charles University “Implementation of 3D models in the teaching of bachelor students of chemical disciplines”, 2019 – 2020.

OP VVV (Operational program Science, Research, Education) project - “Support for undergraduate education of future teachers at Charles University”, European project (ESF funds) coordinated by MEYS, 2020 – 2023.

Project “Research based framework for students’ active learning and evaluation at 4EU+ universities” (4EU+/20/F1/03) – “minigrant” awarded in connection with activities of 4EU+ alliance (<https://4euplus.eu/>), 2020.

Project “Sharing the experience with the use of chemistry teaching aids - 3D models and practical demonstrations” (4EU+/21/F1/03) – “minigrant” awarded in connection with activities of 4EU+ alliance (<https://4euplus.eu/>), 2021.

VIRTCHEM project: “The VIRTual Immersive Education for CHEMistry and Chemical Engineering” (2021_F3_07) - grant awarded in connection with activities of 4EU+ alliance (<https://4euplus.eu/>), 2021 - 2022.

Project HomeLab “My Home – My Science Lab” (2020-1-CZ01-KA226-HE-094433) – European project (Erasmus+), 2021 – 2023.

8. Name of delegate and deputy

Assoc. Prof. Petr Šmejkal, Ph.D. and Prof. Hana Čtrnáctová, Ph.D.

9. Contact details of delegates.

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