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# EuCheMS Div CED

# Annual Report 2015/2016– Israel

Most activities at the junior-high school level in the Israeli multi-sectorial educational system are aiming at attaining similar objectives as in the previous years:

a. Increasing the interest of the young generation in chemistry and more so in their gaining an insight into the significance key role of chemistry in the context of daily social and economic life.
b. Increasing the interest in chemistry and its contribution to science, technology, environment and society at large.
c. Increasing the positive attitudes of society towards the chemical industries which comply with the pollution prevention regulations.
d. Linking chemistry with other disciplines in the science-technology-environment-society-economy-policy (STESEP contexts).

**The above activities consist of:**

- A monthly calendar consisting of historical documentation about chemists and chemical innovations (in the framework of the National Center for Chemistry Teachers), was produced.

- Monthly events aimed at the large population. For example: "The Chemists Night", which already took place in several locations in Israel (including pubs), and consisted of formal and informal conversations with chemists, as well as demonstrations.

- Six one day regional conferences for high school students, in the framework of a special graduate program for chemistry teachers (Rothschild-Weizmann program). During the conferences, students from different schools have presented innovative activities, which were discussed by their colleagues from the other participating schools. The activities were presented in poster forms, experiments, or power point presentations. In addition, all the students and

their teachers who participated in these conferences attended a scientific lecture, given by a chemist from the academia or industry.

- The National Center of Chemistry Teachers (headed by Rachel Mamlok-Naaman), conducts regularly long-term professional courses for high school chemistry teachers, e.g., courses aimed at leading chemistry teachers, in which chemistry leading teachers are prepared to support novice teachers. Additional activities of the National Center of Chemistry Teachers: (1) an annual meeting in which the participating chemistry teachers attend scientific courses as well as chemistry teaching-related pedagogical workshops, (2) publications of two journals targeted at chemistry teachers, (3) a website consisting of: Learning materials which are developed by teachers, summaries of scientific lectures, announcements, and individual related materials.
  Additional details may be found in:
  http://stwww.weizmann.ac.il/chemcenter

- A three years course of creating "Communities of practice" for chemistry teachers (September 2015-August 2018) all over Israel.

- Virtual Chemistry classroom which started on 2014**:** This project aims at web-based chemistry teaching and learning. In many schools there are only few students who wish to learn advanced chemistry, and due to financial and organizational constraints the school principals cannot provide it. In other schools especially in the far periphery, a good chemistry teacher is not always available. Teaching chemistry on-line is a mutual project of Davidson Institute and the department of science teaching at the Weizmann Institute of Science. The on-line classroom will be accompanied with lab summer schools. Dr. Yael Shwartz from the department of science teaching at the Weizmann Institute of Science is coordinating this project, and has the scientific responsibility.
  On 2016 80 students enrolled the program, and for next year we exceed 40 registered students. The participants come from diverse geographic location and sectors (Jewish, Arab, Religious, scholars and students with special needs). Students learn 3 hours per week, of which 1.5 hours on-line

synchronously, accompanied by the use of videos and presentations. In addition students have 1.5 hours of training, devoted to accomplish a task asynchronously on the course website. Asynchronous tasks are given as homework or preparation for a lesson in the form of "flipped classroom". The students come twice a year to carry out lab experiments in the Davidson Institute, in addition to domestic laboratories performed using the kit sent to their home laboratories. The project is accompanied by research investigating the self-learning learning of the students. .

- Nano-technology activities and laboratory experiments became part of the curricular materials of high school chemistry students. Dr. Ron Blonder from the department of science teaching at the Weizmann Institute of Science is one of the researchers who is engaged in and involved in promoting this topic.

- Science educators and science education researchers from Israel are involved in international committees of chemical education in Israel and in Europe, and attend conferences, meetings and symposia all over the world. Chemical science education *research* in Israel is rather strong, being conducted currently, mainly in the Weizmann Institute and the Technion, whereas research in the context of science education at large, is being pursued at all the country's universities and most of the Academic Teachers' colleges. The resulting publications in the related leading international science/chemical education journals – *JRST, J. Chem. Educ., Science Educ., IJSE, RISE, JSET,* and *CERP,* constitute clear evidence of this fruitful research activity.

- The (ICS) involvement in the chemical education In Israel is threefold: (a) A special chemical education session (~ half a day) in the 2$^{nd}$ day of the Annual Meeting of the Society, to which a chemical educator from abroad is invited as a speaker; (b) the yearly “Chemiada” (Chemistry Olympiad), which is annually organized and supervised, mainly by the Technion – Israel Institute of Technology; and (c) special awards and recognition of chemistry high school teachers and students who have excelled in high school chemistry teaching and chemical research projects, respectively, during the previous (to the Annual Meeting) academic year.

Reporting:

Rachel  Mamlok-Naaman, Israel