

## **Danish report to EuCheMS DivCEd council meeting 2015 for the period June 2014-June 2015.**

The Danish Chemical Society serves around a thousand members, mainly chemists from industry, chemical research institutions and universities. Chemistry graduates from a technical university are further organised in the chemistry section of The Society of Danish Engineers. The chemistry teachers of the upper secondary school are by tradition organised in the Chemistry Teachers Association with roughly 800 members.

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1. The enrolment into tertiary chemistry education has now stabilised and follows the cohort. According to a governmental act, university laboratories are being renewed in these years. Some universities have now opened its new laboratories. Accreditation of Universities with high internal quality assurance mechanisms instead of accreditation of programmes only is in its first phase. The upper secondary school reform did not result in Chemistry being chosen by as many students as in the old system. Chemistry departments at universities are routinely involved in open house arrangements and other recruitment events preferentially for upper secondary school. There is an increasing tendency to governmental regulation of university's internal systems and procedures. Focus on higher graduation speed has resulted in further detailed regulation.
2. **National educational policy**
  - The relatively high age of university graduates as well as relatively slow graduation rates has for some years been of great concern: Students are being awarded by letting their upper secondary school grading count a little more if they enter the university in the same year, and the student living grant has been cut to a shorter period. Further, a part of the university funding depends on graduation rates. This year a "speed-up" reform was gradually implemented: like in school, students now have to follow a 60 ECTS programme each year, and if they fail some of it, in the following year they have to take another 60 ECTS plus what they missed. And they are automatically signed in for examination. Of course there will be an increase in re-examination number, the re-examination usually taking place a month after the ordinary examination.
  - To enter into tertiary education students have to have passed certain subjects at a given level. This is not new. And so far, it has been possible to change "track" after having obtained a bachelors degree by studying a specified supplementary programme (of maximum 60 ECTS) at the bachelor level to enter a master's programme. The ministry has now closed this possible route. Universities are no longer allowed to count a bachelor's qualifications obtained after graduation when taking in students for a master's degree. This regulation is fully implemented now.
  - Accreditations of all tertiary programmes are running these years. Another system of accreditation seems to emerge: the quality assurance systems at universities will be the target, supplied with random sampling of single programmes. Universities are preparing themselves to reach at such a status. The first universities and other tertiary education institutions are at the beginning of such a process. The others will follow, since the accreditations capacity is, after all, too small.

- A new school act with longer school days has been passed lately and has been active for the first the school year 2014/15. Science and mathematics was not the focus, but physical education and creative activities like drama, music and painting have been put into the increased number of hours. The implementation and its effect will be evaluated.
- The former government banned the examination of students in small groups, having worked together during the semester. Since then all oral examination has been literally individual: no other member of the working group were allowed to be present at the examination. Now this detailed regulation is abandoned and the number of oral examination of co-working students in small project-groups is gradually increasing.

### 3. **Events in chemical education.**

- As usual universities arrange "open house" or visiting days with lectures and demonstrations preferentially for upper secondary school classes. The format and volume varies from university to university. Chemistry has of course been involved in such activities at the universities. "Order a researcher" is a PR-reformulation of the opportunity to get a lecturing researcher to an upper secondary school. Some universities hire some of their own students to perform "chemistry road shows" at local music festivals and other events to get in touch with young people. It seems as if increasing efforts (and money) are put into such enterprise.
- The Danish participation in IChO's for more than 25 years is a well established annual event which is sponsored by industry and universities. The 2014IChO in Hanoi resulted in one silver medal and two bronze medals to the Danish participants.

4. The **Division of Chemical Education** of the Danish Chemical Society is still dormant since it is not backed up by university and industrial chemists in The Society. Other priorities apparently exist among university chemists. As stated above in the head of this report, the upper secondary school teachers in chemistry have their own association, which is still operating with meetings and a little joint journal in Danish together with mathematics and physics in school.

### 5. **Publications.**

- The national journal on science and mathematics education in Danish with peer review, "MONA" (an acronym for mathematics and science) covering science and mathematics education issues from early school to university level is still published. If a direct proportionality between the difficulty of a subject and the number of contributions to the journal existed, chemistry is not a very difficult subject, while mathematics is very much so.
- The monthly Journal "Dansk Kemi" (Danish Chemistry) has main focus on industrial chemistry, although it brings articles of interest to chemistry teachers and from time to time material directly related to chemistry teaching.