Chemical Societies of Fennoscandia

Newsletter November 2015

A Nordic perspective

Denmark, Finland, Norway and Sweden have a long common history of collaboration and, from a very general chemistry perspective, the countries are very similar.

In all, there is a significant chemical industry, chemistry is provided as a topic of its own at all education levels and chemical societies have a long history of providing networks for those with a chemistry education, a chemistry-related profession or simply an interest in chemistry.

In all four countries, the societies are facing very similar questions and experience the challenges of most voluntary topical organizations, with attracting and keeping new members as a main issue.

Realizing that we are stronger together, chairs and SG of the Nordic chemical societies meet in odd years in order to share good examples and learning experiences and to facilitate collaboration in matters of common interest such as nominations to European (EuCheMS) or international (IUPAC) bodies.

As one of the pillars of collaboration is to know each other, the 2015 meeting in Longyearbyen, Svalbard provided an excellent stage for formal and informal discussions on how to proceed and to become stronger. Information flow was indentified as one important factor.

Although all societies run websites and provide member magazines, in theory available for a wider audience, there are still barriers between the countries, not only language ones. In order for the information that we share and discuss at the presidential meetings as well as other national chemistry-related issues to be better disseminated, we decided to compile a common addition to the regular society magazine or newsletter every second year. This is the first edition. Questions, comments etc are most welcome

Best regards
Presidents of all the Nordic Societies

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Minutes of the Nordic Presidents' Meeting in Longyearbyen

15-16 May 2015

The host for this year's meeting was the Norwegian Chemical Society (NKS). The following were present at the meeting: Øyvind Mikkelsen and Harald Walderhaug (NKS), Helena Grennberg and Agneta Sjögren (Swedish Chemical Society, SK), Stefan Vogel (Danish Chemical Society, DKF), Mariann Holmberg and Triin Gyllenberg and Heleena Karrus (Finnish Chemical Society, SKS).

The meeting took place in room Tempelet at Polarinstituttet, Longyearbyen, and a presentation of ongoing research projects at Polarinstituttet was given by representatives of UNIS (University of Svalbard) (see below).

Welcome by the representatives of the host. Thereafter, Tone Hertzberg from Sysselmannen's (The Norwegian authorities') staff oriented about Svalbard – its special political status, geography, climate, fauna, flora, history, etc. In the old days (19th and early 20th century) the hunters that lived here stayed in small cottages at trap stations and hunted whale, seal, polar fox and polar bear. In modern times, coal mining has become a traditional activity, and still is. This activity is mainly located in and near Longyearbyen and Svea (Store Norske), and in Barentsburg (Russians and Ukrainians). Research stations are located in Ny Ålesund (many nations are represented), and in Longyearbyen UNIS and Polarinstituttet is located. Tourism is an increasing activity, and there are daily flights between mainland Norway and Longyearbyen, named after an American that started the coal mining activity in Svalbard (Spitsbergen) around the year of 1900. The name Svalbard is old Norse and means literally "cold coast". Even though the Gulf stream is passing into the Barents sea around the archipelago, the ocean is partly covered with ice.

Activities in the Nordic societies

Harald gave a short presentation of NKS and recent activities, that included the national meeting in 2014. NKS has roughly 1900 personal members and 24 supporting company members, but has ambitions regarding recruitment of more and younger members. NKS has activities directed also to young people, like the popular "spørrespalten" – a web based communication channel, located on the society's homepage.

Helena told us about a New Strategy in the Swedish Chemical Society (around 3500 members): A vision for the Chemistry or the Society. "Mossig"/"Omossig" : Old fashioned and boring – or something new and exciting?

Stefan could report on increasing number of members in the Danish Chemical Society, that now goes up to 830. The society is also responsible for a chemical dictionary "Kemisk ordbog" , in Danish.

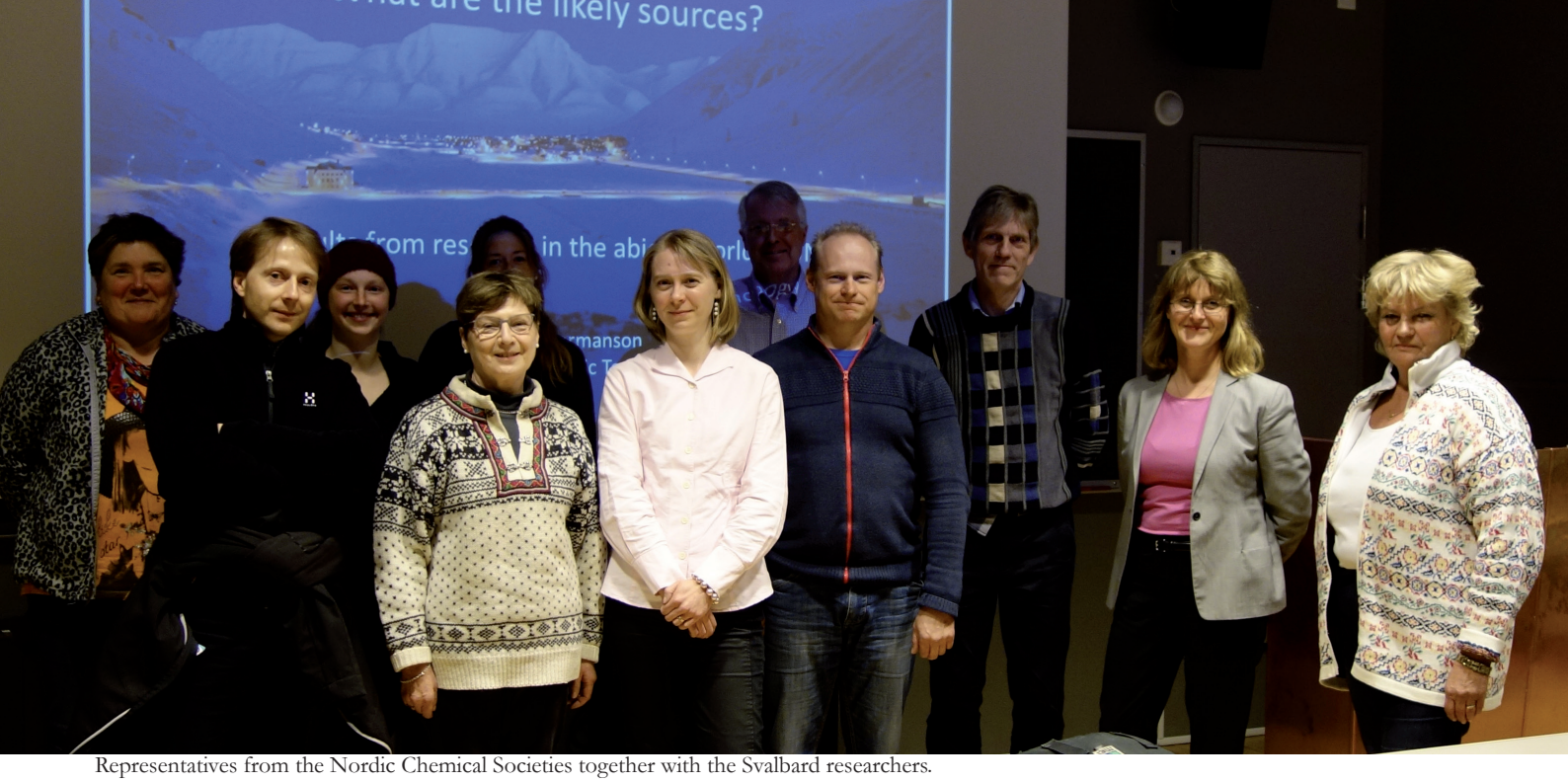
Heleena and Triin oriented on the status for the Finnish Chemical Society that in addition also includes the Chemical Society of Finland (Finska Kemistsamfundet) and Finnish Society of Chemical Engineers, after the reorganization in 2012. Altogether, the society has ca 3000 members, and reports on an increasing number of younger members. Student grants (ca 2000 Eur) are offered and seem to be a way of recruitment.

The EuCheMS conference in Sevilla 2016

Helena, who was Chairman for the EuCheMS conference in Istanbul in 2014, and Chairman for the Sevilla conference Peter Edwards, on Skype from UK, oriented. There was a drop in the number of attendees to ca 1200 at the Istanbul meeting, compared to 2500 in Budapest 2006 and Nürnberg in 2010. It is therefore important to make good advertisement of the conference well in advance. The view of the organizers is to make it The Conference for The Chemistry in Europe. A one page flyer intended for advertising in the societies is planned. The conference will consist of 8 main subjects, and will take place from the 11th to the 15th of September 2016.

Copyright Acta Chem. Scand.

Lars Skattebøl (Norway) has informed that he still is the formal copyright owner of the journal. He now wants to resign from this duty. It was decided that the nordic chemical societies accept his resignment, and Agneta will write him a letter, confirming this.



Representatives from the Nordic Chemical Societies together with the Svalbard researchers.

Recruitment

The Danish Society of Chemistry arranges one annual meeting – TOKS – Træf for Organisk Kemi-Studerende – for around 150 students. There is also a more recent and corresponding meeting for students in inorganic chemistry. The society uses the registration form for the Annual Meeting of the Danish Chemistry Society actively for recruitment of (younger) members. A very simple and web-based procedure. A ”Young Chemists Meeting” is wanted – it should not compete with the Annual Meeting, though. Both Denmark and Finland also edit student magazines, directed to the gymnasium level. Regarding EYCN (the Europen Young Chemists Network) Finland has an arrangement that involves ”linjeforeninger” – an arrangement that will be tried also in Norway.

IUPAC

Representatives of our societies will attend the GA in Busan, Korea, in august. The deadline for appointment of National Representatives and Titular Members to the various divisions had already been passed at the time of the Nordic Presidents' meeting, but status is the following: Norway and Sweden have 3 to 4 representatives each, Finland 6 (some of them new), and Denmark has 36 persons involved in the IUPAC system. A general question is: How do we recruit younger scientists into IUPAC? Also: There is a deadline at the 12th of June to nominate members for the Bureu. Do we have any from Scandinavia/Norden?

Member Magazines

These are now produced both in a paper- and an electronic edition. While Finland and Norway report that their societies have large influence on the contents, in Sweden some worries exist whether the magazine is intended primarily for the members of the Swedish Chemical Society. One annual English edition of the Swedish magazine is produced. The magazines are important for the societies' members regarding identity – they form a sort of glue that unites the corresponding societies. This is important to remember in a time where the economy (adverisement income) may be somewhat problematic.

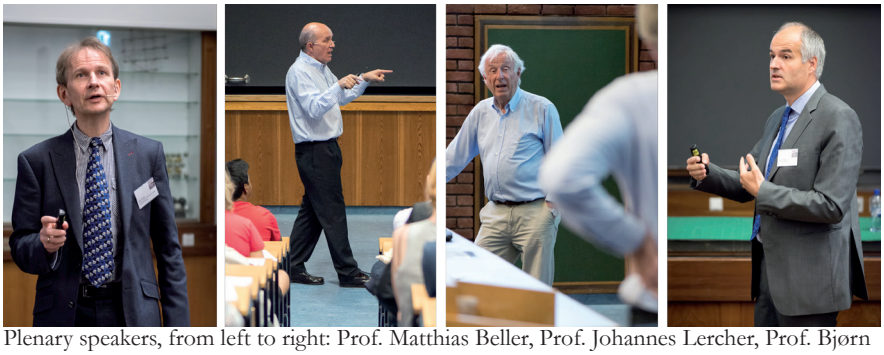
A suggestion came up at the meeting: We will launch a new and biannual Nordic Chemical Societies' Newsletter. It should be posted on our respective web-pages in the end of the year, and should contain articles and announcements of mutual nordic interest. The material, consisting of ca two pages with info on the Presidents' meeting, views for the next two years from each society, and one or two articles per society, will be edited in cooperation between the societies. We start this year, and hope that it will be wellcome by our members.

Chemistry Research Projects at Polarinstituttet/ ArcticTechnology/UNIS

Mark Hermanson and two students, Michelle Nerentorp (Chalmers) and Katharina Halbach (NTNU) gave an interesting presentation during two hours of ongoing research in the arctics, related to airborne pollution and possible impact on animals and humans. Some of the substances are generated in the arctic atmosphere (bromine oxides) and transported over large areas. Other substances (like methyl-Hg) may be formed far away and brought to the arctic area where they may combine with substances in plants and animals, forming toxines of various forms. The transport is studied using special filter equipment and by e.g. satellites.

Harald Walderhaug
Øyvind Mikkelsen

Minutes of the 16th Nordic Symposium on Catalysis – NSC2014



Plenary speakers, from left to right: Prof. Matthias Beller, Prof. Johannes Lercher, Prof. Bjørn Pedersen, Dr. Christoph Gürtler (Photos: Reynald Henry, UiO).

The 16th Nordic Symposium on Catalysis was organized on the University campus in Oslo during June 15th -17th 2014. The Nordic Symposium on Catalysis is organized biannually and circulates among the Nordic countries. The symposia are organized within the framework of the Nordic Catalysis Society (www.nordic-catalysis.org). This symposium series constitutes a unique meeting ground for researchers within all aspects of catalysis in the Nordic countries. The organization committee had chosen "From fundamentals to industrial application" as the theme for the 16th symposium.

About 190 participants had registered for the symposium, which is close to the number of participants at the 15th symposium organized in Åland in 2012. The scientific committee received around 170 abstracts. 44 of these were chosen for regular oral presentations, whereas the authors not awarded oral presentations were given the opportunity to present their work as posters. Moreover, there were four plenary lectures and four Nordic keynote lectures.

Attendants at the symposium enjoyed the very high scientific level of the four invited plenary lecturers. Prof. Johannes Lercher (Technische Universität München) discussed the reactivity of acidic zeolites and other catalysts in his presentation "Acid-base catalysis in constraints – A general principle for catalysis?". In 2014, we have celebrated the 150th anniversary of the discovery of the Law of Mass Action in Oslo. Prof. Bjørn Pedersen (University of Oslo) gave a popular scientific account of the lives and careers of the two Norwegian scientists Cato M. Guldberg and Peter Waage who made the discovery. Prof. Matthias Beller (Leibniz-Institut für Katalyse e.V. an der Universität Rostock) compared the use of homogeneous and heterogeneous catalysts and wished to spur discussion with the somewhat provocatively entitled presentation: "Selective Organic Synthesis with Homogeneous and Heterogeneous Catalysts: Which one is better?". Dr. Christoph Gürtler (Bayer MaterialScience AG) explained how not only scientific challenges, but also business aspects contribute to Bayer's efforts towards the development of commercial utilization of CO2 as raw material for chemical products, such as sustainable polyurethane for e.g. mattresses.

It has become tradition that four representatives of the Nordic countries are given the opportunity to present their work as Nordic keynote lecturers. The tradition was upheld at the 16th symposium by Dr. Esa Toukoniitty, Helsinki Metropolia University of Applied Sciences ("Towards understanding of enantioselective hydrogenation over chirally modified Pt"); Assoc. Prof. Hanna Härelind, Competence Centre for Catalysis, Department of Chemical and Biological Engineering, Chalmers University of Technology ("Aspects of reducing agent, active sites and reaction mechanisms for lean NOx reduction over silver-alumina catalysts"); Assistant Prof. Christian Danvad Damsgaard, Department of Physics, Technical University of Denmark ("Adding the environmental TEM to the in situ toolbox for catalyst characterization"); Prof. Vincent G.H. Eijsink, Department of Chemistry, Biotechnology and Food Science, Norwegian University of Life Sciences ("Lytic polysaccharide monooxygenases - novel enzymes for improved biomass processing").

A poster award was kindly sponsored by two journals published by the Royal Society of Chemistry - Green Chemistry and Catalysis Science & Technology. The winner of the Green Chemistry award was Aron Dombovari from the Microelectronics and Materials Physics Laboratories, Department of Electrical Engineering, University of Oulu, for the poster entitled: "Photocatalytic processing of algae". The jury praised the poster for being eye catching and well presented. The winner of the Catalysis Science and Technology award was Jacob O. Abildstrøm from the Department of Chemistry at the Technical University of Denmark, for the poster entitled: "Investigation of mesoporous TS-1 for the catalytic formation of N-oxides". The jury found the poster to be well presented, straightforward, readable, balanced and informative.

The proceedings of the symposium will be published as a special issue in Topics in Catalysis. More information about the program of the symposium, and photographs, can be found on the symposium website: www.mn.uio.no/kjemi/english/research/groups/catalysis/events/nsc2014/

The symposium was kindly sponsored by the Research Council of Norway via the GASSMAKS program, the Department of Chemistry and the Center for Materials Science and Nanotechnology at UiO, the Catalysis Section of the Norwegian Chemical Society, and World Scientific and Imperial College Press. Several suppliers of instruments and scientific equipment exhibited their products at the symposium; Matriks; Houm; Nerliens Meszansky; Flow-Teknikk; Heco Laboratorieutstyr; Teknolab; Process Partner; Dotmatics; Hiden Analytical.

On behalf of the local organization committee, I wish to thank the symposium sponsors, exhibitors, all the members of the organization committee and the scientific committee, as well as all the students of the Catalysis group at UiO for their contributions towards organization and execution of the symposium.

Stian Svelle
Leader of the local organizing committee
16th Nordic Symposium on Catalysis

PS – the 17th Nordic Symposium on Catalysis will be organized in Lund, Sweden, June 14th-16th 2016.

About 190 people attended the 16th Nordic Symposium on Catalysis (photo: Reynald Henry, UiO).

Background and recent highlights for The Norwegian Chemical Society. And plans for the future...

The Norwegian Chemical Society
Norsk Kjemisk Selskap
www.kjemi.no

was founded in 1893. The objective of the society is to promote the interest and understanding of chemistry and chemical technology with respect to teaching and research. Today NKS is comprised of 7 local branches and 10 professional divisions, where most of the activity takes place. The professional divisions represents the following areas; analytical chemistry, history of chemistry in Norway, catalysis, chemometry, quantum chemistry, macromolecular chemistry, food chemistry, organic chemistry, chemistry in education, and inorganic chemistry & material science. The division for inorganic chemistry and material science was established in 2013, and has already attracted over 60 members.

The Norwegian Chemical Society has around 1900 personal members and 24 supporting company members, and has ambitions regarding recruitment of more and younger members. NKS has activities directed also to young people, like the popular "spørrespalten" – a web based communication channel, located on the society's homepage. The number of meetings in the individual local branches is typically 6 - 8 pr year. These member meetings in the local branches normally include a scientific presentation given by an invited researcher, followed by small unformal discussions and, some times, a dinner or a banquet. The professional divisions arrange every year a number of meetings and conferences, and the activity level is very good. In October 2014 the National congress in Chemistry was arranged for the 20th time. The organizing committee included the leaders from 8 of the professional division in addition to Finn Knut Hansen (cashier NKS) and Harald Walderhaug (general secretary). The committee was chaired by Nils Arne Jentoft, who has over several years made the National Congress in Chemistry a very successful event. The congress was held at Norwegian Trade Fairs at Lillestrøm. During the last years it has been a tradition to arrange this congress together with Lab Norge. Lab Norge organizes the laboratory industry in Norway, and count at moment about 55 companies as members within the suppliers and manufacturers branches of laboratory equipment, instruments, reagents and consumables. Lab Norge strongly supports the National congress in Chemistry both economically and with infrastructure during the fair, for which NKS expresses its large gratitude. The National Congress in Chemistry attracted between 250 and 300 registered applicants, and the program included three plenary sessions and a number of parallel sessions organized by the professional divisions. In the first day plenary session the Guldberg-Waage presentation was held by Signe Kjelstrup, which was the 2014 receiver of the Guldberg-Waage medal awarded for her research with great importance for irreversible thermodynamics with special focus on electrochemical cells, membrane systems and energy optimization of chemical processes in chemical engineering. During the Norwegian Chemistry Congress, also a joint session with Lab Norge was arranged where a prize of NOK 100.000 is awarded for the most promising young researcher under 35 years within the area of experimental natural science. Winner of the 2014 prize was Cinzia Progida at the Center of Immune Regulation University of Oslo.

Some months earlier, on March 11, NKS celebrated the 150th anniversary of the Law of Mass Action with a scientific symposia and a following celebration ceremony. The symposium was held at The Norwegian Academy of Science and Letters in Oslo, the same institution where what later became known as the Law of Mass Action was at the first first time presented by Peter Waage at this date in 1864. Invited lectures for the symposium were Roland Kjellander, University of Gothenburg, Eberhardt Voit, Georgia Institute of Technology, Poul Nissen, Aarhus University, and Signe Kjelstrup, Norwegian University of Science and Technology (NTNU). The symposium was chaired by Stig Omholt, NTNU. The following celebrating ceremony was chaired by Einar Uggerud, University of Oslo, and included artistic features, presentation of the history behind the discovery of the law as well as reflections on the application of the law in present and future research and industry.

Some other highlights from 2014: Our periodical "Kjemi" is published 6 times a year (in 2014) with a printed number of 2800. Chief Editor is Lars Ole Ørjasæter and the journal is published by Media Oslo AS. Last year it was decided to make the periodical able in digital form. The digitalization will gradually replace the printed copy for most members. Also past volumes will be digitalized. The Hassel Lecture, in honor of Odd Hassel, the Norwegian receiver of the

Nobel Prize in chemistry 1969, is a yearly event organized at Department of Chemistry, University of Oslo, in May. In 2014 the honor lecturer was Helmut Schwarz, Technical University of Berlin, who gave the presentation ”Methane Activation: Fundamental Aspects and Concepts Rather than Recipes”. In 2015 Peter Seeberger, Max-Planck-Institut für Kolloid und Grenzflächenforschung, Potsdam, Germany, was the honor lecturer, giving the presentation ”Preventing and Curing Infectious Diseases: Carbohydrate Vaccines and Continuous Flow Synthesis”. These lectures usually attract around 200 listeners and are open to the public. For upcoming and plans we will like to mention especially two larger conferences supported by NKS. In December 2015 the Nordic Chemistry Learning Conference will be held at NTNU in Trondheim. This conference will gather chemistry teachers and researchers in chemistry education of all the Nordic countries to give them the opportunities to learn about and from each other, build networks as well as having a good time with high quality lectures, work-shops and discussions. The theme for the Nordic Chemistry Learning Conference 2015 is chemistry teaching at various stages of education.

In 2017 the Norwegian Chemical Society divisions of Analytical Chemistry will, together with University of Oslo and Norwegian University of Life Sciences (NMBU), organize and host the 16th ICCE meeting. ICCE 2017 intend to provide a unique information and communication platform for environmental scientists and a forum of professional exchange with collaborators and colleagues in (environmental) toxicology, analytical chemistry, microbiology, geosciences and other related disciplines. The local organization committee is chaired by Roland Kallenborn from NMBU.

Harald Walderhaug
Øyvind Mikkelsen

Nordic Chemistry Learning Conference 2015

The Norwegian Chemistry Society's group for Chemistry is arranging this year's Nordic Chemistry Learning Conference in collaboration with NTNU's resource centre for STEM education. The conference venue is NTNU Gløshaugen campus in Trondheim, Norway.

With this conference, we are trying to establish a meeting place for Nordic chemistry teachers from all school levels. The first conference was held in Stockholm, Sweden, as part of the International year of Chemistry in 2011.

The main purpose of the conference is to gather chemistry teachers and researchers in chemistry education from all the Nordic countries, and provide a meeting arena where they can connect, share and exchange ideas and experience.

Currently, more than 120 participants have signed up from most of the Nordic countries, and we hope more people will register in the weeks remaining until we open the doors on December 3. The conference lasts for two days, and there should be something for everyone on the menu, spanning from plenary sessions on water and metal, to workshops aimed at more specific levels (primary, lower secondary, upper secondary) and finally a poster session where teachers can share their best practices and great ideas.

Exchange of experience through posters is not a well established tradition in the Nordic schools, it is a way of sharing more commonly found in research institutions. But it is a great way to show others what you are doing, and connect with others working with related topics. It is really important to dare to show others not only the perfect lesson or experiment, but also those that had flaws. Maybe other people reading or hearing about your work will have some good tips!

Our plenary speakers come from a variety of backgrounds. Sven Lidin is a professor at Lund University in Sweden, where he does research on the chemistry of materials, and will talk about metals. He is also a member of the Nobel Committee in chemistry. Carl Henrik Gørbitz, a professor at the University of Oslo in Norway,is specialising in crystalline structures in amino acids and peptides. At the conference, he will give a talk on something as simple - and special - as water. Jan Lundell is a professor at the University of Jyväskylä in Finland, where he is head of the Department of Chemistry Teaching, and will share some thoughts on chemistry teacher education for the future. Kristin Misund is R&D director at Borregaard Industries and will speak about how they work with innovation in the world's most advanced biorefinery.

In the workshops you can find a variety of topics. Among other things, there is a session on using research in high school (upper secondary) chemistry lessons, which is not a very usual phenomenon, as most teachers have more than enough focusing on the curriculum. One session has a critical eye on how chemical bonds are modelled in many chemistry and science text books, and how this sometimes creates misunderstandings and problems understanding basic chemistry. Some sessions will focus on practical experiments in small scale, and many of them can be done in ordinary classrooms.

We would like to welcome chemistry and science teachers and researchers from all Nordic countries to our conference in December. For details about the conference and registration see: www.nordicchemistry.eventweb.no

Frøydis Hamre
May Britt Stjerna

Chemical Societies in Finland

Finland has three chemical societies: Finnish Chemical Society (Suomalaisten Kemistien Seura, SKS), Chemical Society of Finland (Finska Kemistsamfundet, FKS), and Finnish Society of Chemical Engineers (Kemiallisteknillinen Yhdistys, KTY). While the three societies operate as independent parallel organizations, it has been agreed that joint responsibilities will be held by Finnish Chemical Society. This applies to official international contacts, so in international context the name of Finnish Chemical Society is to be used. The former umbrella organization Association of Finnish Chemical Societies (Suomen Kemian Seura, SKKS) was discontinued as of March 2013.

Finnish Chemical Society will also act in the role of Finnish National Committee for Chemistry. Finnish National Committee for Chemistry coordinates international activities and represents Finland in international organizations, primarily in IUPAC, EuCHeMS, and EFCE. The three societies maintain close contact with their Nordic counterparts.

Chemistry Days (Kemian Päivät) the largest meeting of its kind in Nordics is arranged semiannually by Finnish Chemical Society together with other societies. Chemistry Days consist of seminars both for professionals and general audience and ChemBio Finland exhibition and other program arranged together with The Chemical Industry Federation of Finland (Kemianteollisuus ry) and Finnish Bioindustries FIB (Suomen Bioteollisuus FIB). A special track for education is included. In 2015 the annual seminar in atomic layer deposition was arranged by the Finnish centre of excellence of the Finnish Academy of Sciences. In March 2015 the two day long Chemistry Days had close to 1500 seminar attendees and the exhibition had some 4500 visitors. (www.kemianseurat.fi/kemia/kp2015/)

The main publication on chemistry in Finlad is Kemia-journal which is one of the benefits to the members of the three societies. It is published eight times annually in printed form and also in the net. The members do also receive up-to-date electronic newsletters (www.kemia-lehti.fi).

Three societies have jointly close to 3500 members 80% of which are members of Finnish Chemical Society.

Heleena Karrrus
General Secretary, Finnish Chemical Societies

Finnish Chemical Society
Suomalaisten Kemistien Seura
www.suomalaistenkemistienseura.fi

Finnish Chemical Society was founded in 1919 and currently with 2900 members it is one of the largest scientific societies in Finland. For full members of the society applicants are required to have at least masters degree in chemistry while university students majoring in chemistry are eligible as young membership.

The central purpose of the Finnish Chemical Society is to advance the recognition of chemistry in co-opretion with the main operators in chemical industry. Finnish Chemical Society provides a strong networking opportunity to chemists and chemical engineers and supports the development of know-how among practitioners. Finnish Chemical Society invests in the development of high quality education in chemistry on all levels. Finnish Chemical Society supports students majoring in chemistry from the freshman stage on and also provides a wide network of active members that can help the young chemists when moving to work career. Finnish Chemical Society has nine local sub-societies geographically covering whole Finland as well as 18 sections in different fields of chemistry. The society holds annually at least seven general meetings.

Finnish Chemical Society has severals awards and stipends. Komppa award is given annually to in maximum two doctoral dissertations of exceptional quality in theoretical or applied chemistry. N. J. Toivonen fund supports research in organic chemisty in Finland. The award for young chemists is given to one or two chemists or students of chemistry under 30 years of age. There are stipends for university students majoring in chemistry and also for promising high school students.

Heleena Karrrus
General Secretary, Finnish Chemical Societies

Finnish Society of Chemical Engineers
Kemiallisteknillinen Yhdistys
www.kty.fi

The purpose of Finnish Society of Chemical Engineers is to act as a link between members working within chemical industry and in chemical engineering in general, to work toward higher appreciation of their work and their joint endeavors, to support their professional development and to have an impact on the advancement of chemical engineering and chemical industry. Finnish Society of Chemical Engineers foms a bridge to international organizations in chemical engineering, such as EFCE (European Federation of Chemical Engineering) and Nordic sister organizations.

Finnish Society of Chemical Engineers arranges lectures and educational sessions such as Process Development Day and Chemical Engineering Seminar. Other activities consist primarily of annual meetings and elections for officials. These meetings also provide an opportunity to visit interesting compsnies of institutions.

From 1995 on Finnish Society of Chemical Engineers has semiannually awarded Chemical Engineering Prize (Kemiantekniikan palkinto - Kemisktekniska priset) to one exceptional licentiate work or docoral dissertation within the field of chemical engineering. The purpose of the award is to increase recognitiion of chemical enginering and to create positive publicity to research in chemical engineering.

Pia Saari
vice Chairman of KTY

FKS FINSKA KEMISTSAMFUNDET

Chemical Society of Finland
Finska Kemistsamfundet
www.finskakemistsamfundet.fi

Finska Kemistsamfundet was established in 1891 in Helsinki following the rather ambitious models of Kemistsamfundet (est. 1883 in Sweden) and Deutsche chemische Gesellschaft (est. 1868). According to available statistics, FKS seems to be the 9th oldest chemical society in Europe, and the 11th in the World.

All chemists were welcome but the predominant language spoken at FKS was and is Swedish, the other official language in Finland, besides Finnish.

FKS has a local chapter (KSÅ) in Turku (Åbo), largely supported by chemists at Åbo Akademi University, where Chemistry and Chemical Engineering have always had a strong position.

The academic background at Helsinki consists of both the University of Helsinki and the Technical University, currently belonging to the new Aalto University. Engineers have always been welcome to FKS and, more recently, chemistry teachers are forming an essential and valued part of the membership. Moreover, chemists in industry and elsewhere in society traditionally form the support of FKS. Historically, the meetings of the society were a useful way to update one's competence. What is still left, are excursions to industries and other organizations.

Another function of FKS was to publish a scientific journal, Finska Kemistsamfundets Meddelanden, laid down in 1970 when the still vigorous Kemia-Kemi was started. The round anniversaries of the Society are still celebrated by an issue of the more jocular Finska Kemistsamfundets Glädjande Meddelanden. Frankly, new scientific results should be published in the best international journals and this lesson has now been learned. A partnership in Acta Chemica Scandinavica has been replaced by a collaboration with the journals of RSC, in particular Dalton and PCCP.

FKS grants every year an Alfthan Prize for a good Ph. D. Thesis from a Finnish university. The resources for this prize were originally donated by the first industrial chemist in the country, Anton E. Alfthan, in 1933. The prizewinner holds a lecture at the annual meeting of the Society. FKS also participates in organizing events for high-school students and their teachers.

Pekka Pyykkö
Professor Emeritus at University of Helsinki;
Former Chairman of FKS and SKKS

A new strategic vision into the future of the Finnish Chemical Society

The Finnish Chemical Society is a chemists´ union with traditions. Its history reaches back to the very early years of Finnish independence, and we will thus soon celebrate its 100th anniversary.

Over a year ago the Board of the Society began working on a new strategy. We had indeed held internal strategy seminars annually. However, it was a long time since a novel strategy document had been considered necessary. But the yearly seminars led the Board to reflect more and more deeply the role and functions of a society of this kind, from the viewpoint of its membership on one hand, from that of various stakeholders on the other.

It is justified to examine the raison d'être of a society of chemists from various directions. Are we, in the first place, a scientific society and if yes, what should then be the essence of its activities? Do we have a role in emphasising the general role of chemistry among a wider public? Should a professional society of chemists aim at being able to influence education and research in the field of chemistry, and perhaps even their funding? Or are we ultimately an association which concentrates on maintaining social relations among the craft?

An important step in creating the strategy was taken during an extended Board seminar day in the autumn of 2014. Based on extensive preparations, in-depth discussions and a number of group assignments we were finally able to formulate the core ideas and future policies for the strategy, as well as the general alignments for its representation.

We ended up with a new formulation for the role of the Finnish Chemical Society: FCS is an uncommitted scientific society and a union for all Finnish chemists. In other words we decided to define a double role for the society, scientific and social. The new strategy aligns several concrete duties for the Society in supporting networking between stakeholders and highlighting the importance of chemistry in Finland. It emphasises chemistry as a science which is able to provide solutions to challenges within the environment and human welfare, the availability of energy, clean water and nutrition as well as the development of new materials.

We defined four focuses for the Society:

- promotion of science and know-how
- support to entrepreneurship
- sustainable development
- a look to the future

As the Chairman of the Society I personally consider the fourth to be of special importance because it stresses the significance of working with the young. One of the concrete goals of the Society is to be able to reach the best talent of the generation and have them study chemistry. This is going to call for careful planning by a Society where the average age of the membership undeniably is relatively high.

In designing the strategy one of our aims was to express its ideas as concisely as possible. A leading principle was not to prepare an action plan but rather to decide upon concrete actions only at a later phase and align them based on the strategy.

During summer and past autumn the strategy was given a stylish visual look - at least according to our own opinion. The strategy will be enforced in the annual meeting of the Society at the end of November and it will be published on FCS web pages immediately after.

Self-evidently strategic planning in the Finnish Chemical Society will not end with this. The next phase is the definition of its policies and activities through designing both a long-term plan and yearly action plans which are based on the new strategy.

On the basis of the experience gained over this process I dare to argue that it is indeed necessary, from time to time, to undergo a similar process which reassesses the fundamentals and redirects the functions of a society. It tends to broaden the thinking of at least all decision-makers and hopefully also that of the membership.

As the Chairman of FCS I look forward, with great enthusiasm, to the joint work of the Board over the next stages of the planning processes.

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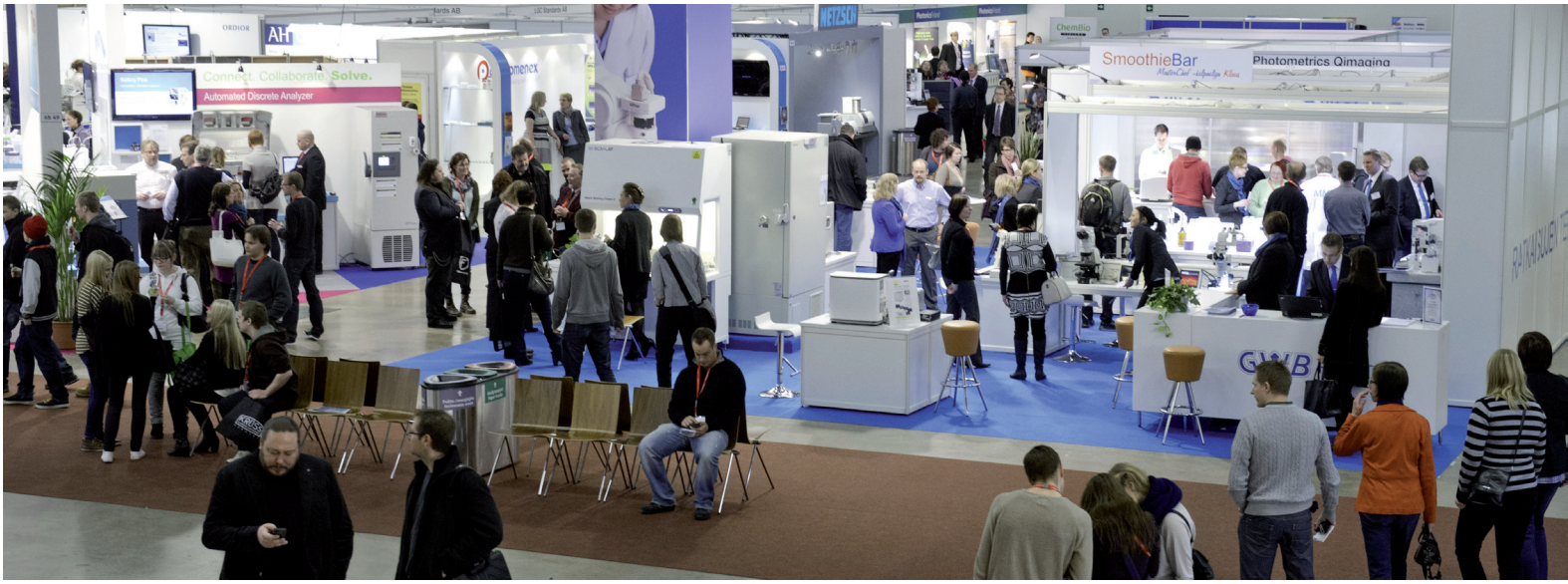
Chemistry Finland initiative: National profiling of chemistry

Departments of chemistry and chemical technology in Finnish universities started 15.9.2014 national negotiations for more effective coordination of chemistry research and education. The negotiating group has representatives from all chemistry departments in Finland. Also Kemianteollisuus ry, a trade association for the Finnish chemical industry, is involved in the initiative.

The initiative has two goals. The first one is a creation of a roadmap for the chemistry teaching and research in Finland. Such a roadmap should assist in evaluating and coordinating profiling of each department so that excessive and unnecessary overlaps will be eliminated and collaboration between the departments will be intensified. The second goal is to secure facilities for high level research by bringing chemistry on the national infrastructure roadmap with the weight chemistry deserves considering its national and international impact. Chemical industry represents a quarter of Finnish exports with a substantial annual growth. In a global picture it is well established that chemistry is in a decisive role in looking for solutions to the grand challenges of mankind.

National profiling will not be easy and requires long negotiations especially in what comes to 'out selection' – an awkward new term launched by a ministry to bring positive flavor for ending long-term teaching and research activities in Finnish universities as part of structural development. A recent chemistry evaluation by Academy of Finland highlights internationally and nationally leading areas of chemistry wherein future activities should be directed. The report also points out weaknesses whose elimination is one target of the present initiative. The current status of Chemistry Finland initiative is in recognition of strengths, weaknesses and overlaps. This evaluation forms the basis upon which further development will be structured as follows:

1. Finnish chemistry research and education will be developed especially within the four areas that were recognized as the most important research focus areas, all providing solutions to the grand challenges of mankind: materials chemistry, chemistry in energy, sustainable chemistry and chemistry of human health. Within these topic areas close collaboration in research and education will be put into practice, serious deficiencies identified and fulfilled, and unnecessary overlaps eliminated.



2. The bachelor level curriculum will be reformulated to meet the requirements of multidisciplinarity set by a ministry. The students will be offered a possibility to plan their studies according to their personal interests and motivations. A sufficient amount of studies in chemistry, physics and mathematics will be secured, and specialization to one discipline of the natural science will be guided through a process of personal study planning. Already now teaching in chemistry departments in Finland is well harmonized as evidenced by Eurobachelor and Euromaster labels given to many departments. Yet another aim is to add collaboration between various doctoral programs.

Chemical industry in Finland:
34 000 empolyees
25 billion euros turnover
13 billion euros exports
23 % of Finnish export are chemical products

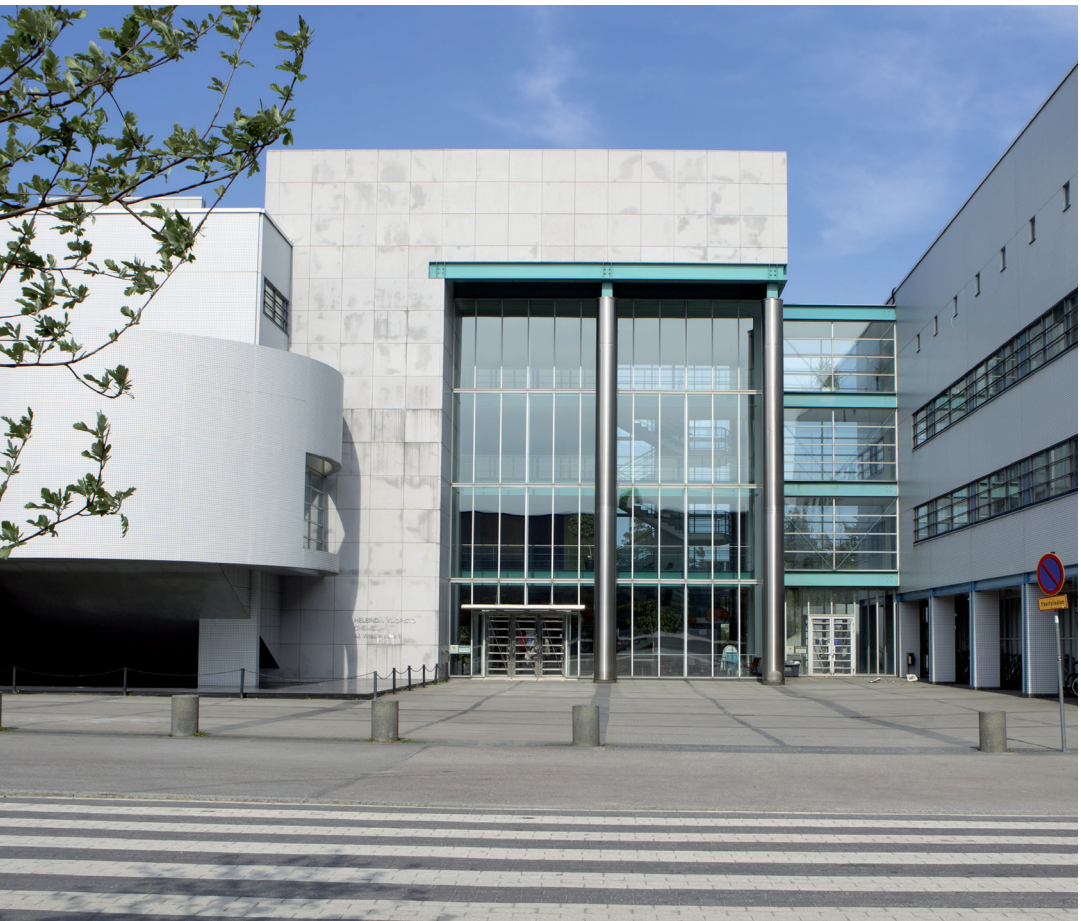
3. Research infrastructure will be developed through national coordination. Especially the most expensive special equipment will be purchased and used in centralised manner. The shared use of these equipment will promote mobility of researchers and students. For locally needed instrument collective acquisitions will be encouraged. Through the well-defined and coordinated plan for the national infrastructure chemistry hopes to become accepted on the national research infrastructure roadmap. This roadmap has got a very decisive role in national level infrastructure with tens of millions of euros being directed to large infrastructures, often international, but with only limited value for chemists. The problem of chemistry appears to be that the infrastructure it needs cannot be centralized but is needed locally at each place where experimental chemistry is being practiced, like NMR, MS, XRD. Outside the roadmap the infrastructure updating is largely left on the departments themselves which at the same time struggle with steadily increasing rental costs that are especially heavily affecting the laboratory intensive departments.

It is now time to proceed from the analysis and mapping of the current state to conclusions about the future actions and start to implement these. To assist the Chemistry Finland group in this challenging task, Universities Finland UNIFI, a co-operational organisation for Finnish universities, has nominated academician prof. Risto Nieminen from Aalto University, as a rapporteur to prepare a report about the future actions by the end of September. Nieminen is worldwide known physicist in computational and theoretical condensed-matter and materials studies, and is thereby in an excellent position for bringing external views to the Finnish chemistry community. Unfortunately dark clouds have appeared to the future sky in the form of budget cuts imposed by Finnish government also to the field of education and universities. At this point it remains to be seen how severely these will affect chemistry departments across Finland. On one hand one might hope chemistry being saved from the worst cuts because of its industrial and societal impact, but on the other hand one may also be worried chemistry being cut harder than the others because of its heavy cost structure.

Chemistry Finland has got a good start with all the departments working together in a constructive atmosphere toward a common goal. The initiative has got positive feedback also from university leaders and is seen as a model other sciences may likely follow in one form or another.

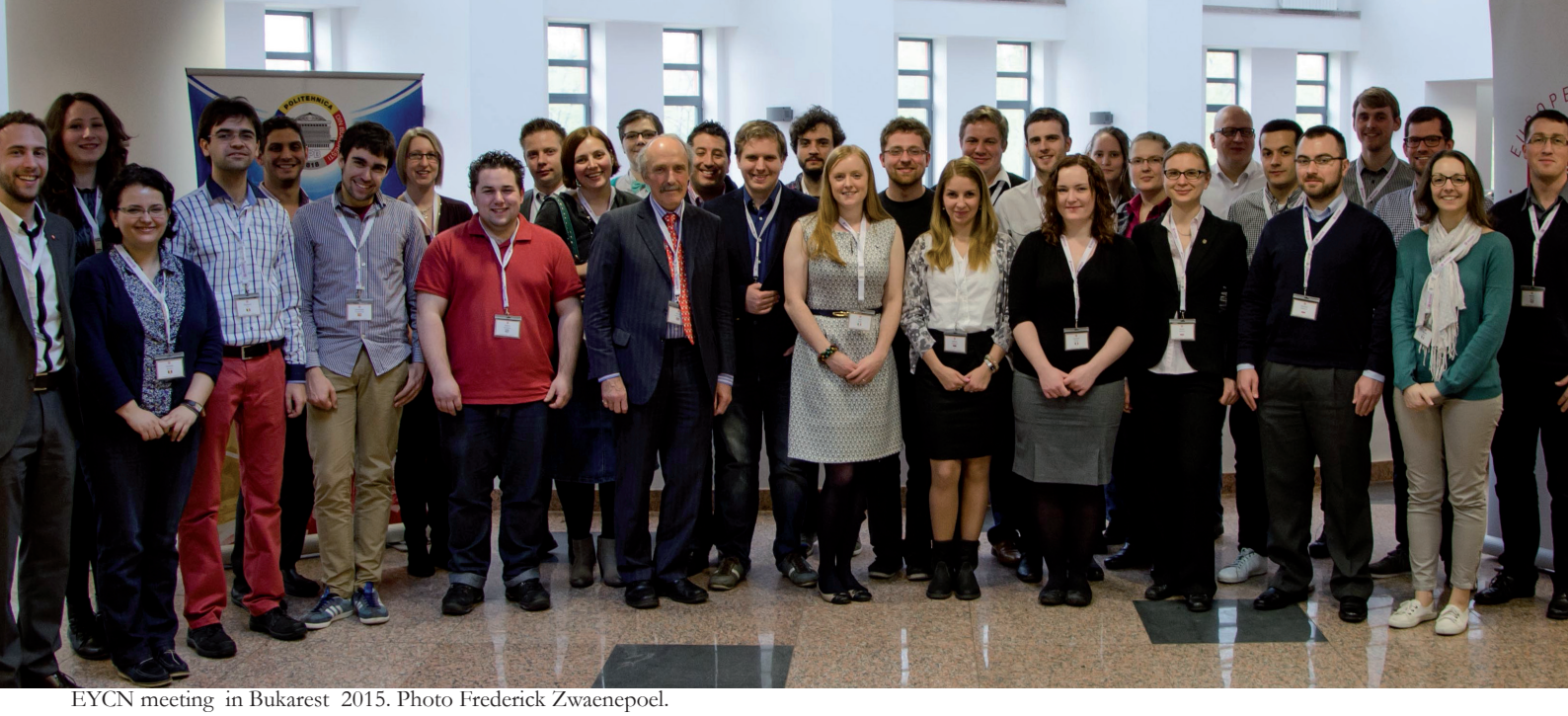
Chemistry and chemical technology research in Finnish universities

Chemicum Building of the University of Helsinki. Photo Linda Tammisto



One of the first tasks of Chemistry Finland initiative was to analyze the current research in Finnish universities in the departments of chemistry and chemical technology – being department based this analysis therefore excludes chemistry research done in other departments, research centers and companies. The analysis was started by each department listing its own research areas. An obvious and expected conclusion from this data was that chemistry research is focused in finding solutions to the grand challenges of mankind: energy, food, pure water, health and well-being, environment, sufficiency of resources, urbanization. The research divides into four main themes: chemistry of human health and wellbeing, sustainable chemistry, chemistry in energy production and storage, materials chemistry. The first three ones are in a direct match with

	Materials chemistry	Chemistry in energy	Sustainable chemistry	Chemistry of human health
University of Helsinki	Thin films (Atomic Layer Deposition) Functional polymers and hybrid nanomaterials Synthesis and properties of nanoparticles and nanofibers Solid state photochemistry and spectroscopy Computational materials, surface, molecule and reaction studies	Nuclear waste management and final disposal	Renewable resources Homogeneous catalysts Environmental analysis including radioactivity Reactions and chemistry of atmospheric pollutants	Radiopharmaceutical chemistry Medical spectroscopy and bioanalytics
Aalto University	Organic-inorganic thin films New fuel cell materials and their modeling Functional polymers and polymerization technology Catalyst research Modeling of materials properties Chemistry in wood processing	Electrochemical energy storage and fuel cells Thermoelectric materials Heterogeneous catalysis Reaction and reactor technique Process automatisation	Biobased materials based synthetic chemistry Biopolymers and chemistry of natural polymers Reaction and reactor technique Design and life cycle of industrial processes	Medicinal chemistry (synthetic), drug dosage, Point-of-Care analysis Medical biopolymers
University of Turku	Electroactive materials Luminescent material applications Solar energy harvesting, storage and conversion		Natural products chemistry: analytics and utilisation of plant based polyphenols	Bio-organic, especially biopolymer chemistry Radiopharmaceutical chemistry
Tampere University of Technology	Supramolecular photochemistry	Photovoltaics and photocatalysis	Carbon-free energy production	Biological and chemical markers
University of Jyväskylä	Nanochemistry Functional organometallics Supramolecular chemistry		Chemistry and analytics of environment Biomass refining Chemistry of macromolecules and natural substances	Bioactive molecules and materials
University of Eastern Finland	Functional surfaces, photonic materials and composites	Final disposal of nuclear waste Bioenergy	Environmental catalysts and bioeconomy	Protein and vaccine research Biomolecular chemistry
University of Oulu	Molecule materials	Renewable energy	Environmental and process analytics Natural materials and catalysis	
Åbo Akademi University	Chemical sensor technology Electrochemistry Biocomposites Paper electronics Functional nanoparticles, microparticles and coatings	Biomass: thermal conversion, combustion and high temperature chemistry	Process analytical chemistry Catalysis and reaction kinetics Synthetic chemistry, platform and fine chemicals Halogen free flame retardants Chemistry of natural substances, biopolymers,wood and paper Environmental and aqueous chemistry	Biomaterials and bioglass for medical applications Chemical biology, carbohydrate chemistry and cell growth substrates
Lappeenranta University of Technology	Materials in separation and purification technologies		Processes of separation and purification technologies Environmental analysis Process design and intensification	



EYCN meeting in Bukarest 2015. Photo Frederick Zwaenepoel.

the grand challenge topics while materials chemistry is an interdisciplinary key technology providing solutions to all challenges. The themes are strongly interconnected and division often is ambiguous. For example the focus areas of Department of chemistry in University of Helsinki are sustainable chemistry and materials chemistry but in the national profiling certain topics get naturally reclassified under the other two main topics.

An important common basis for the chemistry research in Finland are chemical methods and related infrastructure: chemical synthesis, analytical chemistry, spectroscopy, computational chemistry and materials characterization. Substantial part of the research is about development of these methods that is also done parallel to the research under the thematic areas, for example in the computational chemistry. Research of chemistry education in turn supports chemistry teacher education and updating training.

The topics of the main research themes are application oriented but the research done under these topics has lots of fundamental aspects too. Characteristic to the modern chemistry research is that borders between basic and applied research are difficult and unnecessary to define. The problems and challenges met in various applications are so difficult that they cannot be solved without profound basic research. This in turn means that the results of basic research have nearly immediate possibilities for exploitation.

The titles of main themes of research are repeated in one form or the other also in the thematic areas of universities, faculties and departments across Finland. This may at first sight give a false impression of severe overlaps in research in various universities. Closer look of the research topics reveals, however, that departments have found their own areas of specialty under the main themes. As noted, this analysis is about the current state and will serve as the starting point for the future development of inter-university collaboration and research profiling as part of the structural development of Finnish universities.

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EYCN provides new possibilities for young chemists

The European Young Chemists' Network (EYCN) was founded in 2006 to bring together the young chemists within the EuCheMS. EYCN is the young chemists' division of the EuCheMS, so every chemist under the age of 35 in a member society of the EuCheMS is automatically a member of the EYCN as well. Every national society, or the youth section thereof, is expected to send a national delegate or two to the EYCN Delegates' Assembly (DA) each year. I have been the representative of the Finnish Chemical Society since the spring of last year.

The working structure of EYCN is based on teams. There is a board that consists of the chair, the secretary and the team leaders. The rest of the national representatives then join the Scientific, Networking, External communications or Membership teams, where most of the action happens. The teams work on their projects during the year, and their results are presented at the DA.

The role of EYCN in EuCheMS has been strengthening during the years, especially now with the new chair, David Cole-Hamilton. He has been advocating for the voice of young chemists to be heard more, and now there are EYCN members also in the EuCheMS strategy task groups.

This year, the DA was held in Berlin in April. The EYCN organization is still quite new, so there have been problems with project completion, when there is more enthusiasm than resources for the actual performance. This is now being improved via improved project management, better-thought scheduling, and clearer assignments for the responsible persons.

The project management issue was a good topic to bring up at DA, as it was time to elect the new board for the next two years. This year was special also in the sense that for the first time in EYCN history, the board positions were to be subjected to a vote. This year, I personally did not make the selection, but was awarded the newly created position of project coordinator. There was a consensus that this type of position was needed to keep a better track of the projects and their progress. In general, the new board has gotten a good start, and the teams seem to be working quite well. Additionally, there is a newsletter that advertises events held around Europe, such as young chemists' conferences from all over Europe.

As next year's large EuCheMS Chemistry Congress in Seville is approaching, a large portion of the Delegate's Assembly was dedicated to planning EYCN's program for it. Compared to the scientific program of the main Congress, EYCN has a more of a soft skills program and it is expected to be quite attractive to younger chemists. Additionally, next year there will be the first European Young Chemists' Congress in Portugal, along with the Delegates' Assembly.

The EYCN budget is mainly based on sponsorship and donations from companies and national societies. Important contact to the corporate world comes through the long-standing partner Evonik, a large specialty chemicals company. This year, EYCN and Evonik signed a five-year contract and made the sponsorship official. This will also bring some stability to the funding situation.

On a more general level, EYCN is bringing European chemists closer together, increasing collaboration and exchange of information and good practices from country to country. Many local youth societies also perform community service of sorts, by spreading the word about the joys of chemistry, and what it can offer, to the general public. EYCN also helps the local youth societies to arrange events like Career days and CV clinics.

The immediate benefits come naturally from the networking. The current and future professionals from all over Europe meet every year to discuss among themselves and strive towards common goals. There is still work to be done, but the first steps of EYCN seem quite promising.

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Swedish Chemical Society

Swedish Chemical Societey
Svenska Kemistsamfundet
www.chemsoc.se

The society, founded as ”Kemiska Samfundet” in 1883, with the purpose to promote discussions, exchange of ideas and knowledge of chemistry and all applications thereof. Already in the first half of the 20th century, the original association of autonomous regional societies, each with its own cross-disciplinary activity program, was complemented with disciplinary divisions acting at the national level. Presently, our 3400 members have access to twelve divisions in addition to the local programs offered regionally.

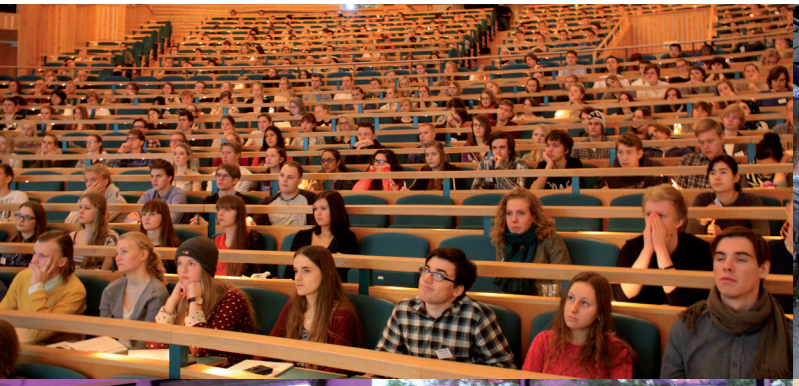
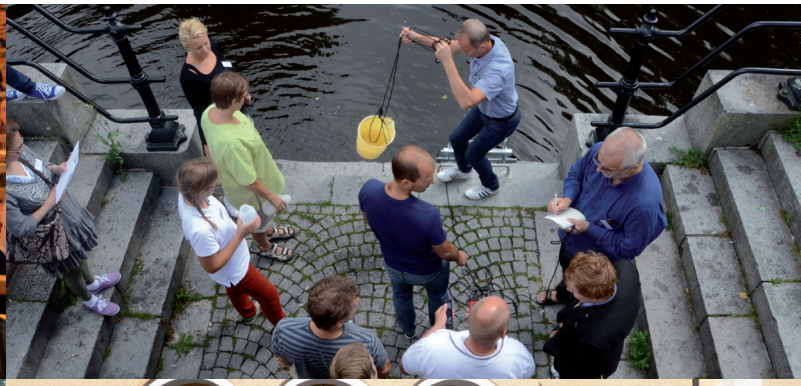
The Swedish chemical society welcomes all with an interest for chemistry in the broadest sense, including chemical engineering – the Swedish association for chemical engineers is since 2006 a division within the society. We offer a reduced membership fee up to the age of 28, as well as a reduction for the second member at the same address, and standing membership at no fee after 50 years of membership.

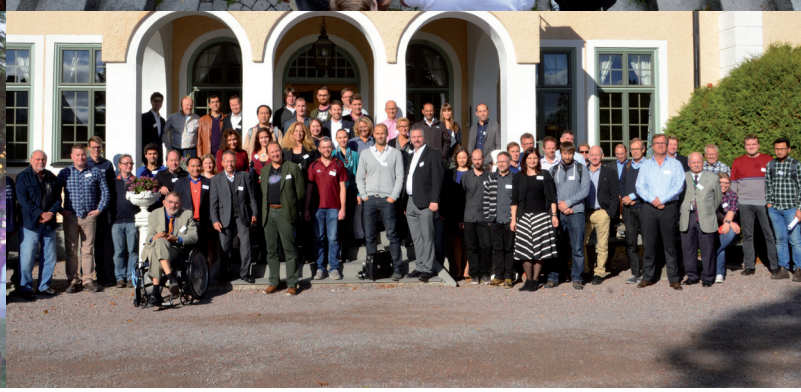
In the past decades, we have seen a growth for the division-run activities towards a professional audience such as congresses and workshops attracting also an international audience. In order to more efficiently cater for the needs of the divisions, we started “Kemistsamfundet Service AB” in 2009. In contrast to the divisional activities, we have seen a general decrease in participation for the “evening lectures” traditionally offered regionally. There are exceptions to this general observation; some regional societies provide substantial programs for members or for schools

Examples of recent activities are given in the picture gallery below.

We are at present actively discussing the future: How can we become more visible, more attractive for potential new members and important enough for the new members to stay? What is the role of a chemical society today, what can be the role five or ten years from now? What to keep or develop on our own and what in collaboration with others? Strategically these are long-term questions, relating to our organization as well as our internal and external communication.

Helena Grennberg
President Swedish Chemical Society



Choosing Chemistry?

Most teachers recognizes the question "Why is chemistry so difficult?" I always try to respond with: "Is it really difficult or is it perceived difficult?" What makes something difficult? In my eyes, chemistry is not more difficult than many other things. My son creates amazing Lego products from his head and my godson is fantastic with a Ping-Pong ball or a fingerboard. Why? Probably because they have spent so many hours with Lego bricks and Ping-Pong rackets. Therefore, to answer the question on why chemistry is perceived difficult, one important issue is time - students need to spend more time on chemistry. And the topic should be taught with connections to everyday life, with a high proportion of practical work.

After several years as an upper secondary chemistry teacher and teacher educator at Umeå University, it was an exciting possibility to start postgraduate education and to in-depth scrutinise Swedish upper secondary chemistry education. I had read so many reports on the school chemistry crisis, which did not really match all the engaged and positive students and teachers I regularly met. I started off with two survey studies inquiring students' opinions about their chemistry lessons. I found students interested in chemistry, students who enjoyed their chemistry lessons, and who emphasised the importance of good teachers (especially engaged ones with clear structure and a well-planned lesson). Their wish to connect chemistry to everyday life paved way for a focus on context-based learning approaches in my thesis.

Context-based learning approaches emanate from a "context" that connects the chemistry content to everyday life, where the relevance of the context is of major concern. Medical drugs in the environment or the use of energy drinks are examples of contexts supposed to be relevant to upper secondary students. Starting from the context, students have to consider what content knowledge they need to understand how comes that medical drugs like Tamiflu can be found in sewage, or how the taurine in the "Energy drink" affects our body. The hypothesis with context-based chemistry is therefore that students who are engaged in their studies also are more eager to learn. The content knowledge is not avoided: factual knowledge is the foundation for understanding the broader and more general issues, however it is not enough to settle for only a recall of facts. This is in contrast to the conventional approaches to chemistry, often described as a ladder only climbed one direction, starting from the atom, continuing with the periodic table, stoichiometry, chemical bonding and in the end organic chemistry and biochemistry. This division of chemistry into restricted content areas often makes it difficult for students to see the "whole picture". Context-based courses are, as opposed to a linear ladder, compared to a spider web allowing collection of information and knowledge from several content areas.

The starting point with the context-based tasks investigated in my thesis is that real chemistry problems seldom have only one single correct answer. This is in contrast to the perception of the students investigated; they stated that, for school chemistry there is always one correct answer that the teacher is looking for. Everyone who knows more chemistry knows this is not true: Chemical phenomena can almost always be explained in several ways. The reason for the presence of Tamiflu in wastewater has several reasons, and therefore you have to move around in the spider web to explain why the medical drug is water-soluble, polar, and perhaps affected by pH!

In my thesis research, I investigated students at the Natural Science Programme regarding their opinions about school chemistry as well as their chemistry learning outcomes. Besides believing that they are supposed to find one and only correct answer, they appreciated the problems they met. They asserted that the context-based tasks were interesting, relevant and challenging. When discussing why they found them challenging, a common answer was that they were not familiar to tasks asking for something more than just a short factual response. Responses with reasoning and explanations were more associated with social science. As teachers, we therefore have to ask ourselves, how to we want the subject to be perceived? Difficult, abstract and irrelevant, or exciting, interesting and relevant?

Another aspect studied in my thesis was how young people build and develop themselves. An interesting observation was that even students who enjoy doing science often have problems seeing themselves as being scientists. The perception of adolescence as a time for identity formation and making choices about one's future suggests a need for us to focus on questions about who students want to be rather than what they want to do. Even though chemistry as a subject can be perceived as interesting, the students (whom all had chosen to study science!) generally did not self-identify as scientists or chemists or persons who might become scientists or chemists. This may relate to

the absence of appealing role models. When discussing role models with the students, medical doctors were in general perceived as good ones. When asked about why, almost everyone gave one specific example: the TV-show Grey's Anatomy. Could it be that Dr Shepherd and Dr Grey are important role models for Swedish upper secondary students? And if so, are there any positive role models for chemistry in particular? As for how we teach, as persons working within chemistry or chemistry education, we all have to consider ourselves as role models. What do we want to convey? For myself, I proudly state that chemistry is interesting, meaningful, relevant and exciting!

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Further reading

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Light and heat: Chemical substances

What is light? Through the years, scientists, chemists and physicists have given many different explanations. However, one phenomenon that they all noticed was that light was inherent in chemical reactions.

When material bodies were set on fire, light was emitted and when stopped burning, the light went out. Until the mid-1800 scientists had a simple answer, light was a weightless material substance, an "imponderabilium". Other such substances were heat, magnetism and electricity. The assumption was strengthened by empirical data. An electric spark burnt a hole in a paper, and hence it must itself be of a material character.

Carl Wilhelm Scheele (1742-1786) burned chemical substances in a sealed glass vessel above water, he noticed that the volume in the vessel decreased, and concluded that "eldsluft", considered as one component of air (the other Scheele called "skämd luft"), somehow had been involved in a chemical reaction. He also noticed that the surface of the vessel become hot, and that sometimes the combustion generated light.

Scheele's explanation was that during the combustion, phlogiston (the hypothetical substance supposed to be contained ain all inflammable substances and which left the body during combustion) was released from the burning body. "Eldsluften" combined with the phlogiston to form the chemical substance heat. As heat was such an extremely small substance, it could penetrate the walls of the glass vessel. When large amounts of phlogiston were present, the chemical substance light was produced.

During the so-called chemical revolution with Antoine Lavoisier (1743-1794) as one of the leading persons, the approach to combustion changed, and so did the perception of heat and light. Not in the sense of losing their status as chemical substances but by turning from complex to simple chemical substances.

In the new theory, oxygen gas was a chemical compound of heat and oxygen. During combustion the oxygen in the gas formed an oxide with the combustible body and the heat from the gas was released. Lavoisier was also keen to explain the origin of the heat generated during the combustion, and to him heat and light were still weightless material substances.

This explains why the chemical substances heath and light are found at the top of the list of simple substances established by Lavoisier. The list is sometimes, a little inappropriately, called the first list of the elements (because it's "almost" corresponds to what we regard as elements today). However, it was in line with Lavoisier's perception of the criteria of an element, namely, "the simplest substances that one can found in chemical analysis".

Both Scheele and Lavoisier had shown, albeit within different theoretical frameworks, that the substances

heat and light could be chemically analysed. The idea of light and heat as “imponderabilia” was such an empirically established fact, that it survived the theoretical reform that resulted in a new view on combustion.

The first chemical nomenclature according to the new chemistry in Sweden by Anders Gustaf Ekeberg (1767-1813), Berzelius’ teacher, was published in 1795. It contained not only the new names on “eldsluft” and “skämd luft” which now became “syre” and “kväve”, but it also kept heat and light as chemical substances.

Jöns Jacob Berzelius (1779-1848) was also a proponent of the notion, and in 1808 he even considered whether light, heat, electricity and magnetism could be various modifications of a common, underlying substance, and that they all might ”consisted of common, simpler, to us unknown elements ”.

To think about what reasons has for believe in a theory can serve as useful exercise.

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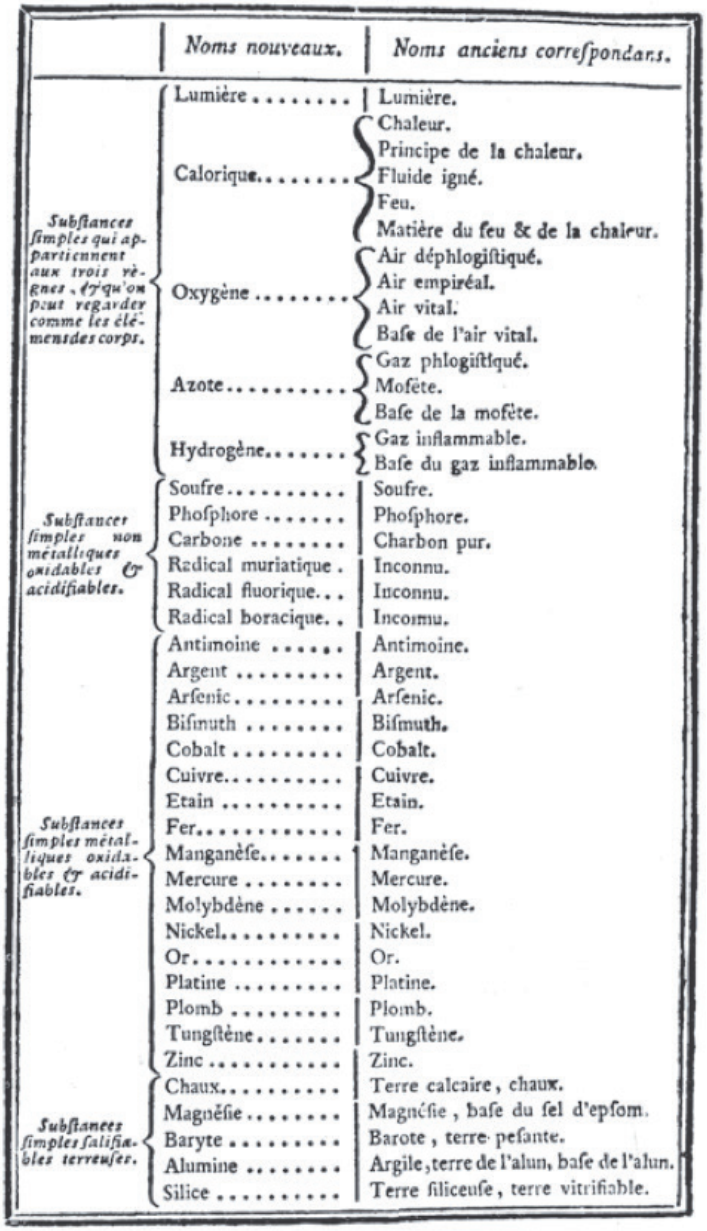

	Noms nouveaux.	Noms anciens correſpondans.
Subſtances ſimples qui appartiennent aux trois règnes, & qu'on peut regarder comme les élémens des corps.	Lumière	Lumière.
	Calorique	Chaleur.
		Principe de la chaleur.
		Fluide igné.
		Feu.
		Matière du feu & de la chaleur.
	Oxygène	Air déphlogiſtiqué.
		Air empiréal.
		Air vital.
		Baſe de l'air vital.
	Azote	Gaz phlogiſtiqué.
		Moſète.
		Baſe de la moſète.
	Hydrogène	Gaz inflammable.
		Baſe du gaz inflammable.
Subſtances ſimples non métalliques oxidables & acidifiables.	Soufre	Soufre.
	Phoſphore	Phoſphore.
	Carbone	Charbon pur.
	Radical muriatique	Inconnu.
	Radical fluorique	Inconnu.
	Radical boracique	Inconnu.
Subſtances ſimples métalliques oxidables & acidifiables.	Antimoine	Antimoine.
	Argent	Argent.
	Arſenic	Arſenic.
	Biſmuth	Biſmuth.
	Cobalt	Cobalt.
	Cuivre	Cuivre.
	Etain	Etain.
	Fer	Fer.
	Manganèſe	Manganèſe.
	Mercure	Mercure.
	Molybdène	Molybdène.
	Nickel	Nickel.
	Or	Or.
	Platine	Platine.
	Plomb	Plomb.
	Tungſtène	Tungſtène.
	Zinc	Zinc.
Subſtances ſimples ſalifiables terreuſes.	Chaux	Terre calcaire, chaux.
	Magnéſie	Magnéſie, baſe du ſel d'epſom.
	Baryte	Barote, terre peſante.
	Alumine	Argile, terre de l'alun, baſe de l'alun.
	Silice	Terre ſiliceuſe, terre vitrifiable.

Calendar 2016/2017

When?	What?	Where?
2016		
7-10 January	Organisk Kjemiske Vintermøte www.kjemi.no/organisk/okv31/	Gausdal, Norway
10-12 January	Norsk Symposium i Kromatografi www.kromatografisymposiet.no/	Sandefjord, Norway
29-30 January	Berzeliusdagarna www.berzeliusdagarna.se	Stockholm, Sweden
5-8 June	8th Nordic Conference on Plasma Spectrochemistry www.nordicplasma.com/	Loen, Norway
6-10 June	2nd International Symposium on Halogen Bonding (ISXB-2) www.isxb-2.eu/	Göteborg, Sweden
14-17 June	Kemiportalen: Analysdagarna och Organikerdagarna www.kemiportalen.nu/	Umeå, Sweden
14-16 June	17th Nordic Symposium on Catalysis www.nordic-catalysis.org/	Lund, Sweden
17-20 June	SBNet - Swedish Structural Biology Network Meeting www.sbnet.se	Tällberg, Sweden
20-22 June	Nordic Environmental Chemistry Conference, www.necc2016.se/	Loka Brunn, Sweden
5-7 September	19th Norwegian X-ray conference www.xraynorway.no/	Fevik, Norway
2017		
29-30 March	ChemBioFinland Chemistry Days	Finland
18-22 June	ICCE - EuCheMS Intl. Conference on Chemistry and the Environment www.icce2017.org.	Oslo, Norway
28 August - 1 September	Euroanalysis XIX www.euroanalysis2017.se	Stockholm, Sweden
November	Finlandsvenska fysik- och kemidagarna	Viking Line, Baltic Sea