CHEMISTRY in Europe
Newsletter for European Chemistry, published by EuChemS

Issue #2021 – 4

EDITORIAL

IUPAC at its Second Century
– Challenges and Opportunities

"A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty."

– Winston Churchill

The main reason for establishing IUPAC and its most celebrated achievement during its first century was developing the common language, symbols, and terminology of chemistry. As we move to the increasingly digital age and e-Science, it is not difficult to predict that the Union will focus on all chemical aspects of artificial intelligence (AI), machine learning (ML), and big data during its second century. Essential data banks will include kinetic and thermodynamic data, raw experimental and spectral data, structural information, etc. The recent IUPAC World Chemistry Congress highlighted these issues through excellent lectures and panel discussions. I see IUPAC having a pivotal role in defining the standards around the data and metadata for such databases and the methods for evaluating the data. Expectedly, to achieve these goals, we'll have to consolidate substantial effort and resources and develop business models to secure sustainable databases. Undoubtedly, IUPAC will take a leadership position in setting the standards.

Most global challenges, including climate changes, food for everybody, the race for sustainable energy, water quality, dwindling raw materials, and health problems, are chemical problems by nature. Therefore, without the chemical sciences and global cooperation, humankind cannot meet these challenges. Chemists have always been doing much better than politicians in solving complex problems, working together across borders and disciplines despite different political systems and cultural diversity. IUPAC can and should take a global leadership position to help meet the global challenges.

Another significant opportunity for IUPAC is the expansion of its international basis. Thanks to my previous service on the EuChemS Executive Board, the FACS Executive Committee, and the IUPAC Bureau, I have realized how important this goal is. My 13-year service as President of the Israel Chemical Society and Pro-Vice-Chancellor at the Technion campus in Guangdong, China, reinforced this understanding. IUPAC should invest much effort in adding less represented countries, mainly in Latin America, Africa, and Asia. Over the past several decades, IUPAC has included primarily the economically and scientifically developed nations. Although the 54 national members represent most of the world's chemical sciences and industry, they constitute only one-quarter of its countries. IUPAC should not stay a club of the wealthy, but become more inclusive and take proactive measures to expand its membership worldwide.

Finally, the strong commitment of IUPAC to embrace and promote transparency, diversity, multi-cultural society, and equal opportunities for all, is reflected by its recently established Committee on Ethics, Diversity, Equity, and Inclusion (CEDEI). Along these lines, I propose establishing a chemical analog of the Hippocratic Oath taken by new physicians. Historically, that oath has become a document of professional ethics, which describes a medical doctor's obligations and professional behavior to their patients and broader society. I suggest that IUPAC develops a Chemist's Oath to be taken by all chemistry graduates worldwide. All new chemists will pledge to pursue truth and the principles of science, use their power to sustain life rather than end life (e.g., refrain from developing chemical weapons and lethal injections). They will follow the principles of CEDEI and stay committed to human society and all fellow human beings.

I look forward to serving the global chemistry community at exciting times for IUPAC.

Ehud Keinan
Professor of Chemistry, Technion – Israel Institute of Technology
IUPAC, President-elect for the 2024-2025 biennium

FOCUS

The carbon element in the EuChemS Periodic Table

The EuChemS Periodic Table depicting element scarcity has been updated to reflect the significance of carbon: its colour has been changed from green – in plentiful supply – to a tricolour of green, red, and dark grey.

This graphical update to the EuChemS Periodic Table, initially released in 2019, highlights the complications that carbon poses for sustainable materials and energy production.

We kindly invite you to read more about the updated version of the EuChemS Periodic Table here.

Professor Koch, congratulations!

Wolfram Koch, Executive Director of the German Chemical Society (GDCh) and member of the EuChemS Executive Board, was elected as IUPAC's Treasurer on 6 August 2021. His term of office will start 1 January 2022 and will last four years. EuChemS would like to extend its warmest congratulations to him and wish him success in his new role at IUPAC.

EuChemS would like to make a special mention of the Executive Board members whose mandates will end on 31 December 2021: our sincerest thanks to Professor Kenneth Ruud and Professor Livia Simon Sarkadi, for your valuable contributions to the progression of Chemistry in Europe.

EuChemS Secretariat

CHEMISTRY in Europe
Newsletter for European Chemistry, published by EuChemS

2

2021-4

POLICY

EU chemicals policy at the heart of a safe and sustainable Europe

In Europe, we have green ambitions to become climate neutral by 2050, create a circular economy, and achieve better safety standards that protect people's health and the environment. But to get there, fundamental changes are needed so that companies can design and create products that are inherently sustainable.

As one of the biggest energy consumers and CO2 emitters, the EU chemicals industry has a significant role to play in achieving these ambitions. All chemical reactions involve energy. Moving to alternative energy sources will not achieve climate neutrality alone. So, to become more sustainable, industry must invest in finding new chemicals that conserve more energy, or new ways of manufacturing that consume less energy.

Further, we still have hardly any chemical mixtures that can be used to form truly circular materials, and our manufacturing processes are still linear – while we can produce recyclable materials, they can still only be recycled a finite number of times. Plastics, for example, can only be recycled around 10-15 times. And we often need primary forms of plastic, in any case.

If Europe truly wants to move towards circularity – as outlined in the EU Green Deal and set out in the Chemicals Strategy for Sustainability – we need completely new materials that fit this circular ethos.

With the information gathered by ECHA after almost 15 years of implementing the REACH and CLP regulations, we now know a lot more about which chemicals are safe and which are hazardous. And this puts us in a great position to ensure that new chemicals produced in Europe are safe and sustainable.

Our recent report on the operation of REACH and CLP lays out the facts on how the legislation has impacted worker and consumer health, the environment, innovation and competitiveness. It does not, however, attempt to assess all the underlying factors that have resulted in hampered progress at EU level. This will be done by the European Commission in their third general review of REACH and CLP in 2022.

Green chemistry has shown that you can find more energy-efficient and less energy-consuming processes, while finding molecules that are inherently safer. In Europe, we have very innovative companies who have already come to this realisation, but some businesses still operate as though the best change is no change – and this mindset must be altered.

We're no longer in a position where we can afford to continue doing "business as usual" when this may lead to health and safety concerns. We need European industry to step up and ensure that the EU is at the forefront when it comes to designing chemicals that are truly circular and less energy consuming.

We realise there are challenges ahead, but the Green Deal and the Chemicals Strategy for Sustainability gives us the policy direction to make these changes a reality. I firmly believe that ECHA's work will continue to play a central role in managing evolving challenges linked to chemicals safety.

Bjørn Hansen
Executive Director of the European Chemicals Agency (ECHA)

CHEMISTRY in Europe
Newsletter for European Chemistry, published by EuChemS

RESEARCH

Green Chemistry in Pharmaceutical industry and Education

Green chemistry (GC) is a current topic which has been highlighted by scientists for reducing the environmental footprint of the pharmaceutical industry. As it is known, the von der Leyen Commission documented over a year ago the need for action at the European level, with six main priorities, including the European Green Deal and a Europe fit for the digital age. Unfortunately, COVID-19 caused a global upheaval both in the economy and the way activities are carried out daily. The transition to a Green Europe will be the backbone of the new economy and the prosperity of the next generation of citizens.

In the context of this strategy, the University of Nicosia participated in the EC Representation in Cyprus-UNIC Collaboration Program, where its main objective is the collaboration of the EU with the academic community to encourage students to “have a say” about the importance of the European Green Deal and the impact of EU policies in their life. Moreover, it was aimed to assist young scientists in facing the new era of the EU, by encompassing new courses on EU priorities and help them to acquire knowledge about the Green Deal. This program will be a great advantage for society, as well as for young people, especially in their academic, private/social, and professional life. For this reason, the utilisation of GC principles in the pharmaceutical industry can therefore be noticed as an obligation to enhance their positive impact on the global community. It is important to mention that Green Pharmaceutical Analysis is rarely taught to undergraduates. Adding courses on GC in the pharmaceutical industry into an already-crowded Chemistry or Pharmacy program is a challenge because education is critical for encouraging the ideas of young scientists. However, many universities have never been exposed to this field.

My participation in this program gave me the opportunity to educate my students on the topics of Green Pharmaceutical Analysis in industry. In my opinion, the involvement of undergraduates in this program was essential as they had the prospect to present their ideas outside the framework of academic society. The students’ ideas focused especially on education and training on green practices in the fields of pharmacology and pharmaceutical analysis. It is well known that the pharmaceutical industry produces a lot of toxic industrial waste in the environment. Therefore, several changes in pharmaceutical industry practices are needed to meet the von der Leyen Commission’s goal of a European Green Deal. In the context of the course, students have been educated about several topics such as the development of green management methods in the process of drug production, the guidelines on green processes from synthesis to analysis of drugs and education on green practices in industry.

Evroula Hapeshi
Assistant Professor at the University of Nicosia, Cyprus

CHEMISTRY in Europe
Newsletter for European Chemistry, published by EuChemS

4

2021-4

Nobel Prize for GDCh Member Benjamin List

The German Chemical Society (GDCh) congratulates its member Benjamin List, who receives this year's Nobel Prize in Chemistry together with the Briton David MacMillan. They are awarded for their work on asymmetric catalysis.

They have established for the first time that small organic molecules are suitable as mediators of chemical reactions. Previously, science assumed that only enzymes and metals, including often toxic heavy metals or expensive and rare precious metals, could accelerate chemical reactions and steer them in a desired direction. The small organic molecules that Benjamin List and David MacMillan introduced as catalysts are particularly suitable for asymmetric synthesis. In this process, only one of two enantiomers is produced – these are molecules that are like the left and right hand, which means they cannot be spatially aligned. Such molecules are involved in all biological processes and play an equally important role as medical agents.

Nobel Prize in Chemistry 2021, Benjamin List Photo © David Ausserhofer / MPG

Benjamin List, Director at the Max-Planck-Institut für Kohlenforschung, has been a member of the GDCh for many years and has already received numerous awards for his work. He gave a plenary lecture on his research at the GDCh Science Forum Chemistry in 2019 (https://av.tib.eu/media/45116, in English).

Karin J. Schmitz
GDCh, Head of Public Relations Department

Source:

- Max-Planck-Gesellschaft: https://www.mpg.de/17662517/nobel-prize-for-chemistry-2021-benjamin-list

CHEMISTRY in Europe
Newsletter for European Chemistry, published by EuChemS

MEMBERS' PERSPECTIVES

2021 brief news from the Hungarian Chemical Society

Joining this year's call of the IUPAC Global Women's Breakfast on 9 February 2021, the Hungarian Chemical Society (HCS) organised an online lecture session entitled "Digital vs Traditional Education". After the opening held by Livia Sarkadi (President of HCS), the speakers summarized the major lessons of digital education, mainly in the field of chemistry, during the COVID lockdown. Éva Magócs (Director of Ferenc Rákóczi Grammar School, Budapest) told that they were not unprepared for the fact that education had moved to a virtual environment in March 2020, as their school with full internet access has long used the online platform as a communication interface and all their teachers and students already had some experience with digital teaching and learning. As the main benefits, she mentioned the methodological development, the versatility and diversity of learning, the improvement of teacher-student cooperation, and even the visualisation of dangerous chemical experiments in the form of videos. However, there were difficulties in drawing reaction equations, chemical structures and isomers, and also involving some students in class work. Edit Székely (Deputy Dean of Education, Faculty of Chemical Technology and Biotechnology, Budapest University of Technology and Economics) highlighted that they did not use any digital methodologies in higher education earlier, so they were unexpectedly affected by the transition they had to prepare for during the 1-week early spring break. The main problem was that not all subjects had teaching materials suitable for online education, and this meant for professors a significant increase in the time spent on preparation for lectures. Laboratory exercises that required manual skills, as well as research works were the main losers of online education. Assessing students' knowledge and ensuring independent work was also a challenge. From a teacher's perspective, the issue of "talking to the monitor", the lack of student feedback, impersonality, and isolation were also very characteristic, although the benefits of digital teaching will continue to be exploited in the future.

In addition to education, the pandemic unfortunately also affected HCS's personnel. Due to the tragic death of István Pálinkó, the new Secretary General of HCS, László Tamás Mika (Head of Department of Chemical and Environmental Process Engineering, FCTB BUTE) was elected at the beginning of September.

Éva Frank
Correspondent from the Hungarian Chemical Society

MEET…

Welcome in your new role at EuChems

Karsten Danielmeier

On 1 January 2022, Dr. Karsten Danielmeier, Covestro AG, will take over the presidency of the German Chemical Society (GDCh. Dr. Karsten Danielmeier is Senior Vice President and Head of Growth Businesses for the Business Unit Coatings & Adhesives since July 2021. After finishing his Ph. D. in Synthetic Organic Chemistry at Bonn University, he joined Bayer/Covestro in 1996 and has since worked in various functions with increasing responsibility in R&D, Product Management, Supply Chain Management and Technical Marketing in Germany and the US. His term of office will be two years.

Cristiana Radulescu

Cristiana Radulescu is a new elected member of the EuChemS Executive Board as of 1 January 2022. She is currently the General Manager of the Institute of Multidisciplinary Research for Science and Technology-Valahia University of Targoviste (ICSTM-UVT).

Annette Lykknes

Annette Lykknes is the new chair of the EuChemS Working Party on History of Chemistry. She is a professor of chemistry education at NTNU – Norwegian University of Science and Technology, Department of Teacher Education.

Florian Budde

Florian Budde is the President of the German Bunsen Society for Physical Chemistry. He is currently member of the Kebotix Advisory Panel, the Universitätsklinikum Frankfurt am Main Supervisory Board and the Guardhat Inc Advisory Board. With his expertise, he contributes to the EuChemS input to theHigh Level Roundtable on the implementation of the Chemicals Strategy.

CHEMISTRY in Europe
Newsletter for European Chemistry, published by EuChemS

Interview with EuChemS EUCYS 2021 winners, Louenn Colineaux and David Barbin

EuChemS EUCYS 2021 winners, Louenn Colineaux and David Barbin, with their winning project "Is the study of chemical reactions possible on the scale of a drop?".

In September 2021, Louenn Colineaux and David Barbin were awarded the special EuChemS prize at the 2021 edition of the EU Contest for Young Scientists (EUCYS) for their project "Is the study of chemical reactions possible on the scale of a drop?".

Both age 18, David started his research on this topic in his first years of high school in Laval (Mayenne region in France), and Louenn, from the same high school, where they later started collaborating on the project. Together, they built a device that replicates classic high school chemistry experiments on the scale of a drop – with a volume of one microliter. Their device is based on colorimetry: they used oil as a container for their water drops – as they are not miscible – and with the help of a syringe pump, they generated coloured drops in the oil. Through statistical study and analysis of photographic images, they can determine the volume of drops generated using the flow rate value displayed by the syringe pump, thus producing and isolating stable millireactors of identical volume.

First, congratulations for winning the 2021 EUCYS EuChemS Award. When did you start having an interest in chemistry? And when did your interest for this field start?

David: I always knew I wanted to become a vet, so at an early age I started to focus on science. I like biology, but I preferred chemistry courses as I found the experiments fascinating. So, I joined the science workshop of our high school – a place where students can work during their free time on chemistry projects. With this group, I had the opportunity to attend scientific conferences and each time, I was impressed by the experts who presented their research at those events.

Louenn: In middle school, I did not really like sciences, and I had to work tirelessly in mathematics to overcome dyscalculia – which I did overcome. In high school, I discovered physics, chemistry, and biology – I really enjoyed doing experiments and became passionate about those topics.

Could you tell us more about how your winning project began? Did the initiative to compete come from you? How did you learn about this competition?

David: Initially, we were part of the science workshop of our high school, where students conduct research on a specific topic, imitating how experienced researchers would work. We are supervised by teachers, and when our project was satisfactory, they encouraged us to first present it at national contests, and then to participate in EUCYS.

Louenn: First, we participated in contests because we wanted to gain experience. We were happy to discover that we won the first prize of the CGénial contest, so we tried with EUCYS.

David: We also won the Olympiades de Physique France in 2020 with this project and we had the opportunity to participate in other regional contests, as well as in the international competition 'Step into the future'.

Did the pandemic situation impact your work for this project?
Louenn: In 2020, we were not allowed to go to high school, so we could not meet during our science workshop meetings. During the academic year 2020-2021, we were back in high school every two or three weeks. We managed to organise our time in a way that we could focus on experiments during the weeks when we were allowed in our high school lab.

David: All the contests after the pandemic were online. It is a shame because you miss out on interesting interactions with other participants and experts that you would have during physical events.

What were the main obstacles you have encountered during your research? How did you overcome them?
David: We have been working on this project for three years, and I spent the first year focusing on conductometry before realising that this type of measurement would not work. Then, we switched to colorimetry, and tried for months to incorporate a peristaltic pump motor, but without success. This is how we ended up using a syringe pump.

Louenn: Somehow, the whole project was a succession of obstacles, but we learned so much thanks to the difficulties we encountered. It is the fact that you stay stuck on something that will make you discover something that you were not necessarily looking for!

David: When we were doing our research, we contacted some scientists whose work inspired us with this project and asked them our questions. We were lucky that most of them were very responsive and kind enough to advise us.

What were the scientific outcomes of the project?
Louenn: By doing chemistry on the scale of a drop, we built a green device as we use less volume of products for experiments, thus avoiding waste and reducing costs. Also, our device provides reliable measurements.

How do you see this project evolving in the future? Have you thought about applying for a commercial patent?
Louenn: For now, we are busy with our demanding studies – I started a Bachelor of Medicine and David got into a veterinary school. It would be interesting to keep this project within the sphere of high school to show to other young students what microfluidic is, how it works and make it is accessible to them.

David: It is not an expensive device to produce, and the fact that it is ecological and reliable invites us to further reflect in this regard.

Finally, is there any message you would like to leave to younger people who are reading this interview?
Louenn: The sciences are accessible to everyone, there must be at least one field that you like! Find out what drives you and keep on learning! I would also like to thank all the scientific experts who keep on conducting their research and making science accessible to everyone, they are inspiring younger generations to follow in their steps.

David: Never give up and do not limit yourself! Science is so vast, you will for sure find a field that makes you passionate.

Interview of Louenn Colineaux and David Barbin, EuChemS EUCYS winners 2021
Conducted by Laura Jousset, EuChemS Science Communication & Policy Officer

NETWORKS

Almadén added to the EuChemS Historical Landmarks

Last September, the EuChemS family finally got together to celebrate the unveiling of the EuChemS Historical Landmarks 2019 plaque in recognition of the role the Mines of Almadén played in the history of chemistry and shared European cultural heritage.

Located in the province of Ciudad Real (Castilla-La Mancha region) in Spain, the Almadén mines, visited the previous day by the attending European guests, represent a world reference of a historic mercury mining site. Mercury is a relatively rare metal: its extraction took place in a very limited number of mines, and Almadén was one of the largest sites of mercury production worldwide until recently. The extensive extraction of mercury deeply impacted the mining industry on a global scale. Thus, the Almadén mines constitute an important heritage of the evolution of scientific and technological methods for mercury extraction. The site has also seen a long history of mercury trade which has generated intercontinental exchanges over the centuries. The mines closed in the year 2000 but remained one of the world's most extensive mercury resources.

Photo of the EuChemS representatives together with the Real Sociedad Española de Química, the Universidad de Castilla-La Mancha, MAYASA industries and Junta de Comunidad de Castilla-La Mancha and other local governmental authorities. © UCLM

EuChemS representatives and other guests joined in a guided tour to learn more in detail how life was inside the Mines. © UCLM

The history of Almadén is closely linked to that of the mine and the people who worked in it. Therefore, in the 18th century, the Royal Mining Academy and the Miners' Hospital were established. Both were set up to conduct purely scientific and technical inquiries around the relationship between mercury and life in Almaden. The historic site of Almadén thus tells the entire story of mercury mining, in all its complexity. For several years now, the site's management has successfully shared this history with visitors, including students from all over the country and abroad. This is the reason why the unique and well-preserved Almadén mines were unanimously recommended for the EuChemS HLA award in 2019.

As is usually the case in the EuChemS Landmarks programme, the event started with a scientific symposium followed by the unveiling of the plaque. The event was attended by different representatives, both from regional and European levels. Representing EuChemS, President Floris Rutjes presided over the event accompanied by Pilar Goya (Vice-President), Nineta Hrastelj (Secretary-General) and Laura Jousset (Science Communication and Policy Officer). The event began with an address of the President of the Spanish Royal Society of Chemistry (RSEQ), Antonio Echavarren, who took the opportunity to refer to the potential of scientific tourism: "We want that when mercury is studied, we think of Almadén; we propose to the families to visit these mines, starting a cultural and scientific tourism, and a historical one, given the importance of these mines in Spain's development". The RSEQ was also represented by some former presidents and its Secretary-General Sonsoles Martín de Santamaria. Furthermore, the ceremony was attended by the Rector of the University of Castilla-La Mancha, José Julián Garde López-Brea, the President of the Portuguese Chemical Society, Artur Silva, managers of the Almadén Mines, as well as the President of MAYASA. S.A., Emiliano Almansa, and by numerous people from the scientific field and by municipal and regional representatives from the region of Castilla-La Mancha.

The official programme was concluded with the unveiling of the plaque that comes with the EuChemS Historical Landmarks award by Floris Rutjes. 'I am sure that recognising the historical importance of the Almadén site by EuChemS will provide an impetus to the current efforts to make the mines more known among the general public and enhance the possibilities for tourism also for educational purposes. On the other hand, we as EuChemS can also be proud that the Almadén mines, which were already recognized as a UNESCO World Heritage site, are now on our Historical Landmarks list and thereby will also contribute to the visibility of this EuChemS programme.'

The Almadén population resonated with the EuChemS Historical Landmarks award and its event, reaching out in the form of the words of the last speaker of the day, Rosa Carmen Rodríguez Martín-Doimeadios, a researcher originally from Almadén when she remembered the miners and their families: "With these words, we want to express our gratitude to all the families and all the miners who have made History now written in the history books. Though, this History could not have been written but with many other stories. Those stories represent the people who have made enormous efforts and sacrifices, often leaving their health and, sometimes, their lives behind. This recognition also goes to all the people involved in the mines across the centuries: the miners and their families."

Unveiling of the Almaden plaque from Floris Rutjes, accompanied by other authorities, after the Almadén symposium. © UCLM

The event ceremony can be re-watched from the RSEQ YouTube channel, and the final programme of the event can be found at the editorial services of UCLM.

Please visit EuChemS website and YouTube channel to discover more about this ceremony.

Antonio M. Rodríguez García
Research Assistant Professor at the University of Castilla-La Mancha

María Antonia Herrero
Professor at the University of Castilla-La Mancha

Pilar Goya
EuChemS Vice-President

Floris Rutjes
EuChemS President

Scientific writing for early career chemists

Scientific writing can be an intimidating task, especially when you don't know where to begin. You start with nothing but a lab book filled with scribbles and a blank page on a computer screen. Like many aspects of the scientific world it can overwhelming, or so it has been in my experience. We are not always provided with the information we need, and it is often the case that we are left to our own devices with little guidance or preparation. This task is often complicated further, as many scientists are required to publish in a language which is not their first. That is where the inspiration for an article began. We hoped by using our own personal experiences as early career chemists, along with information already available within the literature, to provide a map that will help to ease the process of writing and publishing for other young scientists.

A schematic illustrating the defined 10-step writing guide: Image adapted from © microvector/123rf.com

Throughout the course of the article (S. M. Richardson, F. Bella, V. Mougel and J. V. Milić, Journal of Materials Chemistry A, 2021, 9, 18674-18680.) the steps required for writing are broken down. We start by providing tips on how to first approach writing and provide direction on when is the best time to start. This is followed by an easy to follow 10 step guide, which upon completion should provide the necessary material for completing a scientific article draft. Alongside these 10 steps, the order of approach, article content and construction, and key tips are discussed in separate parts entitled Title, Abstract, Introduction etc., laid out as a coherent guide for each section. This is aided by other information, including choosing an appropriate journal and constructing a cover letter, in order to provide a broad view of the publishing world.

Having gathered this information so it is now available within a single document, we hope that this will help early career scientists; to ease the task of writing and guide the next generation of scientists on their scientific writing journey.

Shona Richardson
EYCN Global Connections Team Leader

CHEMISTRY in Europe
Newsletter for European Chemistry, published by EuChemS

12

2021-4

CHEMISTRY TALKS

EYCheM
– A Platform for Connecting and Empowering Early-Career Chemists

Scientific talks, networking, EYCN DA and social events at previous PYCheM and EYCheM editions. Image credit to the conference organisers and attendees.

The European Young Chemists' Network (EYCN), the young division of the European Chemical Society (EuChemS), has created a platform for biennial meetings of young chemists across Europe – the European Young Chemists' Meeting. Since its inception in 2016, EYCheM has become a unique international platform for scientific exchange between young chemists in Europe and beyond. The meeting offers early-stage chemists a unique opportunity to develop their professional skills, expand their network, and increase their international visibility while building long-term and fruitful collaborations.

EYCheM evolved from PYCheM, a biennial scientific conference for the community of Portuguese young chemists, founded in 2008.

Due to the coronavirus pandemic, the 3rd EYCheM had to be postponed and will be held in January 2022 online. However, a wide variety of online events were held in 2020 and 2021. The lessons learned here stimulate discussions about more sustainable and inclusive conference formats. Hybrid conference formats are possible, which would allow a broader international community to participate.

Important for further success is continued support, for example through sponsorship by industry, and the participation of established experts who are willing to mentor the next generation of young chemists and support their professional development.

Read the full article by João Borges, Jovana V. Milić, et al. in ChemistryViews: https://doi.org/10.1002/chemv.202100110

Timeline from EYCHeM 2019 to EYCHeM 2021

President's Column

From Open Access to Open Science

On a regular basis, the European Chemical Society (EuChemS) publishes positions about chemistry-related issues based on the best available independent scientific knowledge based on the views of experts across our member societies.

When it comes to more general science-related policy questions, however, we also work together with other organisations on the European level. More specifically, EuChemS is a member of the Initiative for Science in Europe (ISE), which is an independent platform of European Learned Societies and Research Organisations from various science disciplines. ISE supports all fields of science, involves researchers in the design and implementation of European science policies, and is a strong advocate of independent scientific advice in European policy making. Topics that are currently discussed by ISE are amongst others researcher's careers, Horizon Europe, young researchers, and Open Science. EuChemS has its own Task Groups on some of these topics and the Task Group members actively contribute to ISE's activities.

CHEMISTRY in Europe
Newsletter for European Chemistry, published by EuChemS

Analysing the Night Watch with top-notch chemistry

A paradigm in organic chemistry that has been in use since 1931 has turned out to be wrong, Amsterdam scientists found. It is not carbon s-p hybridisation, but steric repulsion that causes the variation of e.g. C-H bond lengths. 'This discovery has been in the making for about twenty years.'

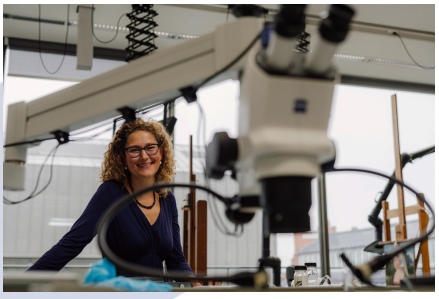
At the end of the nineteenth century, researchers were already using the then newly discovered X-rays to look through oil paintings. But in the last few decades, the scientific analysis of art has expanded enormously. Using enormous amounts of data, researchers are trying to find out what chemical and physical processes take place in art objects.

Chemist Katrien Keune links fundamental research on the properties and behaviour of materials to the appearance of pieces of art in the collection in her work at the Rijksmuseum in the Netherlands, first as a researcher and since 2019 as head of the Science department. Keune tries to gain insight into how the appearance has changed in the past and how it may change in the future. She is currently responsible for the scientific research within Operation Night Watch, a large-scale research and conservation project in which Rembrandt's famous painting is being meticulously mapped out using a wide range of analysis techniques.

How does your fundamental research translate to museum practice?
'That is exactly what makes my role so interesting. I am embedded in a restoration studio at the museum and every day we have discussions and questions about this very topic. What is the point, what do we still need to know? That's what's so good about Operation Night Watch, that we have weekly meetings with conservators, restorers and researchers where we ask each other questions from all sides. That way you immediately see where all the holes in the science are, because there are many questions that I can't answer at the moment.'

What makes Operation Night Watch so unique?
'Besides the close cooperation between the various groups within the museum, it's mainly the mix of complementary techniques that we use. The way we are now researching the Night Watch would not have been possible five years ago. The speed and resolution of analytical techniques have improved so rapidly in recent years. Our ambition is to get the most complete picture possible of the painting, of the materials used and of its condition. You usually don't get to study the Night Watch every month or year, so this is truly a once-in-a-lifetime opportunity.'

Want to learn more about how Katrien Keune came to be an art researcher and what analytical tools she uses? You can read the complete interview here: https://c2winternational.nl/c2w-2021-issue-4/analysing-night-watch/



Katrien Keune in her laboratory ©Jordi Huisman

The EuChemS Task Group that focused on Open Access (publications financed with public money should be publicly available) broadened its activities to Open Science. This stands for open access to scientific knowledge, to science infrastructure, science communication, and involvement of societal stakeholders. Open Science is also associated with a broader view on research and innovation: scientists engage more in discussions with societal actors, output is no longer restricted to scientific publications and societal challenges have to be addressed by multidisciplinary teams of scientists. These developments cause that conventional ways to assess research quality (e.g. number of publications, journal impact factor, H-index) require revision and that other activities such as teaching, leadership, and outreach to society also must be taken into account. We should, however, not completely abandon the existing metrics, but instead move to a more integrated approach to assess the quality of research and the researchers involved.

The EuChems position on Open Science is expressed through participation in ISE activities, but also by participation in expert groups. An example is the EuChemS participation in the Open Science Policy Platform (OSPP), a High-Level Group of stakeholders advising the European Commission on Open Science policy, thereby contributing to articulating the voice of chemists at the European level.

Floris Rutjes
EuChemS President

CALENDAR

In the current environment and status of COVID-19, some events recognised by EuChemS are being postponed or canceled. However, EuChemS Events calendar is being updated on a regular basis.

If you plan to attend an event, we invite you to check the calendar here.

We encourage organisers of conferences related to chemical sciences to apply for EuChemS Recognition of Event. Once your event is recognised, you will be able to use EuChemS logo. We will add the event to the EuChemS Events Calendar and we will share the event on all our social media channels.

The recordings of EuChemS online events are available on the EuChemS YouTube Channel.

COLOPHON

Chemistry in Europe (CiE) is the EuChemS quarterly newsletter mainly intended for an audience of chemists. Its objective is to inform the community about research in Europe, to provide updates from EuChemS Member Organisations, and to investigate the latest policy-related developments.