

EUCHEMS
EUROPEAN CHEMICAL SOCIETY
Activities' Report - Year 2021

MAURIZIO PERUZZINI

1. Introduction

The drafting of this report cannot fail to ignore the fact that a critical health situation is still persisting throughout Europe in which successive waves of SARS-CoV2 epidemics occurred in all European countries with different intensities from country to country, but always heavily affecting the productive activities as well as those regarding the world of research and cultural activities. For this reason, the networking and international coordination activities carried out by EUCHEMS have been heavily reduced throughout all 2021, especially regarding the ones which envisaged activities in the presence and exchange of researchers.

2. Main activities carried on by EUCHEMS during 2021 relevant for Italy and for CNR

More specifically, as regards the scientific and congressional activities of EUCHEMS carried out during 2021, numerous virtual events were held mainly in the format of the webinar. In particular, on the initiative of Dr. Nicola Armaroli, CNR Research Director and member of the governing board of EUCHEMS, it was proposed and accepted to organize a series of in-depth webinars on some of the chemical elements pursuing a double objective: i) to focus on elements of the periodic table considered strategic for the development of the global economy and, at the same time, ii) to highlight their role as critical elements both for their scarce availability in absolute terms or for their complicated accessibility also in consequence of geopolitical problems or of the incorrect management of the reserves available on the planet. The first of these two events entitled "*The Carbon element - Key towards a sustainable society*" (<https://www.euchems.eu/carbon-element-webinar/>) took place on April 22, 2021 and concerned the Carbon element and the enormous challenges of technological innovation that the energy transition and the exit from the economy based on the use of fossil resources is posing to chemistry. The only affordable discipline capable of promoting and enabling the energy transition towards a complete decarbonisation of the world economy. A second webinar entitled "*The Lithium Element - Enabler of the Energy Transition*" (<https://www.euchems.eu/lithium-element-webinar/>), took place on December 1, 2021 and focused on the strategic role that the lithium element is increasingly having to guarantee the efficient storage of (renewable) electrical energy (lithium batteries) for the purpose of achieving the energy transition and in agreement with the internationally set objectives for mitigating climate-altering processes.

Both of these events have had a great scientific success and have seen a significant and qualified Italian participation.

3. Activities carried on by Maurizio Peruzzini within EUCHEMS during 2021 and impact on the Italian scientific community

As Associate Member of EUCHEMS (Supporting Member), the CNR representative in the organization has been officially requested by the Executive Board of EUCHEMS (and specifically by the "EUCHEMS Periodic Table Task Group") to express its opinion on the advisability of setting up a series of interactive Internet seminars (webinar) on the critical elements that populate Mendeleev's periodic table (see above). On that occasion, CNR expressed itself favorably, considering this initiative and this line of activity completely in accordance with the strategic choices of our country and with the mission of the Department of Chemical Sciences and Materials Technologies of CNR and of our organization as a whole. In this way the chemistry developed at CNR is perfectly aligned with the European strategies and fully implemented by the Italian government, regarding the major issues of the energy transition towards a widespread use of renewable sources in view to safeguard the environment and to reduce the greenhouse gas emissions that threaten, if not controlled quickly, the survival of the life on our planet.

4. Evaluation of the participation in terms of benefits and membership cost

The well-recognized role played by EUCHEMS towards both European academy and chemical companies is well known to the CNR - DSCTM which for years has collaborated with the Italian Chemical Society (SCI), (the effective member in EUCHEMS for Italy), one of its main network partnerships in our country, also in an international perspective. CNR - DSCTM has in fact signed close collaboration agreements with SCI in the last 15 years and has recently renewed the agreement in 2018 which has led to a close scientific collaboration between CNR and SCI, thus favoring the participation of CNR researchers in important roles in the Society and in participating to several scientific events organized by SCI. Among them it is worth mentioning the joint organization of the Avogadro Colloquia in December 2019, an international conference that received broad support from EUCHEMS for the elected topic centered on the chemistry of some of the elements of the Periodic Table particularly relevant for the theme of decarburization and for the production of energy from renewable sources.

This close integration between the reference organization of the Italian Chemistry and the National Research Council is certainly strategic for CNR and foresees the existence of joint objectives which involve not only EUCHEMS, but also extend to a more global level involving the activity carried out by the CNR in collaboration with other international Unions and Associations. In particular, it is worth stressing the success of the strong collaboration with the IUPAC NAO CNR National Commission, representing Italy in its participation in the International Union of Pure and Applied Chemistry (IUPAC). As proof of this, it is worth emphasizing that, on the occasion of the IUPAC General Assembly (Montreal 2021, virtual), Italy played an active and not marginal role in the election of the Israeli chemist Ehud Keinan as the next IUPAC President. The Italian support to such candidate, which had been proposed by EUCHEMS and supported also by several European chemical companies, was the position taken also by the IUPAC NAO CNR National Commission and his election certainly represents a success of the strategies in place of CNR both towards EUCHEMS and IUPAC.

5. Evaluation of Italians' attendance and how to improve interest and involvement

Participation in EUCHEMS of the CNR-DSCTM allows the CNR to be part with its own experts in the decisive occasions for the identification of strategic actions and for evaluation of the European strategic agenda increasingly oriented to pursue sustainable development issues, and energy transition, to mitigate the impact of human activities on both the environment and the planet's climate by contributing also to the circular economy. Towards the end of 2020, for example, EUCHEMS organized with the European Commission the workshop entitled "*The Value is on Circularity: Recycling-reusing-reinvesting on critical raw materials*". The Italian participation in these events has been always highly qualified and appreciated and we believe it is significant to be present on these occasions and to play a primary role since EUCHEMS often represents the sole interlocutor of the European Commission to define and finalize community programs aimed at strengthening the role of chemical sciences and the roadmap that through Green Chemistry should lead to a real sustainability of the European chemical industry. As confirmatory proof of the important role taken by EUCHEMS towards the European Commission, we can recall that recently EUCHEMS was invited to the "*High Level Roundtable on the implementation of the Chemicals Strategy*", offering the CNR the opportunity to participate online in this event (May 2021). In the same year, due to the COVID-19 pandemic and the consequent health crisis, the General Assembly of EUCHEMS did not take place. It was postponed to 2022, like the EuChemS Chemistry Congress (ECC8) and should be held in Lisbon at the end of August 2022 (<https://euchems2022.eu/>).

As for the EUCHEMS scientific and congress activity carried out during 2021, the long period of the pandemic has affected the associative sociality which has always been an irreplaceable engine for scientific activities. However, numerous virtual events have been created mainly in the webinar format (see above) dedicated to the critical elements and issues related to their growing use and global strategic value.

Also noteworthy is the important webinar held last November in which the EUCHEMS policy was presented, which provides for a wide range of EUCHEMS prizes announced on a variable basis and in which Italy has always been the protagonist. However, on the issue of Italian participation in EUCHEMS calls, it would be desirable for the CNR to have a better synergy and unity of purpose with the Italian Chemical Society which could lead to the appointment of CNR chemists both as members in the selection juries of the winners and in the identification of CNR researchers as credible candidates. In agreement with the management of the DSCTM, we could work towards younger researchers to make credible and authoritative nominations for these awards, thus creating important opportunities for visibility and international reputation for the chemists of the DSCTM. Relevant in this regard are the calls for the European Young Chemists' Award (EYCA), an important award in which profiles of excellence in the fields of academic and industrial research are awarded, and similarly the EUCHEMS award on Historic Places of Chemistry, in which the CNR could in the future try to "create a joint action" with SCI to select and propose historical places of Italian chemistry that could also underline the decisive role played by the CNR in some territorial areas, also highlighting the cultural roots that made it possible to develop academia, scientific research and society.

6. Italian experts with important roles within the Union or within related Commissions and Programs (if known)

Italy has always occupied important positions in the European Chemical Society boasting among its chemists Prof. Giovanni Natile, from Bari, who was EUCHEMS President and Vice President in the five-year period 2004 - 2009 and Prof. Francesco De Angelis, professor of Organic Chemistry at the University of L'Aquila, who was respected Treasurer of EUCHEMS in the period 2010 - 2016. Currently Dr. Nicola Armaroli, Research Director of the Institute for Organic Synthesis and Photoreactivity (ISOF - CNR) of Bologna, holds a top position inside the Association being an elected member of the Executive Board of EUCHEMS. Here, he exercises a particularly active role in the field of chemistry and chemical technologies applied to renewable energy and the energy transition. In this context, Armaroli plays the role of Chairperson in the EuChemS Periodic Table Task group established in 2020.

Among the various Divisions there is a broad and qualified participations of Italian chemists in the various Division, Commissions and Working Groups. Among these I name: Luigia Sabbatini (Bari) and Federico Marini (Rome) for the Division of Analytical Chemistry; Maurizio Peruzzini (CNR Florence), Nicola Armaroli (CNR Bologna), Tomaso Munari (CNCF), Sandra Rondinini (Milan) for the Chemistry and Energy Division; Antonella Rossi (Cagliari), Liberato Cardellini (Ancona) for the Chemical Education Division; Francesco Peri (Milano Bicocca) for the Division of Chemistry and Life Sciences; Marco Arlorio (Alessandria), Gianni Galaverna (Parma) for the Food Chemistry Division; Luigi Vaccaro (Perugia) for the Green and Sustainable Chemistry Division; Roberto Gobetto (UNI Turin) for the Inorganic Chemistry Division; Flavia Groppi (UNI Milano) for the Nuclear Chemistry and Radiochemistry Division; Gianluca Farinola (UNI Bari) for the Organic Chemistry Division; Alceo Maccioni (UNI Perugia) for the Organometallic Chemistry Division; Giovanni Marletta (UNI Catania) for the Physical-Chemistry Division; Salvatore Coluccia (UNI Turin) for the Solid State Chemistry and Materials Division; Luigi Campanella (UNI Rome) for the Working Party on Ethics in Chemistry; Marco Taddia (UNI Bologna) and Vincenzo Schettino (UNI Florence) for the Working Party on the History of Chemistry.

7. If Union with CNR Commission, short summary about the 2021 CNR Commission activities

No Italian Commission is active.

8. Notes (if any)

Not necessary

9. Conclusions

Reiterating what has already been stated in the 2020 report, I believe that the membership of the CNR in EUCHEMS as Supporting Member is fully justified and of great importance for the CNR and especially for the chemists of the DSCTM-CNR. In fact, joining EUCHEMS allows the researchers and technologists of our institution to be fully integrated in the most important European network of chemistry, facilitating the participation and the presence of Italians chemists in events and occasions of high scientific interest on highly topical-technological issues. and of strategic significance for the European chemistry agenda. In this way, in front of a decidedly modest investment (5000 Euros), CNR can support the official role played in EUCHEMS, the largest reference organization of molecular sciences at European level, by both the Italian Chemical Society and the Italian Order of Chemists and Physicists. Therefore, CNR is allowed to carry out a well-shaped role that is not subsidiary, but central in the agency that more than any other directs alongside and often the strategic choices of the European Union in the interest of both the chemical industry and the molecular sciences. In conclusion, the membership of the CNR as Supporting Member of EUCHEMS constitutes a value for the entire Italian chemical community and amply justifies the little associative cost incurred by CNR for its participation to EUCHEMS.



Dr. Maurizio Peruzzini

CNR Titular Representative for the participation of CNR in EUCHEMS
European Association for Chemical and Molecular Sciences