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Union Internationale Pour La Science, La Technique et Les Applications du Vide
International Union for Vacuum Science, Technique and Applications
Internationale Union für Vakuum Forschung, Technik und Anwendung

IUVSTA President's Message

Anouk GALTAYRIES, anouk.galtayries@chimieparistech.psl.eu

Dear IUVSTA Colleagues,

The second year of this triennium is coming to an end: after 3 virtual EC Meetings since March 2020, the 4th one of this Triennium could finally take place at least partly in person in Marseille, and this was a real pleasure to meet the colleagues who could make the trip to France.

For sure, we are aware that the IUVSTA life will never be as it was before, and for some reasons, this will bring unexpected improvements in the Union way of life more participants in our meetings to take decisions, more condensed meetings, provided they are well-prepared in advance.

The IUVSTA activity has paradoxically increased in the past 20 months, the monthly meetings of officers and committee chairs are there to prove it, not only for deciding postponements but also to make new decisions: more IUVSTA Elsevier grantees, more IUVSTA M Welch Award Awardees, which is a positive point for students in their PhD studies, more scientific meetings and discussions in the frame of IUVSTA IOP webinars. One final achievement which stands out is the International Year for Basic Sciences and Sustainable Development 2022 (IYBSSD 2022), which has been voted on December 2, 2022 at the United Nations General Assembly. IUVSTA is one of the founder scientific international unions of this program, we expect to support both our fundamental approach to science as well as its benefits for sustainable societal development.

IYBSSD 2022 is now a concrete scientific window which is open to all our member societies, from July 1, 2022 to June 30, 2023. We should be ready to benefit from this label: either to include sustainability in our scientific programs or to

reinforce the discussions on energy, water, that have already been presented in the frame of IUVSTA at EVC15 (Water) and EVC16 (Energy with the ITER project). The IUVSTA Ebara Award has also all its importance, as a focus on the excellence of the work of a young researcher considering environment in its technological or scientific research.

Sustainability will have all our respect in 2022 as well as in the future years, and especially regarding the strength and longevity of IUVSTA!

Wishing all of you happy days for the end of this year, in the company of your friends and family!





Report on ECM 135: a Hybrid Meeting, partially Marseille France, partially Teleconference Meeting

Christoph Eisenmenger-Sittner, christoph.eisenmenger@ifp.tuwien.ac.at

ECM 135 was held on Saturday, November 20th, 2021 as a hybrid Executive Council Meeting in conjunction with EVC 16 in Marseille, France. The Real-Life part of the meetings associated to ECM 135 was held in the City Center Vieux Port on Friday November 19th and Saturday November 20th afternoon from 13:00 to 17:30 CET. Delegates, who could not be present in person, were able to join via a teleconference system. Apart from minor technical issues the hybrid format worked well, and it can be anticipated that hybrid components will be integral part of future ECMs, provided the extra-costs of such hybrid meetings can be partially covered by IUVSTA in the framework of a new economic model for hybrid meetings.

Meetings associated to ECM 135 started on Thursday November 18th with the Officers Business Meeting, followed by Committee meetings and the STD meeting on Friday November 19th. ECM 135 finally was held on Saturday November 20th.

After the President, Anouk Galtayries, opened ECM 135, the Secretary General C. Eisenmenger-Sittner in collaboration with the Recording Secretary, Ana G. Silva checked the attendance. ECM 135 was found to be safely quorate with 75% participation. As the quorum was established, the President opened ECM 135.

In her report, Anouk Galtayries, welcomed all IUVSTA Officers, Councillors, Alternate Councillors and Observers present in the room and virtually. She acknowledged the fruitful discussions within the productive hybrid meeting held on the previous day.

The president expressed her joy of having the first hybrid ECM, her pleasure of sharing a face-to-face meeting with the members present in Marseille, and of having the other members and officers online. The Union worked smoothly by having very efficient and productive monthly informal virtual meetings and interactions. Anouk Galtayries highlighted the success of IUVSTA under the exceptional circumstances, which is possible only due to support and commitment of Officers, Committee Chairs, Division Chairs, and the member societies of IUVSTA.

The President then mentioned several activities developed by IUVSTA. International scientific meetings, held totally virtual, were a great success. Also, scientific webinars in association with IOP reached a considerable number of international attendants. Further webinars are already planned for 2022. IUVSTA also endorsed and sponsored the International Year of Basic Sciences for Sustainable Development (IYBSSD). The organization of this event can be of benefit for all members and particularly for the IUVSTA IVC22 Congress. After finishing the President's report, the next item on the agenda of ECM 135 was the evaluation of Bids for ECM 136, which should happen around April 2022. Within this meeting the candidates for the President Elect present their statements for the future of the Union and the first round of Bids for IVC 24 will be also discussed. Therefore, an in-person meeting would be highly desirable.

A bid for organizing the next ECM, ECM136, was submitted to IUVSTA by the Mexican Vacuum Society. Emmanuel Haro - Poniatowski presented the proposal for a hybrid ECM136 in Mexico. After some discussion and questions, Emmanuel Haro - Poniatowski was asked to reschedule the meeting to 25-27 March 2022, which



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was then accepted to be the final date for ECM136. In the wake of this discussion, the Past President, Lars Montelius, suggested the next ECM136 to be 100% virtual to reduce the ecological footprint of the Union. This issue was voted on by the delegates, and, considering the important topics at ECM 136, it was decided to have an in person meeting with a solid majority. The Venue of ECM 136 was unanimously decided to be Cancun, 25-27 March 2022. Delegates who will not be able to join in person will be able to participate in ECM 136 via a teleconference system.



Moving on in the agenda, selected committees presented their reports, as extensive committee reports were given on Friday November 19th. Within the report of the Finance Committee, regarding provisional budget for 2022 two motions were adopted to vote: (i) to increase the triennium highlights budget to sponsor a special Joe Greene session at the IVC22 conference, and (ii) to increase the unexpected expenses line of the budget to provide support for future hybrid ECMs. Open votes for both proposals yielded unanimous approval.

In the report of STD, the Scientific Director Jay Hendricks talked about the ongoing activities regarding the several workshops and TTCs postponed to 2022. Some of them will be held as hybrid events, while others are still intended to be fully on-site meetings. The Scientific Director, Jay Hendricks, acknowledged all Division Chairs, the Scientific Secretary Katsuyuki Fukutani and the chair of the Education Committee, Alberto Tagliaferro, for their work and efforts.

In the last item of the Agenda, any other business, the Secretary General presented a timeline of the Executive Council Meetings which happen during a Triennium of the Union. Some of them are of particular importance, such as the meeting associated to the Highlights Seminar or the one where the candidate for the President Elect is determined. This timeline shall be a guide for optimizing the meetings of the Union in respect to a choice between Real Life and Virtual events. It was also stressed that Real Life ECMs should be strictly tied to scientific events to facilitate travelling of the delegates, as official missions may be scrutinized more closely in the future.

Finally, The President, Anouk Galtayries, expressed her gratitude to all attendants in the ECM 135 and closed the Meeting.



Report on 16th European Vacuum Conference

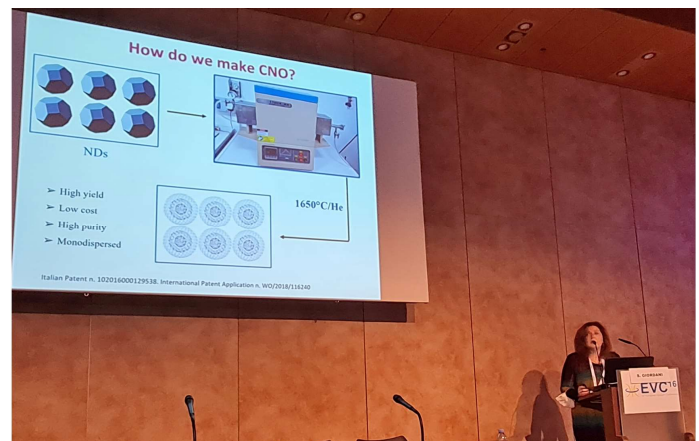
Irina Martin Graur and Anouk Galtayries

The 16th European Vacuum Conference (EVC-16) took place in Marseille, France between 22-26 Nov. 2021.

As decided by the International Organizing Committee, EVC-16 was scheduled in Marseille, France from May 31 to June 4, 2021. Unfortunately, the complex health situation continued to impact our professional lives and complicated the planning of the international trips in summer 2021. At the same time, we considered it more appropriate that this international conference be organized in person and not in an online version. Therefore, it was decided to move EVC to November 2021.



Dr. Alain Becoulet, head of Engineering Domain at ITER



Prof Silvia Giordani

EVC-16 was organized by the French Vacuum Society (SFV) and Aix Marseille University (AMU), with the endorsement of ITER, located nearby Marseille.

This five-day event brought together 140 participants from 25 countries, including leading experts in Vacuum Sciences and Technologies (chemistry, physics, mechanics, biology, durability...) and other professionals for scientific exchanges through lectures and posters.

On Monday morning, following the conference opened in presence of the two Chairs (Irina Martin Graur and Jean-Louis Bersier), a VP of Aix Marseille University (Stefan Enoch), The Chair of the ASC of IUVSTA (Martin Wüest), the IUVSTA Treasurer (Arnaud Delcorte) and the President of IUVSTA (Anouk Galtayries). Following welcome speeches and brief presentation on IUVSTA, it was the time for 4 scientific plenary conferences for the IUVSTA Highlights @EVC, in presence of all participants and the participants of ECM135 who were in Marseille the 2 previous days.

The first lecture was presented by Dr Alain Becoulet, head of Engineering Domain at ITER who made a nice introduction on the different amazing dimensions of the project: 20 years of construction, 20 years of operation, 20 billion euros invested and thousands of researchers and engineers from all countries involved for the energy of the future.

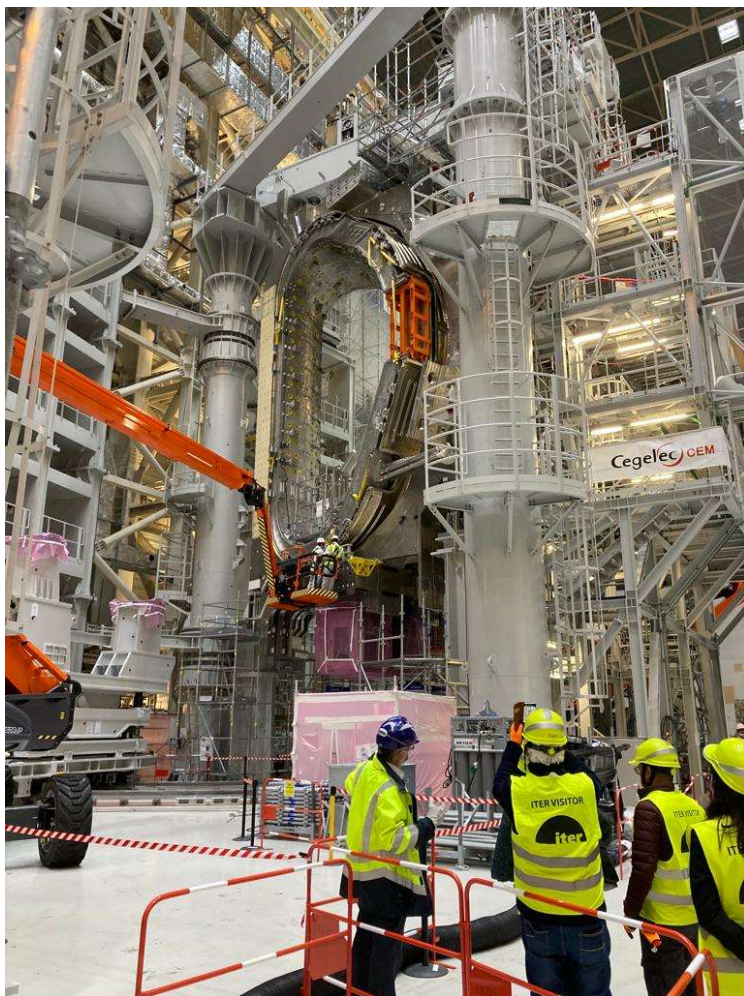


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The second plenary took us back to the early times of the 20th century, the incredible 15 years (for physics): at the beginning of the past century Martin Knudsen was a pioneer in gas flows, and the scientific and historical journey that Prof Jørgen Schou proposed to us was really interesting.

After a break, the third plenary was given by Prof Silvia Giordani on Biointerfaces : a nanoscale world with a huge potential, particularly emphasizing the role of carbo nano onion structures composed of multiple concentric shells of fullerenes as promising materials for biomedical applications.

The 4th plenary presented «classical» gas-surface interactions but in the domain of astrophysics, which once again, was bringing us to huge dimensions as with the first presentation!



During the visit of ITER

Along the week, the participants had the chance to listen to 2 other plenary lectures (Prof Vasco Guerra and Prof Yannick Marandet), but also 11 keynote lecturers in about 25 sessions in total (with series of 2 parallel sessions).

It was also possible to discuss science during 2 poster sessions on Monday and Tuesday, as well as technology along with the 90 companies exhibiting in connection with this international congress as well as with another French congress organized (A3TS).

Associated to these scientific events were two sessions of visits of ITER: one on Monday afternoon for the IUVSTA participants, and one on Friday morning for the rest of the volunteering participants from the congresses. Just a few days after the UN 2021 Conference on Climate in Glasgow (COP 26), it was a unique opportunity to meet both the utopia of an infinite energy (nuclear fusion) but also an international collaborative project (as IUVSTA is!) at huge scales.

An excellent way to celebrate this face-to-face meeting for a few magic days in France, before re-facing hard times with a new variant of the same pandemic.



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Recognition of the IUVSTA Welch Awardees at EVC-16

Dr. Martin Wüest, Chair of the IUSVTA Awards Committee

For quite some time there was the desire to recognize the IUVSTA Welch Awardees at an IUVSTA endorsed conference. The 16th European Vacuum Conference was the opportunity to bring Clio Azina (IUVSTA Welch Awardee for 2019) and Yanela Mendez González and Rémi Delaporte-Mathurin, the two newly-selected IUVSTA Welch Awardees for 2021 (see also IUVSTA Newsflash 29 from November 2021), together and present them during the opening ceremony of the conference with an award certificate and an issue of the IUVSTA history book. Clio Azina, who already finished her Welch Award research period, gave a keynote speech on



IUVSTA President A. Galtayries, R. Delaporte-Mathurin, Y. M. González, and M. Wüest



IUVSTA Elsevier Awardees

MAX phase thin films: from design and processing to environmental resistance. Yanela Mendez González gave a talk on her current research on enhanced electrocaloric response on antiferroelectric systems: an approach to solid-state cooling devices. Rémi Delaporte-Mahurin gave a presentation on modelling hydrogen transport in ITER divertor. The IUVSTA Welch scholarship is graciously funded by Mr. Kenneth Bro and his sister Mrs. Beth Howard, continuing the award established by their grandfather Medard W. Welch, an industrialist in vacuum technology.

Following the IUVSTA Welch Awards, the recipients of the IUVSTA Elsevier Awards were recognized. This award is sponsored by the publishing house Elsevier. They were: Thanasis Basdanis - University of Thessaly, Filipe Correia – TECMINHO, Michal Haubner - Czech Technical University Prague /CERN, Joana Ribeiro - University of Minho, Pakaj Kumar Samal - Charles University Prague, Benjamin Tomasetti - UC Louvain. They also received an award certificate at the opening ceremony. The awardees gave oral or poster presentations at EVC-16.



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Report on the 10th Vacuum and Surface Sciences Conference of Asia and Australia (VASSCAA-10) & The Chinese Vacuum Conference 2021 (CVS 2021)

The 10th Vacuum and Surface Sciences Conference of Asia and Australia (VASSCAA-10) joint with the Chinese Vacuum Conference 2021 (CVS 2021) took place from October 11 to 14, 2021 in Shanghai, China. Hong-Jun Gao, the president of Chinese Vacuum Society, delivered the opening remarks.

The Vacuum and Surface Sciences Conference of Asian and Australian (VASSCAA), is a special scientific conference officially endorsed by the International Union for Vacuum Science, Technique and Applications (IUVSTA). The purpose of the conference is to establish a new academic forum in Asia and Australia at which the topics on vacuum, surface and related sciences, techniques and applications could be discussed. In particular, the conference provides an excellent platform for academic communication and collaboration among outstanding young scientists in Asia and Australia.

Joint with the Chinese Vacuum Conference 2021 (CVS 2021), this conference and a series of activities also served as a bridge to facilitate the academic exchanges among various players of vacuum science and technology in China, promote collaborations between academia and industry, accelerate the transfer of advanced technologies, and continuously inject vitality into innovation in the field.



The Opening Ceremony of VASSCAA-10



Online Q&A session of Prof. Young Hee Lee's lecture



Presentation in Parallel Session

The plenary speakers, Prof. Michael Fuhrer (Monash University, Australia), Prof. Tetsuo Hanaguri (RIKEN, Japan), Prof. Young Hee Lee (Sungkyunkwan University, Korea), Prof. Paul S. Weiss (UCLA, USA), Prof. Hongwei Zhao (Institute of Modern Physics, Chinese Academy of Sciences, China) delivered excellent lectures to the audience.



IUVSTA-Elsevier Student Awardees

| | NAME | AFFILIATION | Gender |
|---|---------------|--|--------|
| 1 | Yanbang CHU | Institute of Physics, Chinese Academy of Sciences | M |
| 2 | Xiaodong HAN | Xiamen University | M |
| 3 | Yonglin KUANG | Northeastern University | M |
| 4 | Chenglong LI | Institute of Plasma Physics, Chinese Academy of Sciences | M |
| 5 | Xintong LI | University of Science and Technology of China | M |
| 6 | Kun WANG | Fuzhou University | M |
| 7 | Mei WU | Peking University | F |

Information of the Student Awardees (Left to Right)

The conference is comprised of nine topics, and 6 sub venues were held in parallel. The conference was held online and on-site simultaneously by providing livestream of all the sessions. Over 300 participants joined the conference onsite, and the number of the total online visits exceeded 10,000

7 Awardees of the IUVSTA-Elsevier Student Award and 20 awardees of the Best Posters Award received certificates onsite. More than forty enterprises were involved in sponsoring the conference and the onsite exhibition.

In the Closing Ceremony of VASSCAA-10, Prof. Fumio Komori (Tokyo University, Japan) introduced the IVC-22/VASSCAA-11, which are opening in Sept. 11 to 16, 2022 in Sapporo, Japan.



Call for Nominations for the IUVSTA Prize for Science and the IUVSTA Prize for Technology

The two Prizes are the highest awards of the International Union for Vacuum Science, Technique and Applications (IUVSTA). They will be awarded in September 2022 during the International Vacuum Congress IVC-22 in Sapporo, Japan.

The purpose of IUVSTA Prizes is to recognize and encourage outstanding internationally-acclaimed research and achievements in technology and instrumentation in the fields of interest to IUVSTA.

The prizes have been established by the IUVSTA Executive Council, with generous support from the vacuum industry world-wide. The nominee must have accomplished outstanding experimental and/or theoretical research in vacuum science, technique or applications within the ten years preceding the year in which the award is made. Special consideration will be given to nominees currently engaged in an active career of research.

Note that all nominating material must be sent by e-mail as attached digital files (pdf format) and received by **January 31, 2022** For further information, please see the IUVSTA web site <https://iuvsta.org/iuvsta-prizes/#prize-for-science>.

Dr. Martin Wüest
Chair of the IUVSTA Awards Committee
e-mail: martin.wuest@inficon.com



IUVSTA Prize for Science

IUVSTA Prize for Technology

Deadline: 31st January 2022

Further Info: <https://iuvsta.org/awards-scholarships/>



IUVSTA WEBINAR SERIES CALL FOR CANDIDATES TO DELIVER WEBINARS

The Education Committee has started an IUVSTA Webinar Series. The ultimate goal is to realize a library of webinars delivered by IUVSTA affiliated society members to be made available to scientists worldwide, with a particular focus on (i) researchers living in countries with limited access to travel funds and (ii) early career researchers / PhD students / Master students.

LECTURERS SELECTION AND WEBINARS BROADCAST

The procedure is the following:

- 1) individual members / member societies / Divisions will propose webinars to the Education Committee
- 2) the Education Committee will transmit the speaker nominations to IOP Publishing (who oversee the technical part as webinars are delivered on the IOP Physics World platform - physicsworld.com/)
- 3) the lecturer will be contacted by IOP to (i) agree on the exact date and time, and (ii) to provide them with all the technical information.

The one-hour-long webinars are broadcast live and also recorded. Registered participants can access the recordings for 6 months through the Physics World platform, and after that through the dedicated IUVSTA restricted-access site.

There is no limitation to the subject: both basics science or cutting-edge research as well as everything in between are of interest.

INTELLECTUAL PROPERTY

To access the webinar, either live or recorded, one must register to Physics World and/or IUVSTA restricted access site. When one registers, they must accept the condition that *'no part of the material can be used without the permission of the lecturer.'* The copyright is retained by the author (not given to or shared with either IOP Publishing or IUVSTA).

BROADCAST WEBINARS

Several webinars have already been broadcast in the framework of the project, such as:

physicsworld.com/a/focused-ion-beam-a-tool-for-micro-nano-fabrication-and-characterization/
physicsworld.com/a/quantum-based-pressure-and-vacuum-measurements-and-nist-on-a-chip/
physicsworld.com/a/introduction-to-scanning-auger-spectroscopy-and-microscopy/
physicsworld.com/a/variational-principles-and-topological-constants-of-motion-for-mhd/
physicsworld.com/a/past-present-and-the-future-of-gas-aggregation-sources-for-nanoparticle-synthesis/

Please note that to access the webinar registration is needed (which is easy and free).

CONTACTS

Please submit your questions and proposed speaker/ topic nominations to the following contacts:

Alberto Tagliaferro, alberto.tagliaferro@polito.it,

with in cc: Ana Gomes Silva, acs@fct.unl.pt and Sylvie Bourgeois sylvie.bourgeois@u-bourgogne.fr