IUVSTA

21st General Meeting

Sapporo Convention Center,
Sapporo, Japan

Wednesday, September 14th, 2022

(For Submission)

http://www.iuvsta.org

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Comprising the 21st Ordinary General Meeting

and the

Extraordinary General Meeting of 2022

Sapporo Convention Center, Sapporo, Japan

Wednesday, 14th September 2022 at 20.00 hrs

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(as notified July 2022)

Argentina		**Czech Republic**	
Head of Delegation	María Carmen Asensio	Head of Delegation	Stanislav Novák
			Pavel Hedbávný
Australia		**Finland**	
Head of Delegation	Anton P.J. Stampfl	Head of Delegation	Jari Koskinen
	Richard Clements		
	Jennifer McLeod		
Austria		**France**	
Head of Delegation	Christian Mitterer	Head of Delegation	Sylvie Bourgeois
	Manfred Leisch		
Belgium		**Germany**	
Head of Delegation	François Reniers	Head of Delegation	Ute Bergner
	Diederik Depla		Christian Day
			Klaus Bergner
Brazil		**Great Britain**	
Head of Delegation	Pedro A. P. Nascente	Head of Delegation	Timo Gans
	Marcelo J. Ferreira		Deborah O'Connell
	Alvaro J. Damiao		Arutiun Ehiasarian
Bulgaria		**Hungary**	
Head of Delegation	Evgenia Valcheva	Head of Delegation	László Óvári
	Ivan Petrov		István Csarnovics
			Attila Csík
China		**India**	
Head of Delegation	Zhenchao Dong	Head of Delegation	Not Represented
	Changzhi Gu		
	Yuyang Zhang		
Croatia		**Iran**	
Head of Delegation	Maja Mičetić	Head of Delegation	Majid Ghanaatshoar
	Nikša Krstulović		Masoud Mahjour-Shafiei
	Krešimir Salamon		Alireza Z. Moshfegh
Cuba		**Israel**	
Head of Delegation	María Sánchez	Head of Delegation	Sidney Cohen
	Kalet León		Tatyana Bendikov
			Igor Rahinov

Italy		**Portugal**	
Head of Delegation	Enrico Maccallini	Head of Delegation	Carlos Tavares
			Orlando Teodoro
Japan		**Serbia**	
Head of Delegation	Yasunori Tanimoto	Head of Delegation	Suzana Petrović
	Katsuyuki Fukutani		Bratislav Marinković
	Fumio Komori		
Korea		**Slovakia**	
Head of Delegation	Geun Young Yeom	Head of Delegation	Peter Siffalovic
	Eun H. Choi		
	Jin-Hyo Boo		
Mexico		**Slovenia**	
Head of Delegation	Emmanuel Haro Poniatowski	Head of Delegation	Miran Mozetič
			Alenka Vesel
			Matjaž Panjan
Netherlands		**Spain**	
Head of Delegation	Sense Jan van der Molen	Head of Delegation	Miguel Manso Silván
	Freek Molkenboer		Celia Rogero
	Fred Schenkel		Francisco Yubero
Pakistan		**Sweden**	
Head of Delegation	Javaid Ahsan Bhatti	Head of Delegation	Pär Omling
	Tariq Sattar		Ulf Karlsson
	Salman Qaiser		Jonas Weissenrieder
Philippines		**Switzerland**	
Head of Delegation	Kathrina Lois Taaca	Head of Delegation	Martin Wüest
	Magdaleno Vasquez Jr		Jörg Patscheider
	Allen Catapang		
Poland		**USA**	
Head of Delegation	Leszek Markowski	Head of Delegation	Gregory J. Exarhos
	Monika Kwoka		Ivan G. Petrov
			Jay Hendricks

Member votes, based on subscribed shares.

Quorum: Two-thirds of members present or represented.

32 members; quorum – 22 members

Shares	National Member	GM Votes
1	Argentina	1
1	Australia	1
3	Austria	2
3	Belgium	2
2	Brazil	2
1	Bulgaria	1
10	China	5
1	Croatia	1
1	Cuba	1
2	Czech Republic	2
2	Finland	2
9	France	4
15	Germany	5
8	Great Britain	4
3	Hungary	2
2	India	2
2	Iran	2
2	Israel	2
5	Italy	3
13	Japan	5
7	Korea	4
2	Mexico	2
5	Netherlands	3
2	Pakistan	2
1	Philippines	1
3	Poland	2
2	Portugal	2
1	Serbia	1
1	Slovakia	1
1	Slovenia	1
3	Spain	2
3	Sweden	2
3	Switzerland	2
20	USA	5

GM-20-01-01

IUVSTA
20th Ordinary General Meeting
Malmö, Sweden
30th June, 2019

http://www.iuvsta.org

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Minutes of the Executive Council Meeting of the IUVSTA
20th Ordinary General Meeting
Malmö, Sweden
30th June, 2019

The President, Lars Montelius opened the meeting at 09:10 am.

1 Attendance

Officers:	President	Lars Montelius
	President Elect	Anouk Galtayries
	Secretary General	Christoph Eisenmenger-Sittner
	Treasurer	François Reniers (Alternate Belgium Councillor)
	Scientific Secretary	Andrej Vincze (Slovakia Councillor)
	Recording Secretary	Deborah O'Connell (Alternate Great Britain Councillor)
Councillors:	Australia	Anton Stampfl
	Austria	Manfred Leisch
		Helmut Riedl (Alternate Councillor)
	Belgium	Diederik Depla
	Brazil	Pedro A. P. Nascente
	Bulgaria	Ivan Petrov (Alternate Councillor Bulgaria & USA)
	Croatia	Maja Mičetić
		Ivana Capan (Alternate Councillor)
	Czech Republic	Stanislav Novák (Alternate Councillor)
		Pavel Hedbávný (Alternate Councillor)
	France	Sylvie Bourgeois
	Germany	Ute Bergner
	Great Britain	Timo Gans
	Hungry	István Csarnovics
	Israel	Sidney Cohen
		Tatyana Bendikov (Alternate Councillor)

	Igor Rahinov (Alternate Councillor)
Japan	Yasunori Tanimoto
	Katsuyuki Fukutani (Alternate Councillor)
	Fumio Komori (Alternate Councillor)
Korea	Geun Young Yeom
	Jong-Souk Yeo (Alternate Councillor)
Mexico	Emmanuel Haro-Poniatowski
Netherlands	Ingmar Swart
	Ad Ettema (Alternate Councillor)
Philippines	Michelle Marie S. Villamayor
	Magdaleno R. Vasquez, Jr. (Alternate Councillor)
P.R. China	Zhenchao Dong
Poland	Leszek Markowski
Portugal	Carlos Jose Macedo Tavares
	Orlando Teodoro (Alternate Councillor)
Slovenia	Janez Kovač
	Miran Mozetič (Alternate Councillor)
Spain	Miguel Manso
Sweden	Lars Johansson
	Pär Omling (Alternate Councillor)
	Ulf Karlsson (Alternate Councillor)
Switzerland	Jörg Patscheider
	Martin Wüest (Alternate Councillor)
USA	Joe Greene (Alternate Philippines Councillor)

Observers:

Ana Silvie Gomes (Portugal)
David Böhm (Austria)
Mariano Anderle (Italy)

Attendance and Constitution of General Meeting 20

Prof Christoph Eisenmenger-Sittner, the Secretary General announced that the meeting was quorate with 75 votes in the room.

2 Welcome by the President

The President, Lars Montelius, welcomed delegates to the general meeting and thanked the Swedish Vacuum Society for their hospitality.

3 Remembrances

The President, Lars Montelius, presented a tribute to Peter Varga who passed away during 2018. Peter made significant contributions to the international community during his career and greatly to the Austrian Vacuum Society (ÖGV President 1997- 2001), and IUVSTA. One minute silence was held.

4 Alterations to Membership

Prof Eisenmenger-Sittner informed the meeting that two Societies, The Cuban Union of Physicists and the Serbian Vacuum Society, had applied to join the Union, each requesting one share. Both applications had been discussed at ECM130 and provisional membership for both Societies had been agreed.

In order to vote on including Serbia as a member the agenda needed to be changed to include this item into the agenda. The Secretary asked the room if there were any requests to have a secret vote on including this item on the agenda. There were none. The President asked if there were any objections to changing the agenda. There were none and the change to the agenda was accepted.

The Secretary explained that the voting procedure was a secret ballot during which delegates and representatives from the applicant countries were asked to leave the room; as there were no delegates from the prospective members present, their representatives were asked to leave. Joe Greene, as representative of Cuba, left the room and Ivan Petrov (alternate) represented the USA. Janez Kovač, as Serbian representative left the room, Miran Mozetič (alternate) represented Slovenia.

Andrej Vincze (Slovakia) and David Böhm (Austria) were appointed as tellers and a secret ballot undertaken. 75 votes were available. The outcome of which was unanimous approval for Cuba and for Serbia 74 yes votes in favor and one no vote. Both members were admitted to the Union with one share each.

5 Approval of Minutes of GM 19

Prof Eisenmenger-Sittner reported that the minutes of GM18, [GM-19-01-01], were on the web site and in the book of reports. He had not been informed of any necessary changes to the minutes and these were approved as a true report of the meeting.

6 Amendments to the Statutes and By-Laws

There are no proposed changes to the Statutes and By-Laws. The Secretary alerted the room that the Awards and Scholarships have been updated in the procedures manual during the triennium and delegates are encouraged to read these.

7 Approval of the Accounts for Financial Year 2018

The Treasurer summarised the final accounts at the end of 2018. These were approved by the accountant and this approval is included in the minutes (Appendix A). A motion to approve the accounts for 2018 was carried unanimously.

8 Discharge of Directors

The Directors of the Union (all officers) were discharged.

9 Approval of the Budget for Financial Year 2019

The Treasurer summarised the proposal of the budget for this year. The Treasurer asked if there were any questions. Joe Greene raised the point that he, and other colleagues, would like to see more of the funds used on workshops. The President addressed his point that there would need to be specific things to spend the money on, and he encouraged people to continue to think about this and discuss at future ECMs. The Treasurer also reminded the room that there are updates to the budget made every six months. David Ruzic asked the questions if the budget would be fixed for the next 3 years. The Treasurer replied that this would not be the case and that the budget of the coming Triennium would be voted on later during the meeting. David Ruzic also supported including further funding into the budget for the coming three years. The President called a motion to approve the budget for 2019. There was one vote against. The majority voted to approve the budget and so the budget was approved (Appendix A).

10 Transfer of Presidency

At this point in the meeting Lars Montelius (Sweden) formally transferred the Presidency of the Union to Anouk Galtayries (France) by handing over the gavel in a symbolic gesture.

The new President introduced the proposed new Officers. The President proposed Jay Hensricks
(US) as Scientific Director, Katsuyuki Fukutani (Japan) as Scientific Secretary, Christoph Eisenmenger-Sittner (Austria) to continue as Secretary General, Arnaud Delcorte (Belgium) as Treasurer. The Secretary had not received any alternative proposals. Additional officers would include the Executive Council nominee for President Elect, Francois Reniers (Belgium), and the Past President, Lars Montelius (Sweden). The President asked for a vote and this was approved unanimously by a show of hands.

The Secretary and President thanked the outgoing recording secretary Deborah O'Connell.

11 Ratification of the framework budget for the Financial Years 2020 to 2022

François Reniers (outgoing Treasurer) presented the framework budget for the new triennium explaining that the budget was an important issue determined by the Union's policy for the next triennium. He highlighted that this budget had been discussed many times during the previous ECMs. Highlighted items included that the price per share would increase, interest had been in general decreasing due to decreasing interest rates, donations include the Sapporo IVC, a transfer from the general funds, communications budget would increase, the workshops, schools and the education budget would remain the same. The Treasurer also noted that the workshops, schools and the education budget had not been spent during the previous triennium.

There was a discussion in the room as to why the price per share needed to increase. Concerns related to affordability and burden for developing countries and also considering the reserves that the Union holds. The Treasurer explained that the price per share had not changed in several years, while at the same time inflation had increased. The President followed that it is important for the Union to keep the value of the fund and not continue to take from it to ensure longer term sustainability. The Past President highlighted that there will likely be a need in the future to increase the annual budget and therefore it is important to sustain the capital fund.

Diederik Depla (Belgium) suggested that the share money should be given back to the Societies if not spent.

Mariano Anderle stressed that the important points are the ideas and engagement of IUVSTA in overcoming the barrier of reaching a larger community, rather than money.

David Ruzic highlighted that 13 workshops and schools were approved and funded during the previous trinnenium.

Joe Greene (US) proposed a motion, which was seconded by Timo Gans (Great Britian), to **"Increase the line item of the Workshops and Schools from €80,000 to €120,000 with the intent to increase the amount of funding per workshop/school from €6,000 to €9,000".**

Ad Ettema (Netherlands) proposed a motion, which was seconded by Ivan Petrov to **"keep the value of the share at €150".**

Francois Reniers (Belgium) clarified both motions in writing on the projector. Voting on both of these motions was per share. Francois Reniers (Belgium) and David Böhm (Austria) were appointed as tellers and a secret ballot undertaken for both motions.

Motion number one ("Increase the line item of the Workshops and Schools from €80,000 to
€120,000 with the intent to increase the amount of funding per workshop/school from €6,000 to €9,000") was passed with 64 shares. Motion number two ("keep the value of the share at €150") was passed with 59 shares. There were a total of 77 votes.

Martin Würst proposed a motion, which was seconded by Ivan Petrov **"to increase the amount of both the IUVSTA Science and Technology Awards from €3,000 to €5,000 each".**

Motion number three ("to increase the amount of both the IUVSTA Science and Technology Awards from €3,000 to €5,000 each") was passed with 38 shares. There were 36 no votes and 3 abstentions. There were a total of 77 votes.

Francois Reniers (past Tresurer) presented a revised budget keeping the price of the share at €150 per share and the increase in the IUVSTA Award. The transfer from the general fund would now be €71,000.

The Secretary General highlighted that this additional money will come from the general fund. The President asked the room to ratifify the modified budget, including the three motions (Appendix B). Each society had one vote. This was unanimously approved by a show of hands.

12 Approval of subscription rates for each of the three Financial Years 2020,

The President asked the room by a show of hands to keep the subscription rates. There were three votes against, no abstentions and all others voted for. The current subscription rates were approved.

13 Ratification of National Committee Councillors & Alternates

The Secretary General presented on the overhead projector the names of the National Committee Councillors & Alternates. The Secretary asked the room by a show of hands for approval the list. The list was approved unanimously.

14 Recognition of retiring Officers and ECM members

Lärs Montelius presented a list of retiring Officers, Councillors and Alternates and Division Chairs. He presented those present at the meeting with certificates and asked representatives of those not present to deliver their certificates on his behalf.

Mariano Anderle (outgoing Past President) gave a short speech in recognition of his time served in IUVSTA.

15 Any other business

No other business.

Adjournment of GM 20 Opening of EGM 2019

The President adjourned General Meeting 20 and opened the Extraordinary General Meeting 2019. The meeting was declared quorate.

16 Retiring President's Report [GM-20-02-01]

The Retiring President, Dr Lars Montelius, presented his Retiring President's Report [paper GM-20-02-01]. He expressed his thanks to all those who had helped him during his Presidency

17 Report of the Secretary General [GM-19-03-06]

Christoph Eisenmenger-Sittner, the Secretary General, said his report on the previous triennium was given in the Book of Reports [paper GM-20-03-06] and he wished to keep his presentation short. He took the opportunity to thank all those who had helped him with

his work over the preceding triennium, especially the National Vacuum Societies who had hosted ECMs and the Swedish Vacuum Society for ECM30 and GM20.

18 Committee Reports

The President, Anouk Galtayries, invited the Retiring President, Lars Montelous, to present a summary of the reports on work carried out by the committees during the previous triennium. These can be seen in full in the Book of Reports, LINK TO BOOK OF REPORTS.].

19 Scientific and Technical Director's Report [GM-20-10A-1]

The Scientific and Technical Director, Prof David Ruzic, reported that a total of eleven Workshops, two Schools, one Technical Training Course and eleven Short Courses had been supported in the triennium. He commented on the Highlights Seminar, which had been held alongside the CVASSCAA 9 meeting in Sydney, Australia. He stressed the importance of the Scientific Divisions, the Chairs of which provided a link between the Union and the scientific community in 30+ member nations. He informed the meeting of the names of the incoming Division Chairs. He thanked the outgoing Division Chairs for their work and reminded the meeting that their reports on the work of the past triennium could be found in the Book of Reports.

20 Treasurer and Finance Committee Report [GM-20-04-01]

The Treasurer, Prof François Reniers, commented that his full report was available on the web. He stressed that the role of the Treasurer was to collect and distribute funds, money that was generated from subscriptions, IVC, interest and increase in value of the General Fund. He thanked the Treasurers of the National Societies for paying their subscriptions promptly.

21 Inaugural Address [GM-20-02-02]

The President asked the meeting to rise to their feet and give the retiring President, Lars Montelius, a standing ovation.

She then read his inaugural statement from the book of reports.

She reminded delegates that the first ECM of the new triennium, ECM132, would take place right after the closure of EGM 2019.

A motion to adjourn the meeting was proposed and seconded; the President closed EGM2019 at 12:10.

D O'Connell

Recording Secretary
3rd July 2019

APPENDIX A: Realized budget 2018 and proposed budget 2019

IUVSTA Budget 2017-2019									
Euro		2014/2016	2017/2019	initial investment	2017 - Budget	2017 realized	2018	2018 realized	2019- proposal
Income:									
Subscriptions	(share value of 150 € per year)	65 250	65250		21750	20527,59	20000	19751,04	20000
Interest		24 784	25000		8333	8287,9	8333	6794,27	7000
Visual Aids		0							
*Donation (Welch Award)**							13000	16713,85135	13000
Company engagements			10000		5000		10000	15900	6500
Donation (from IVC)		30 000	40000		0				40000
transfer from general fund			51150		24384		37 800		8479
Total income		120 034	191 400		59 467	28 815	89 133	59 159,16	94 979
Expenditure:									
Communication		6 000	6000		2000	1305,82	2000	2273,09	2200
Educational Activities		20 000	24000		8000	6400	6000	2000	8000
Workshops/Schools		60 000	80000		30000	20500	36000	24000	30000
World Transfer Program		10 000							
Officers discretionary expenses and travel		6 000	12000		4000	2537,41	6000	2605,83	6000
Scientific and technical directorate		2 000	3000		1000				
Liability insurance for IUVSTA president		984	1000		333	327,75	333	327,75	333
ICSU/NGO-UNESCO		2 000	2000		500	500	500	500	1000
Bank charges, taxes, commitments, miscellaneous		4 000	4000		1333	1079,64	1500	1143,13	1800
Accountant for tax filllings		2 250	2400		800	605	800	1149,5	645,5
IUVSTA Prize		6 800	10000		0				10000
transfer to general fund									
IUVSTA summit			20000	15000			20000	33575,49	2000
recruitment new societies			1000	1000			1000		
Website			6000	6000	4000	1668,47	0	405,46	2000
Communication Plan			3000	3000	2000		2000		
Awards: Students, Graduates, Specific conf awards			15000	10000	5000		13000	0	29000
unexpected expenses			2000		500				2000
Total expenditures		120 034	191 400	35 000	59 467	34 924	89 133	67 980,25	94 979

** within the AVS*

APPENDIX B: Framework Budget 2019 - 2022

IUVSTA Budget 2020-2022

Euro		2014/2016	2017/2019	2020/2022 voted
Income:				
Subscriptions	(share value of 150 € per year)	65 250	65250	61924
Interest		24 784	25000	18000
Visual Aids		0		
Donation (Welch Award)*				39000
Company engagements			10000	10000
Donation (from IVC)		30 000	40000	45000
transfer from general fund			51150	75000
Total income		120 034	191 400	248 924
Expenditure:				
Communication		6 000	6000	8000
Educational				
Activities/Webinars		20 000	24000	22000
Workshops/Schools		60 000	80000	120000
Officers discretionary expenses and travel		6 000	12000	14000
Scientific and technical directorate		2 000	3000	0
Liability insurance for IUVSTA president		984	1000	1000
ICSU/NGO-UNESCO		2 000	2000	2000
Bank charges, taxes, commitments, miscellaneous		4 000	4000	4000
Accountant for tax fillings		2 250	2400	2750
IUVSTA Prize		6 800	10000	14000
IUVSTA highlights				10000
Welch-IUVSTA award				39000
Ebara-IUVSTA award				4500
integration new societies				2000
communication plan			3000	
unexpected expenses			2000	5000
website			6000	
recruitment new societies			1000	
IUVSTA summit			20000	
Awards: students, graduates, conf.awards			15000	
Total expenditures		110 034	191 400	248 250

**** within the AVS***

Report of the treasurer for the triennium 2019-2012

This triennial report is based on a synthesis of the finance committee reports of ECM132-136, which can be found by the members on the IUVSTA website, and includes an update for the six month period between ECM136 and ECM137.

Accountancy 2020-2022:

Unlike the triennium time period, accountancy is by calendar year in Belgium, therefore the accountancy of year 2022 will only be closed after December 2022. The accountancy of years 2020-2021 was validated by the company RSM audit and transferred to the competent authorities. Over this triennium, the yearly income was as expected, based on the subscriptions (approx. 20 k€/y) and interests, as well as donations from the Welch family and Elsevier. Interests from the fund tend to decrease because some bonds came to term and were reinvested in stocks which are more profitable in the current context (see infra). 41 k€ were received from the organizers of the IVC 21 conference (Malmö, Sweden).

Concerning the expenses, many of the voted events of 2020-2021 had to be postponed or cancelled as a result of the COVID 19 pandemics, so that the money spent in educational activities and especially workshops and schools was less than half the initially planned amount (120 k€). A new line with a budget of 10 k€ was created concerning IUVSTA's participation to the International Year of Basic Sciences and Sustainable Development (IYBSSD 2022). Exceptionally, a second Welch award of ~15 k$ was funded by IUVSTA and 20 k€ were budgeted for a special "Joe Green session" at IVC 22 (Sapporo, Japan). The IUVSTA prizes will also be awarded to C. Mitterer (Science prize) and I. Gilmore (Technology prize) at IVC 22 (budget 18 k€).

Partly because of the pandemic-related reduction of activities, the triennium budget is well balanced (~210 k€ in income/expense) without the need of transferring money from the general fund. It is also lower than initially planned (250 k€). Status of financial accounts, general fund After the pandemics-related drop in 2020, the value of the general fund recovered well and it increased steadily until the end of 2021. Because of the large amount of cash on the accounts at the end of 2020 (~190 k€), a total amount of 100 k€ could be reinvested in stock funds (currently more profitable than bonds) with the advice of the committee and our advisor at Beobank. Upon agreement within the committee and officers, focus was placed on sustainable businesses, water and emerging technologies, and, in geographic terms, the Asia-Pacific region. The list of new investments can be found in annex to the Finance Committee report of ECM134. The financial situation was further complicated since February 2022 by the Ukrainian crisis but at this point in time (August 2022), the fund is recovering and the indicators are rather positive.

Framework Budgets:

Finally, a discussion was initiated at ECM136 concerning the budget of the next triennium. The president-elect suggested a series of new ideas in order to reinforce the action of IUVSTA and, in particular, to re-boost it after these difficult years of pandemics. This discussion is connected to the long-range planning and will continue through ECM137-138, where concrete and budgeted proposals should be made.

Arnaud Delcorte, treasurer

Annex:

Finance Committee Members for the triennium

Name Title

Arnaud DELCORTE Treasurer

Anouk GALTAYRIES President

Anton STAMPFL Member (Australia)

Anton TADICH Member (Austria)

Christoph EISENMENGER-SITTNER Secretary General

François RENIERS President Elect

Ana GOMES SILVA Recording Secretary

Jay HENDRICKS Scientific Director

Election of Officers for the Triennium 2016-2019

The President will be Prof. Francois Reniers

The Past President will be Prof. Anouk Galtayries

The Executive Council nominee for President Elect is Prof. Jay Herndricks

The President nominates the following Officers:

Scientific Director Prof. Katsuyuki Fukutani

Scientific Secretary Prof. Anton Stampfl

Secretary General Prof. Christoph Eisenmenger-Sittner

Treasurer Prof. Arnaud Delcorte

Short biographies/CVs are on the following pages

IUVSTA President: François Reniers

Short CV

François Reniers (male, age 57) obtained his M.Sc. in Chemistry in 1987, and his PhD in sciences in 1991, both from the Université libre de Bruxelles (ULB). He did a post-doctoral stay at the University of California Berkeley (USA). He got a permanent position at ULB in 1997 and he is professor of chemistry since 1999. He is full professor since 2008. F. Reniers was also Vice-Chancellor for teaching at ULB (2006-2008), Vice-Chancellor for research and development (2008-2010), and Dean of the Faculty of Sciences (2011-2015). He was, from 2011 to 2021, Vice-President of the Greenwin competitivity cluster (Walloon region), dedicated to the green technologies.

He is, since 2020, the head of ChemSIN (Chemistry of Surfaces, Interfaces and Nanomaterials), an interdisciplinary research group dedicated to phenomena at interfaces. He also heads the plasma group, one of the 4 subunits of ChemSIN. He started the atmospheric plasma activities in 1999 thanks to private IP protected funding from Solvay and Cockerill-Sambre (now ArcelorMittal). The plasma group has now an average of 15 researchers per year.

His research activity deals with the chemistry and physics of the (atmospheric) plasma-surface interactions, chemical reactivity of plasmas, plasma polymerization, coatings deposition, gas conversion using plasma, plasma synthesis of molecules and nanoparticles, plasma medicine, surface spectroscopy using Auger and X-ray photoelectron spectroscopy, chemical and optical characterization of the plasma phase and development of new atmospheric plasma sources and reactors.

Major awards and distinctions:

- President-elect of the International Union for Vacuum Science, Technique and Application - IUVSTA (2019-2022),

- Past-Chair of the Plasma Science and Technology Division of the American Vacuum Society (2020),

- **Fellow of the American Vacuum Society, AVS (2018) for "For seminal contributions to atmospheric plasma synthesis of organic, inorganic and hybrid coatings to attain a wide variety of functional properties and dielectric barrier discharge CO_2 conversion into useful molecules",**

- Stas Award of the Royal academy of Art, Letters and Sciences of Belgium (1991),

- Fulbright Award (1996),

- Certificate of Merit, American Chemical Society (2005),

- First Socrate award of the Université Libre de Bruxelles, 2005 (best professor),

- Chairman of the ECASIA 2007 Conference, Brussels, Belgium (800 participants); Program chair of the International Vacuum Congress, Paris, France, 2013 (2500 participants); Co-chair of the International Vacuum Congress, Busan, Korea, 2016 (2000 participants),

- Former president of the Belgian Vacuum Society (BELVAC); Member of the international steering committee of ECASIA; Member of the program committee of the symposium "Nanomaterials, nanoparticles and nanostructures produced by plasmas: synthesis, characterization and applications", MRS 2017 fall symposium

Mentoring:

- Supervisor of 29 finished PhD theses and 21 post-doctoral fellows, now supervising 6 PhD students (incl. several joint PhD students with other universities), and 3 postdocs.

Scientific output:

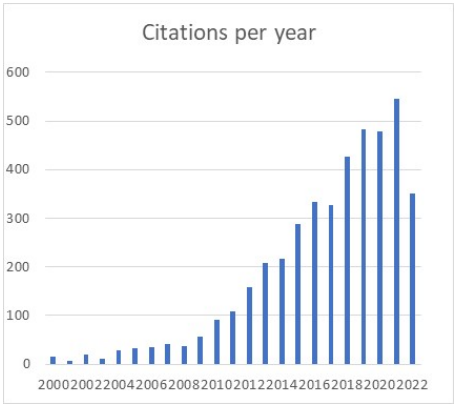
- >140 peer-reviewed publications, h-index = 38 (Google Scholar), >4400 citations,

- 5 book chapters,

- 14 patents on atmospheric plasma,

- > 330 oral/poster presentations in international conferences,

- >35 recent invited talks in international conferences and universities (official seminars).



Summary of awarded funding:

More than 15 M€ research funding obtained from European Union, the Belgian Fed. Government (IAP 2007-2011, 2012-2017), FNRS-FWO Excellence of Science project (2018-2021; 2022-2025), Walloon Region, Brussels Region, private companies, private foundations, all related to (atmospheric) plasma.

International collaborations:

More than 20 international collaborations (UCSB, UCLA, U. Illinois Urbana-Champaign, U. Catania, Beihang University, U. Montreal, Polytechnique Montreal, …..)

Other scientific, educational and societal impact:

F. Reniers is teaching the following courses at the ULB: General Chemistry (1st year in Science, 600 students), Inorganic Chemistry (Ba level), Physical-Chemistry of plasmas (Ma level), Surface Analysis of materials (Ma level). He was also invited to give advanced lectures at the Chinese University of Hong Kong, and in the European Engineering master in Materials Sciences (Nancy, France).

He is an expert for many funding research agencies in Belgium and abroad, and for the assesment of professors, in Europe and in the USA.

He was also strongly involved in service activities (Vice-Chancellor of the University, Dean of the Faculty of Sciences) during 8 years, and he is very active in the diffusion of science (Youtube videos, classes to the “university of the seniors”, interviews on TV, articles in dedicated journals).

He was also Vice-president of Greenwin, the Walloon competitivity cluster dedicated to green technologies from 2011 to 2021, and, as such, contributed to the Hydrogen roadmap in Wallonia.

A few selected publications:

Demaude, A., Baert, K., Petitjean, D., Goormaghtigh, E., Hauffman, T., Gordon, M. J., Reniers, F., (2022). Simple and Scalable Chemical Surface Patterning via Direct Deposition from Immobilized Plasma Filaments in a Dielectric Barrier Discharge. *Advanced Science, DOI: 10.1002/advs.202200237*.

Liu, Q., Dong, G., Chen, Q., Guo, J., Xiao, Y., Delplancke, M.-P., Reniers, F., & Diao, X. (2018). Charge-transfer kinetics and cyclic properties of inorganic all-solid-state electrochromic device with remarkably improved optical memory. *Solar energy materials and solar cells, 174, 545-553. doi:10.1016/j.solmat.2017.09.012*

Ozkan, A., Dufour, T., Arnoult, G., De Keyzer, P., Bogaerts, A., & Reniers, F. (2015). CO_2–CH_4 conversion and syngas formation at atmospheric pressure using a multi-electrode dielectric barrier discharge. *Journal of CO_2 utilization, 9, 74-81. doi:10.1016/j.jcou.2015.01.002*

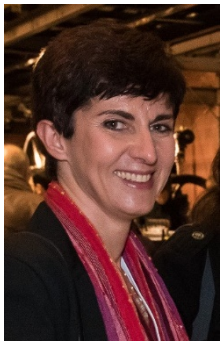
Merche, D., Vandencasteele, N., Reniers, F. (2012). Atmospheric plasmas for thin film deposition: A critical review. *Thin solid films. doi:10.1016/j.tsf.2012.01.026*

Vandencasteele, N., Reniers, F. (2010). Plasma modified polymer surfaces: Characterization using XPS. *Journal of electron spectroscopy and related phenomena, 178, 394-408.*

Past IUVSTA President:

Prof Anouk GALTAYRIES PhD, Habilitation

anouk.galtayries@chimieparistech.psl.eu



French Dean at Graduate Sino-French Institute of Chemistry
"Chimie Pékin" &
Invited Professor
@Beijing University of Chemical Technology (BUCT)
anouk.galtayries@chimiepekin.cn

❖ since 1999: **Associate Professor** in Materials Chemistry
@ Ecole Nationale Supérieure de Chimie de Paris (Chimie Paristech)
@ Institut de Recherche de Chimie Paris (CNRS)
Research Group: **Physico-Chemistry at Surfaces**

❖ **2019-2022: President** of the International Union of Vacuum Science, Technique and Applications, 35 countries, www.iuvsta.org

❖ Member of International Scientific Committee @EVC-15, Geneva, 2018

❖ Member of International Scientific Committee @SIMS21, Krakow, 2017

❖ Co-Chair of ECASIA'17 in Montpellier, 2017

RESEARCH

❖ Surface reactivity of model catalysts and passivated metals and alloys: oxidation, corrosion, biointerfaces, **h=31**, more than 3120 citations (Google Scholar)

❖ Chemical surface characterisations under UHV (**XPS, ToF-SIMS**)

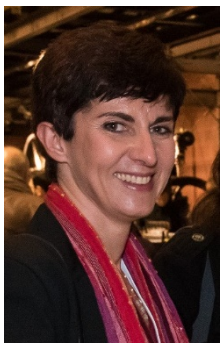
❖ Member of the Editorial Board of the Biointerphases Journal (AVS)

❖ Member of the Board of the French Vacuum Society (Past-President)

❖ Collaborations: Université de Technologie de Compiègne (F); Sorbonne Université (F); École Normale Supérieure de Paris (F); Université de Paris (F); University of Cádiz (S); Politecnico Torino (I); University of Ferrara (I); Bulgarian Academy of Sciences (Sofia, BLG); Romania Academy of Sciences (Bucarest, ROM); Federal University of São Carlos, (BRA)

❖ Collaborations: Solvay; CEA; Areva; TOTAL; Saint-Gobain; EDF; Alveole (Paris)

Prof Anouk GALTAYRIES PhD, Habilitation



anouk.galtayries@chimieparistech.psl.eu

WORK EXPERIENCE

❖ 2018- today: **French Dean at Beijing Paris Curie Engineering Graduate School of Chemistry (Chimie Pékin)**

@ Beijing University of Chemical Technology (China). Open in 2017.

Sino-French Institute for a 6 year program in Chinese and in French in Chemistry (bachelor and master degrees), 400 students over 6 years, Team management: 1 Deputy Dean, 6 French resident professors, 30 academic professors, 10 industrial speakers, 3 professors of French Language, 1 administrative assistant (in France), incl. interactions with 2 Chinese Dean & Deputy Dean, 6 scientific Chinese professors (French and/or English speaking, 3 Chinese administrative assistants, 1 Chinese assistant for Communication, Setting of 6 teaching programs from L1 to M2 for Application to French CTI accreditation, Human Resources, Finances (French part budget of about 700 keuros/year), Relationships with national and international institutions, French Embassy in China, Research, Contacts with industry in France and China.

❖ 1999-today : Associate Professor in Materials Chemistry (CNU 33)

@ Ecole Nationale Supérieure de Chimie de Paris (Chimie Paristech-PSL), PSL University

@ Institut de Recherche de Chimie Paris (CNRS)

Research Group : Physico-Chemistry at Surfaces

INTERNATIONAL RESPONSIBILITIES

❖ **2019-2022: President of IUVSTA** (International Union of Vacuum Science, Technique and Applications, 35 countries, www.iuvsta.org)

❖ Member of International Scientific Committee @EVC-15, Geneva, 2018

❖ Member of International Scientific Committee @SIMS21, Krakow, 2017

❖ Vice-Chair of ECASIA'17 in Montpellier, 2017

❖ Vice-Chair of the Program Committee @IVC-19, Paris, 2013

NATIONAL RESPONSABILITIES

- **2013-2019: President of the French Vacuum Society (SFV)** www.vide.org

  Management of a permanent staff of 4 persons

  About 5 scientific and technical events per year

  About 200 participants to short courses per year

EDUCATION

- **2008**: « Habilitation à Diriger des Recherches » (HDR), Sorbonne Université (Paris)
- **1996**: PhD Thesis in Spectrochemistry, Molecules, Solids, Reactivity, Université de Lille
- **1992**: Master degree in Spectrochemistry, Université de Lille
- **1989-1992**: Chemist degree, graduated from École Nationale Supérieure de Chimie de Lille

IUVSTA President Elect:

Dr. Jay H. Hendricks

National Institute of Standards and Technology

100 Bureau Drive, Stop 8363
Gaithersburg, MD 20899-8363
(301) 975-4836
jay.hendricks@nist.gov

A world-class expert in low pressure and vacuum metrology, Dr. Hendricks is the Deputy Program Manager for NIST on a Chip program and is the former leader of the NIST Thermodynamic Metrology Group. Jay received his M.A. and Ph.D. in Physical Chemistry from Johns Hopkins University, and his B.S. in Chemistry from Penn State University. In 1996, he started his career at NIST as a post-doctoral fellow conducting research on a novel low-temperature CVD that resulted in a US patent. He is currently the Scientific Director for IUVSTA.

Dr. Hendricks has 30 years of vacuum science and technology experience and has worked on many aspects of vacuum technology and metrology. He led a 5-year Innovation in Measurement Science project that has re-invented the realization and dissemination of pressure, temperature, and length using optical Fabry-Perot interferometer cavities. The research has resulted in 4 patents, 14 publications, 8 invited talks and has fundamentally changed the way pressure and standards are be realized and disseminated with technology transfer to the private sector currently underway. His current research interests focus on development novel photonic methods for realizing traditional vacuum and temperature metrology and extreme vacuum production and measurement.

Dr. Hendricks has authored 105 publications on vacuum science/ metrology/ technology/ surface chemistry/ ion-beam laser spectroscopy (source google scholar). He holds 7 patents in vacuum science technology. He has presented invited papers at both domestic and international vacuum symposia and has been a seminar instructor for the Measurement Science Conference 6 times. He is regularly sought out as invited/ keynote speaker (8 times over the past 5 years). Prominent awards include the being named a Fellow of the AVS for exceptional contributions to vacuum science, developing new and revolutionary vacuum standards and methods, and mentorship to early career scientists and engineers, the NIST French Award for development of a new NIST calibration service, and two US Department of Commerce Gold Medals for Fixed Length Optical Cavity (FLOC) and for his service in protecting US historical documents including the Waldseemüller Map, and Emancipation Proclamation, and the US Bill of Rights.

Dr. Hendricks leadership is nationally and internationally recognized is sought out on a variety of vacuum standards meetings, symposia program committees and vacuum societies. He is the Scientific Director of IUVSTA (International Union of Vacuum Science, Technique and Application) an organization representing nearly 15,000 physicists, chemists, materials scientists, engineers, and technologists who are linked through their common use of vacuum. He has served as an AVS Director. He has active roles in the AVS as the IUVSTA Rep. for the AVS VTD, member of the AVS Recommended Practices and AVS Publications Committee. He is active with IUVSTA and participates in IVC, and EVC program planning advisor. He is an active member of the CCM Pressure and Vacuum working group, AVS-Mid Atlantic Chapter Executive Committee, where he co-organizes annual chapter meeting at NIST for the past 12 years, he is active on the ISO TC112 Vacuum Standards Committee where he reviews documents and standards as a technical advisor, and is Chair of the IMEKO TC-16, and member of TC-25, international technical committees for *Pressure and Vacuum Metrology* and *Quantum Measurements and Information.*

Links to Latest Publications

- The Expanding Role of National Metrology Institutes in the Quantum Era
- A New Spin on Kibble: A Self Calibrating Torque Realization Device at NIST
- DETERMINATION OF DISTORTION CORRECTIONS FOR A FIXED LENGTH OPTICAL CAVITY PRESSURE STANDARD
- Quantum-Based Photonic Sensors for Pressure, Vacuum, and Temperature Measurements: A Vison of the Future with NIST on a Chip
- NIST on a Chip: Photonic and Quantum-Based Sensors for Measurements of Pressure, Vacuum, Temperature and Beyond!
- Transient heating in fixed length optical cavities for use as temperature and pressure standards
- Excess Electrons Bound to H2S Trimer and Tetramer Clusters
- Dual Cavity Refractivity measurements using a single Laser
- Towards Photonic based Pascal Realization as a Primary Pressure Standard
- Quantum-based vacuum metrology at NIST
- Recent Developments in Surface Science and Engineering, Thin Films, Nanoscience, Biomaterials, Plasma Science, and Vacuum Technology
- Recommended practice for calibrating vacuum gauges of the ionization type
- Perspectives for a new realization of the pascal by optical methods
- An integrated and automated calibration system for pneumatic piston gauges
- Performance of a dual Fabry-Perot cavity refractometer
- In Search of Better Pressure Standards
- Metrology for comparison of displacements at the picometer level

Education

1996	**Ph.D. Physical Chemistry**	**Johns Hopkins University**
	Advisor: Dr. K H Bowen, Jr.	Baltimore, MD USA
1992	**M.A. Chemistry**	**Johns Hopkins University**
		Baltimore, MD USA
1990	**B.S. Chemistry**	**Penn State University**
	Advisor: Dr. A W Castleman, Jr.	State College, University Park, PA USA

Professional Experience

2020-present **Deputy Program Manager, NIST on a Chip Program**

United States Department of Commerce

National Institute of Standards and Technology, Gaithersburg, MD

- **Deputy Program Manager of the NIST on a Chip Program,** a NIST wide program will $11M annual funding from internal sources and currently seeking an additional $49M in funding over 5 years from external sources. Program seeks to revolutionize standards and traceability by investing in photonics, and quantum-based sensor technologies that are both primary and can be reduced in size, weight, and power to enable chip-scale integrations.
- **Sensor Science Division HQ,** performing functions of Chief of Staff /HQ Administrative Supervisor.
- **Team Lead on Fixed Length Optical Cavity** technology transfer activities and R&D**.**

2019-2020 **NIST Acting Deputy Chief, Sensor Science Division,**

United States Department of Commerce

National Institute of Standards and Technology, Gaithersburg, MD

- **Deputy Chief for the Sensor Science Division of NIST's Physical Measurement Laboratory,** a program with $30M funding and employing 130 Scientists, Engineers, Guest Researchers, and Contractors.

2015-2019 **NIST Group Leader, Thermodynamic Metrology Group**

United States Department of Commerce

National Institute of Standards and Technology, Gaithersburg, MD

- Responsible for leading a team of up to 20 Scientists, Engineers, Technicians, and Guest Researchers.
- Responsible NIST for calibrations of temperature, pressure, vacuum, humidity, and helium leaks.
- Currently on Detail, serving as the **Deputy Chief for the Sensor Science Division of NIST's Physical Measurement Laboratory**.

2012-2015 **NIST Thermodynamic Metrology Group, Team Lead IMS PTL**

- Team Lead of innovations in measurement science project to reinvent pressure, temperature and length metrology
- Development of a photonic, quantum-based pressure standard, the FLOC
- Pilot of international Key Comparison in low pressure
- Ran lowest uncertainty in the world Manometry pressure standards program

1998-2012 **NIST Pressure and Vacuum Group**

- Development of a new NIST Comparison Method Calibration Service for vacuum gauges with range of 0.65 Pa to 130 kPa
- Developed new ultrasonic interferometer manometer electronics
- Developed a high-stability transfer standard for international key comparisons 100 Pa to 130 kPa.
- Measured the effect of gas absorption on the density of octoil-s and developed and conducted temperature programmed desorption (TPD) studies of water and hydrogen from stainless steel surfaces
- Technical expert for a project by the Library of Congress to re-encase the historically significant documents
- Technical expert for the development of leak tight enclosures for National Archives Project to Re-encase the Charters of Freedom including the Declaration of Independence.
- Expert with NIST 140 Pa, 160 kPa, 13kPa, 360 kPa UIM Primary Standards
- Capacitance Diaphragm Gauges (CDGs) and Piston Gauge measurements
- Quartz Bourdon Gauges (QBGs) and MEMS RSG measurements and research
- Ion Gauges (IGs), He Leak measurements from $3x10^{-4}$ scc/sec to $1x10^{-10}$ scc/sec

1996-98 **NIST Reacting Flows Group of CSTL**

Postdoctoral Fellowship, NIST /National Research Council

CVD Reactor Development: Successfully designed, implemented, and developed a low-pressure co-flow sodium / metal-halide reactor process to produce **metal** and **ceramic** thin **films**. **US Patent # 6,113,983** awarded for this novel process. The nanostructured thin films were investigated by XPS, XRD, EDS SEM, TEM, WDS, SAED, and Raman spectroscopy. Low Pressure Chemical Vapor Deposition (CVD and LPCVD) Titanium and titanium nitride thin film growth (Ti, TiN).

IUVSTA Scientific Director:

August 16, 2022

Curriculum Vitae

Personal:

Name: Katsuyuki Fukutani

Sex: Male

Date of Birth: May 1, 1962

Citizenship: Japanese

Education:

1985 B. Sc., Physics Department, The University of Tokyo

1990 D. Sc., Physics Department, The University of Tokyo
(A Study of Homoepitaxial Growth on the Clean and Metal-covered Surfaces of Ge and Si, Supervisor: Prof. S. Ino)

Profession:

1990 - 1995 Research Associate (Prof. Y. Murata)
Institute for Solid State Physics, The University of Tokyo

1994 - 1996 PRESTO Researcher, Japan Science Technology Corporation

1995 - 1996 Lecturer, Institute of Industrial Science, The University of Tokyo

1996 - 2006 Associate Professor, Institute of Industrial Science, The University of Tokyo

2000 - 2000 Visiting scientist, Fritz-Haber-Institut der Max-Planck-Gesellschaft, Germany

2000 - 2001 Visiting scientist, Department of Chemistry, Cambridge University, UK

2005 - 2011 Chief researcher, CREST, Japan Science and Technology Agency

2006 - present Professor, Institute of Industrial Science, The University of Tokyo

2010 - 2011 Department Head, Institute of Industrial Science, The University of Tokyo

2018 - 2021 Deputy Director, Institute of Industrial Science, The University of Tokyo

2018 - present Japan Atomic energy Agency, Advanced Science Research Center
Surface and Interface Science Group, Group Leader

Academic service:

1996 - 2005 Editorial board, Journal of Vacuum Society of Japan

2005 - 2007 Chief editor, Journal of Vacuum Society of Japan

2007 - 2012 Advisory member, PRESTO project, Japan Science and Technology Agency

2007 - 2017 Board member, Vacuum Society of Japan

2008 - 2014 Editorial board, Journal of Physics: Condensed Matter

2009 - 2021 Editorial board, Journal of Physical Society of Japan

2009 - 2012 Board member, Surface Science Society of Japan

2016 - 2019 Chair of Congress Planning Committee, International Union for Vacuum Science, Technique and Applications

2018 - 2022 Vice president, Japan Society of Vacuum and Surface Science

2022 - present President, Japan Society of Vacuum and Surface Science

2019 - 2022 Scientific Secretary, International Union for Vacuum Science, Technique and Applications

Research area

Surface science and thin films. (>220 peer-reviewed papers, >60 review articles)

Selected publications

1. S. Yasuda, H. Matsushima, K. Harada, R. Tanii, T. Terasawa, M. Yano, H. Asaoka, J. S. Gueriba, W. A. Diño, K. Fukutani, Efficient Hydrogen Isotope Separation by Tunneling Effect using Graphene-based Heterogeneous Electrocatalysts in Electrochemical Hydrogen Isotope Pumping, ACS Nano in press.
2. N. Nagatsuka, K. Kato, M. Wilde, S. Ogura, K. Fukutani, Absence of in-gap states due to excess electrons donated by adsorbed hydrogen at the anatase, TiO2 surfaces, Phys. Rev. B 105, 045424 (2022).
3. Y. Nagaya, H. Nakatsu, S. Ogura, K. Shimazaki, H. Ueta, K. Takeyasu, K. Fukutani, Focusing and spin polarization of atomic hydrogen beam, J. Chem. Phys. 155, 194201 (2021).

4. T. Kawauchi, Y. Miura, K. Asakawa, K. Fukutani, Magnetic structure and phase transition in the surface region of Fe3O4(100), J. Phys. Commun. 4, 115001 (2020).
5. H. Ueta, Y. Sasakawa, D. Ivanov, S. Ohno, S. Ogura and K. Fukutani, Direct Measurement of Fast Ortho-Para Conversion of Molecularly Chemisorbed H2 on Pd(210), Phys. Rev. B 102, 121407 (2020).
6. N. Nagatsuka, M. Wilde, K. Fukutani, Hydrogenation and hydrogen diffusion at the anatase TiO2(101) surface, J. Chem. Phys. 152, 074708 (2020).
7. K. Namba, S. Ogura, S. Ohno, W. Di, M. Wilde, I. Pletikosi, P. Pervan, M. Milun, K. Fukutani, Acceleration of Hydrogen Absorption by Palladium through Surface Alloying with Gold, Proc. Natl. Acad. Sci. USA 115, 7896 (2018).
8. K. Werner, X. Weng, F. Calaza, M. Sterrer, T. Kropp, J. Paier, J. Sauer, M. Wilde, K. Fukutani, S. Shaikhutdinov, H.-J. Freund, Toward an Understanding of Selective Alkyne Hydrogenation on Ceria: On the Impact of O Vacancies on H$_2$ Interaction with CeO2(111), J. Am. Chem. Soc. 139, 17608-17616 (2017).
9. S. Ogawa, K. Kato, N. Nagatsuka, S. Ogura, K. Fukutani: 2x2 R45 Reconstruction and Electron Doping at the SrO-Terminated SrTiO3(001), Phys. Rev. B 96, 085303 (2017).
10. T. Kawauchi, Y. Miura, X. Zhang, K. Fukutani: Interface-driven noncollinear magnetic structure and phase transition of Fe thin films, Phys. Rev. B 95, 014432 (2017).
11. K. Yamakawa, K. Fukutani, On the reflection symmetries of atoms and diatomic molecules: derivation of Σ+ and Σ− states in terms of the united atom and electron configuration, Eur. Phys. J. D 69, 175 (2015).
12. S. Ohno, M. Wilde, K. Fukutani: Novel insight into the hydrogen absorption mechanism at the Pd(110) surface, J. Chem. Phys. 140 (2014) 134705.
13. T. Sugimoto, K. Fukutani: Effects of Rotational-Symmetry Breaking on Physisorption of Ortho- and Para-H2 on Ag(111), Phys. Rev. Lett. 112, 146101 (2014).
14. M. Wilde, K. Fukutani, Hydrogen detection near surfaces and shallow interfaces with resonant nuclear reaction analysis, Surf. Sci. Rep. 69 (2014) 196-295.
15. K. Fukutani, T. Sugimoto: Physisorption and ortho-para conversion of molecular hydrogen on solid surfaces, Prog. Surf. Sci. 88 (2013) 279--348.
16. S. Ogura, M. Okada, K. Fukutani: Near-surface accumulation of hydrogen and CO blocking effects on a Pd-Au alloy, J. Phys. Chem. C 117 (2013) 9366.
17. T. Sugimoto, K. Fukutani, Electric field-induced nuclear spin flips mediated by enhanced spin-orbit couplings, Nature Phys., 7, 307 (2011).
18. M. Wilde, K. Fukutani: Penetration mechanism of surface adsorbed hydrogen atoms into bulk metals: Experiment and model, Phys. Rev. B 78 (2008) 115411.
19. M. Wilde, K. Fukutani, W. Ludwig, B. Brandt, J.-H. Fischer, S. Schauermann, H.-J. Freund: Influence of carbon deposition on the hydrogen distribution in Pd nanoparticles and their

reactivity in olefin hydrogenation, Ang. Chem. Int. Ed. 47 (2008) 9289.

20. K. Fukutani, K. Yoshida, M. Wilde, W.A. Dino, M. Matsumoto, T. Okano, Photo-stimulated desorption and ortho-para conversion of H2 on Ag surfaces, Phys. Rev. Lett. 90 (2003) 096103.
21. K. Fukutani, A. Itoh, M. Wilde, and M. Matsumoto, Zero-point vibration of hydrogen adsorbed on Si and Pt surfaces, Phys. Rev. Lett., 88, 116101 (2002).
22. K. Fukutani, H. Iwai, Y. Murata, and H. Yamashita, Hydrogen at the surface and interface of metals on Si(111), Phys. Rev. B 59, 13020–13025 (1999).
23. K. Fukutani, M.-B. Song, and Y. Murata, Photodesorption of CO and CO+ from Pt(111): mechanism and site specificity, J. Chem. Phys. 103, 2221–2228 (1995).
24. K. Fukutani, Promotion of Epitaxial Growth of Ge by Ag and Pb Deposited on a Clean Ge(111) Surface, Surf. Sci. 281, 285–295 (1993).

IUVSTA Scientific Secretary:

Curriculum Vitae
Anton P. Stampfl

Anton Stampfl is an experimental solid state physicist since 1983 working in the fields of neutron, electron, and photon-based instrumentation and measurement, surface science, thin films and interfaces, and magnetism. He has built and developed a variety of UHV photoemission spectrometers, as well as other synchrotron-based, and recently neutron-based instrumentation that is being used at different international facilities. Anton has had many roles over the last twenty-plus years at major research facilities ranging from Senior Research Scientist at Argonne National Laboratory, Program Coordinator for Australian experiments at the National Synchrotron Radiation Research Center in Taiwan, to Instrument Manager for Neutron Spectroscopy at the Australian Centre for Neutron Scattering in Sydney. Anton is also the President of the Vacuum Society of Australia and the Chair of IVC-23, Sydney in 2025.

IUVSTA Secretary General:

Personal Data:

Christoph Eisenmenger-Sittner, born on 21st July 1965 in Mödling, Austria

Professional Background:

2002 – now: Permanent position as Assistant Professor at the Vienna University of Technology, Institute of Solid State Physics

10/2001: Habilitation and achievement of the permission to teach "Applied Physics"

1991 - 2001: Assistant at the Institute of Applied and Technical Physics at the Vienna University of Technology

Education:

1990 – 1994 PhD student at the Vienna University of Technology, Institute of Applied and Technical Physics, supervisor Professor Peter Skalicky

subject: *Roughness Induced Phase Separation in Multicomponent Systems*

1989 – 1990 Physics (Diploma) Vienna University of Technology, Institute of Applied and Technical Physics; supervisor Professor Alfred Wagendristel; subject:

Gesputterte Gleitlagerbeschichtungen auf Cu-Basis

1984 - 1990 Study of "Technical Physics", Vienna University of Technology

Memberships:

Deutsche Physikalische Gesellschaft

Materials Research Society

European Materials Research Society

Austrian Vacuum Society

International Union of Vacuum Science, Technique an Application (IUVSTA)

Referee Activities:

Deutsche Forschungsgemeinschaft

Croatian Ministry of Science

Institute for the promotion of Innovation by Science and Technology in Flanders (IWT Flanders)

Applied Physics Letters

International Journal of Materials Research

Journal of Applied Physics

Journal of Physics D

Journal of Testing and Evaluation

Langmuir

Materials Chemistry and Physics

Physica B

Surface and Coatings Technology

Surface and Interface Analysis

Thin Solid Films

Vacuum

Meeting Activities:

Co-organizer ECASIA 05

Co-Organizer E-MRS Spring Meeting 2007, Symposium Q "Protectice coatings and thin Films"

Membership Programme Committee JVC 12, 2008

Membership International Programme Committee IVC 18, 2010

Membership International Programme Committee ICTF 15, 2011

Membership International Organizing Committee JVC 14, 2012

Membership International Organizing Committee VASSCAA 6, 2012

Membership International Programme Committee IVC 19, 2013

Organizer Joint Vacuum Conference 15 (JVC-15), Vienna, 2014

Programme Chair International Programme Committee ICTF 16, 2014

Membership International Programme Committee IVC 20, 2016

Membership International Programme Committee ICTF 18, 2020

Functions in National and International Bodies:

2004-2013 Secretary General of Austrian Vacuum Society

2004 Austrian Councillor at IUVSTA

2005 Appointment to coordinator of "IUVSTA Technical Training Courses" (ITTC)

2007 Appointment to IUVSTA Scientific Secretary
2013 Appointment to IUVSTA Secretary General

Number of publications in refereed journals: 91

More details:

http://static.ifp.tuwien.ac.at/homepages/Personen/duenne_schichten/german/index_g.htm

IUVSTA Treasurer:

Prof Arnaud DELCORTE
arnaud.delcorte@uclouvain.be

IUVSTA Treasurer

HEAD OF THE SURFACE ANALYSIS GROUP (2013-)
INSTITUTE OF CONDENSED MATTER AND NANOSCIENCES AT UCLOUVAIN

I have been active in Surface Science and Ion Beam Analysis (SIMS) for more than 20 years. My current research activities encompass the theoretical and experimental study of energetic cluster-solid interactions, with an emphasis on soft molecular emission, and of plasma-surface interactions, as well as the 2D/3D molecular characterization of surfaces. Recent developments from my research team concern the use of large gas cluster beams to retrieve physical information from organic surfaces (glass transition of polymers, structural effects) and to transfer non-volatile molecules for the solvent- and matrix-free fabrication of novel biological and hybrid surfaces (soft and reactive landing).

SCIENTIFIC CAREER

- **2016- FNRS Research Director**
- **2004- Professor at University St Louis (USL-Brussels** http://www.usaintlouis.be/**)**
- **2004- Professor at Université catholique de Louvain** (UCLouvain https://uclouvain.be/en/index.html**)**

Previous positions: - FNRS Senior Research Associate (2012-16); FNRS Research Associate (2004-12)

- FNRS postdoctoral fellow at UCLouvain (2000-03)
- Postdoctoral fellow of the Pennsylvania State University (1999-2000)
- Research Assistant at UCL (1994-99)

EDUCATION

- **1999** PhD in Applied Sciences (Surface Science) at UCLouvain (Director: P. Bertrand)
- **1993** Master degree in Materials Science: Orientation Physics at the Louvain School of Engineering

INVOLVEMENT IN THE INTERNATIONAL COMMUNITY

- Elected European member (2015-) and Secretary (2017-) of the International SIMS Conference Committee. Co-chair of the 21st SIMS conference (Cracow, Poland, 2017)
- Committee Member of the International conference on Ion-Surface Interactions (ISI) (2015-)
- Committee Member of the European Conference on Applications of Surface and Interface Analysis (ECASIA) (2017-)
- Member of the Advisory board of the SIMS Europe conference (2013-)
- Member of the International Scientific Board of the 15th, 16th and 18th and 19th International Conferences on Secondary Ion Mass Spectrometry (Manchester, England, September 2005 / Kanazawa, Japan, November 2007 / Riva del Garda, Italy, 2011 / Jeju, Korea, 2013)
- Member of the organizing committee of the 19th International Conference on Ion Beam

  Modification of Materials (Leuven, Belgium, September 2014)

PUBLICATION AND CONFERENCES

- **150 articles in peer reviewed journals (>3100 Citations; Current Hirsch index: 28)**
- **5 book chapters**
- **54 invited talks at conferences**

SUPERVISION OF PEOPLE AND PROJECTS

- 14 PhD theses (11 defended)
- 10 post-doctoral fellows
- 21 undergraduate/master theses
- Member of 22 other PhD thesis jurys

- >20 research projects (incl. EU-FP7, Federal Belgian Science Policy, FNRS, Wallonia-Brussels Federation, Wallonia Region, etc.) for a total cumulated budget of approx. 6 M €

OTHER RESPONSIBILITIES

2011- Head of the management board of the Surface Characterization (SUCH) technological platform at UCL.

2007-2010 Head of the PCPM laboratory, UCL (~45 people; ~6 technical and staff).

MAIN COLLABORATIONS

Academia The Pennsylvania State University, USA; Texas A&M University, USA; The National Physical

Laboratory, UK; University of Surrey, UK; University of Manchester, UK; Jagellonian University, Poland; University of Catania, Italy; University of Yaoundé, Cameroon; Université Pierre et Marie Curie, France; Free University of Brussels, Belgium; Catholic University of Leuven, Belgium; University of Mons, Belgium; University of Namur, Belgium; University of Hasselt, Belgium.

Companies and Research Centers Ion-ToF GMBH, Germany; AGC glass, Belgium; AGFA, Belgium; UCB, Belgium; IMEC, Belgium; LIST, Luxemburg; Materia Nova, Belgium; Aquatic Science, Belgium; Nanocyl, Belgium.

National Committee Councillors and Alternates
Triennium 2022-2025

Society	Councillor	Alternate
Argentina	Maria Carmen Asensio	Miguel Darío Sánchez
Australia	Anton P.J. Stampfl	Richard Clements
Austria	Paul Heinz Mayrhofer	Wolfgang Werner
Belgium	Diederik Depla	François Reniers
Brazil	Pedro A. P. Nascente	Marcelo Juni Ferreira
Bulgaria	Evgenia Valcheva	Ivan Petrov
China	Hongjun Gao	Zhenchao Dong
Croatia	Maja Mičetić	NIkša Krstulović
Cuba	María Sánchez Colina	Kalet León Monzón
Czech Republic	Stanislav Novák	Karel Mašek
Finland	Timo Sajavaara	Jari Koskinen
France	Sylvie Bourgeois	Grégory Marcos
Germany	Sven Ulrich	Ute Bergner
Great Britain	Timo Gans	Deborah O'Connell
Hungary	László Óvári	Attila Csík
India		
Iran	Majid Ghanaatshoar	Masoud Mahjour-Shafiei
Israel	Tatyana Bendikov	Ytzhak Mastai
Italy	Fabrizio Giorgis	Enrico Maccallini
Japan	Yasunori Tanimoto	Katsuyuki Fukutani
Korea	Jin-Hyo Boo	Junghoon Joo
Mexico	Emmanuel Haro-Poniatowski	Francisco S. Aguirre-Tostado
Netherlands	Sense Jan van der Molen	Freek Molkenboer
Pakistan	Javaid Ahsan Bhatti	Suleman Qaiser
Philippines	Christian Mahinay	Hernando Salapare III
Poland	Leszek Markowski	Monika Kwoka
Portugal	Carlos Jose Macedo Tavares	Orlando M.N.D. Teodoro
Romania (in suspense)		
Russia (in suspense)		
Serbia	Suzana Petrović	Ivana Cvijović-Alagić
Slovakia	Andrej Vincze	Peter Šiffalovič
Slovenia	Miran Mozetič	Alenka Vesel
Spain	Miguel Manso Silván	Celia Rogero
Sweden	Pär Omling	Ulf Karlsson
Switzerland	Jörg Patscheider	Martin Wüest
Ukraine (in suspense)		
USA	Gregory J. Exarhos	Ivan G. Petrov

Certificates of Recognition

Presented at GM-21 to

Executive Council Members and Division Chairs who are demitting office

Name	Latin	English
Lars Montelius	praeses MMXVI - MMXIX propraeses MMXIII - MMXVI MMXIX - MMXXII	President Vice President
Alfredo Juan	consilarius	Alternate Councillor
Anton Tadich	consilarius	Councillor
Jennifer MacLeod	consilarius	Alternate Councillor
Manfred Leisch	consilarius	Councillor
Milena Damyanova	consilarius	Councillor
Ningsheng Xu	consilarius	Councillor
Didier Bergé	consilarius	Alternate Councillor
Dietrich R.T. Zahn	consilarius	Alternate Councillor
Farhad Masoumian	consilarius	Councillor
Abdolmohammad Ghalambor Dezfouli	consilarius	Alternate Councillor
Geun Young Yeom	consilarius	Councillor
Yong Min Kim	consilarius	Alternate Councillor
Ingmar Swart	consilarius	Councillor
Ad Ettema	consilarius	Alternate Councillor
Ryszard Czajka	consilarius	Councillor
Ivana Cvijović-Alagić	consilarius	Councillor
Janez Kovač	consilarius	Councillor
Miguel Manso	consilarius	Alternate Councillor
Leszek Markowski	praeses divisionis	Division Chair
Dmitri Petrovykh	praeses divisionis	Division Chair
Ivana Capan	praeses divisionis	Division Chair
Mile Ivanda	praeses divisionis	Division Chair

Report of the Retiring President

Anouk Galtayries: triennium 2019-2020

The triennium starting in 2019 has been mainly impacted by the sanitary policies due to the Covid19 pandemic. Generally speaking, it has been impossible to meet in person during more than 3 years, with an exception in November 2021, where ECM135 was held in a hybrid form in Marseille, as a satellite meeting of EVC16.

New ways of work had to be found very early when ECM132 had to be cancelled in the beginning of March 2020 (ECM132 should have been held in Annecy, France). This has been done by using virtual meeting tools for the Executive Council Meetings. As it became rapidly clear that international meetings would not restart rapidly, I took a first decision regarding the existence of IUVSTA itself, which was to maintain links between officers and Committees chairs, as well as to take decisions regarding the scheduled meetings. It was also necessary to discuss more frequently than usual, in a "normal" Triennium, to fulfill the objectives of this Triennium. Thus Officers and Committees chairs met every month in virtual meetings, since March 2020. This has allowed a huge quantity of work, which results are now visible and can be presented at GM21. This may also have started the beginning of a change in the IUVSTA habits, to reduce international mobility and to include more participation of the 34 members of IUVSTA (which was indeed a very positive side-effect of virtual communication between members, very sustainable effect, as integrating sustainability is the next big challenge for IUVSTA).

The results of this Triennium are the following ones:

- Educational Committee: to implement and start IUVSTA Webinars on Science. This activity has started following discussions with IOP, which is acting as a sponsor for diffusing announcements and taking care of the registrations.
  Up to 13 webinars have been organized with a reasonable attendance and the process is satisfactory to both IUVSTA and IOP. A great work has been done by the Committee to fulfill this objective, present in my statement.

- Awards and Scholarship Committee: for different reasons either linked to the pandemic (participation to virtual conference does not correspond to the same costs as participating to face-to-face conference) or to past implementation (case of IUVSTA Ebara Award created in the past Triennium), it has had a lot of work, as well as to use flexibility and creativity. Thus,
  - it was possible to grant up to 30 students with IUVSTA Elsevier grants for participating at IUVSTA conferences. This was also an excellent point for visibility of IUVSTA.
  - in addition, and on an exceptional basis, we created the Peter Barna Award at the ICTF IUVSTA conference. ICTF was organized by the Hungarian Vac. Soc. in 2020 and was directly impacted by the pandemic. They managed to shift in 6 months from a face-to-face congress to a fully virtual one, the first time for IUVSTA. We exceptionally helped the organizers with an Award on the name of a Senior Hungarian great researcher who dedicated time and energy for IUVSTA. In turn, Prof P. Barna was selected to become IUVSTA Honorary President, last one being awarded in 1989! This has been a good balance between past science at high level and future science of excellence. 2 IUVSTA Prizes were nominated, for 2 Senior researchers of great international recognition,
  - the second IUVSTA Ebara Awardee was selected, following a call for applications kindly relayed by IOP in its media,

- 4 young researchers were granted with the IUVSTA Welch Award, with a particular financial effort from IUVSTA in 2021, which doubled the number of recipients (and thus, the budget).

This management of this Committee was modified, because of the pandemic, but possible in the frame of the signed Agreements, for example with the Elsevier company.

- Communications committee: the work of this committee is also crucial for IUVSTA, it was sustained and reinforced by social media activities that IUVSTA started to develop in this triennium. In addition, for the persons who wish, it is possible to participate to informal or more serious exchanges on an IUVSTA Whatsapp list. This has reinforced the strength of the Union in the times were the world was completely stopped in all activities. This is also helping very much for knowing some activities of member societies or getting a quick, efficient answer. The website of IUVSTA is regularly updated with all information, this is a more sustainable way to give the news but short Twitts or LinkedIn messages are greatly followed by the younger forces. This development was in my statement.
- STD and scientific aspects: an important work has been done in positioning IUVSTA scientific activities towards sustainability. For this, 2 actions were successful taken: becoming a funding member of the IYBSSD22, and creating a new scientific division-to-be with the Working Group on sustainability, which will be chaired by one of the IUVSTA Prizes of 2022. These are both great news for IUVSTA to work at medium or longer time scale on sustainability. Integrating an international event was in my statement.

To conclude my report, this Triennium has been incredibly unforeseen, but it has also been a time of great and regular work between members: it was impossible to meet in person, thus we met more often by teleconferences! We had to keep IUVSTA alive and finally we did more, having a really sustainable Union.

Anouk Galtayries

Report of Secretary General to GM-21
on
Triennium 2019-2022
Sapporo, Japan, 14th September 2022

1 Period and activities

This report covers the period from, Wednesday, 3rd July 2019 till the official end of the triennium on Wednesday, 14th September 2022. It should be noted that the Financial Triennium (on which the Treasurer will report) covers the three financial years 2020, 2021 and 2022. This document is a cumulative report on the actions of the Secretary General during this triennium 2019 – 2022 which was massively influenced by the national and international measures taken to confine and to contain the Covid-19 disease. This made it necessary modify our meetings and other activities to fit online online formats and often to develop new procedures on the fly. Therefore, and also du to time constraints imposed by the considerably shorter online meetings, single reports of the Secretary General were not given at the previous Executive Council Meetings.
The major activities of the Secretary General during this period were:

- general administration and correspondence
- organization of the Executive Committee Meetings with special attention to frequently changing boundary conditions imposed due to the Covid-19 pandemy.
- organization of GM21 in conjunction with the organizing agents for the International Vacuum Congress
- updating and maintaining various parts of the web site
- keeping track of procedural changes and updating the procedures manual
- interactions with UNESCO, ICSU, ISO, and other organizations

Some of the main points are presented below.

2 Relations with other Bodies

2.1 UNESCO

IUVSTA is a corresponding member of UNESCO, and an associate member of the NGO-UNESCO Liaison Committee. There are reports on many meetings and conferences but essentially none are of interest to the IUVSTA community. One essential activity within the liaison of the Union with UNESCO was the participation in then organization, set-up and launch of the International Year of Basic Sciences and Sustainable Development (IYBSSD) which has started in 2022 and will last until 2023. This event will give the members of IUVSTA to showcase their activities and therefore the incorporation of national activities in the framework of IYBSSD is highly recommended. More information can be obtained from the Secretary General and from the Presidents of the Union, especially from Anouk Galtayries, who played an essential role to establish the link between IUCSTA and IYBSSD.

2.2 ISC (formerly ICSU)

IUVSTA was an associate member of the International Council of Science (ICSU). In 2018 ICSU merged with the International Social Sciences Council (ISSC) to form the International Science Council, ISC. The relations of IUVSTA with this new entity remain unchanged. The link to .ISC is now stable and information on ISC activities can be obtained from the Secretary General.

2.3 ISO

IUVSTA has liaison status with ISO, and is represented on two Technical Committees: TC201 on surface analysis and TC112 on Vacuum Technology.
The relevant IUVSTA Divisions maintain contact and contribute on behalf of the Union. The weekly newsletter STADIST which lists information on newly issued, revised and withdrawn standards is distributed by email. Members interested in the work of ISO are referred to the website www.iso.ch.

2.4 Commercial Bodies

Even in times of the Covid-19 pandemy I receive copious quantities of literature and invitations from Congress Centres, meetings organizers and hotels around the world, which obviously reflects a certain drive of professional event organizers to restore this business, although also online and hybrid formats are increasingly advertised.

3 National Vacuum Societies

I maintain correspondence with National Vacuum Societies. I am grateful to those Societies which promptly inform me of changes in Officers so that correspondence goes to the relevant persons.

4 Communications and Documentation

4.1 Communications

The vast bulk of communication is now by email, but I am trying to put a more active role to the web site for documentation and sharing of information.

4.2 Procedures Manual, Statutes and By Laws

The Procedures Manual, Statutes and By-Laws are available on the website. A task not yet accomplished is the inclusion

4.3 Web Site

The web site now plays a major role for our communication and the distribution of information. Thanks are due to Ivan Petrov, Chair of Publications Committee and John Koudelka, the webmaster, for their hard work in maintaining and improving the site. Within the "Members" section of our website, information on current events like Executive Council Meetings or our General Meetings can be found in the item "Information from the Secretary General" which was formerly called "Meantime". Also useful items like mailing lists of our officers and national representatives or PowerPoint presentations of the Union, which can be used fot the introduction of IUVSTA at selected events can be found there. The ECM Minutes and Papers can also be found in this section and are placed in the Records Area of the Members' part of the web site by the Recording Secretary as soon as they are approves as true records of the respective meetings.

4.4 Social Media

Also social media gain an increasing role in presenting the Union to the Outside World. The Union now has a twitter account, https://twitter.com/iuvsta which is taken care of by our Australian colleague Jennifer MacLeod. I would like warmly thank her for all the effort se puts into this task.

5 Executive Council Meetings

The following Executive Council Meetings have been held during the Triennium

- ECM 131 Malmö, Sweden, 3 July 2019
- ECM 132 Online, 21 March 2020
- ECM 133 Online, 10 October 2020
- ECM 134 Online, 19 March 2021
- ECM 135 Hybrid, Marseille, France in conjunction with EVC 16, 20 November 2021
- ECM 136 Online, 26 March 2022
- ECM 137 Online, 2 September 2022

As the above list shows, most of our Executive Council Meetings were fully online due to the pandemic situation which overshadowed the years 2020 – 2022 in full extent. I would, however, like to sincerely thank the French Vacuum Society who took the effort to organize the hybrid ECM 135 in Marseille, in conjunction with EVC 16.
Concerning the online meetings, after some iteration a format for Executive Council Meetings of two half days duration emerged. A meeting time from approx. 13:00 – 18:00 CE(S)T was found suitable for all delegates in the different time zones. During the first half day, (i) selected committee meetings are held, with the selection based on the activities of the respective committees, and (ii) after the committee reports, STD is meeting with the vote on proposed workshops, schools, technical training courses and short courses. The second half day is devoted to the Meeting of the Executive Council, and, if necessary to the Annual General Meetings of the Union in which the yearly budgets are ratified. This schedule can be extended to three days if time-consuming matters like the bid-selection for the International Vacuum Congress are on the Agenda, In this case, Committee Meetings will be held on two half days, with STD on the second half day and ECM on the third one.
An essential part of these meetings is a suitable procedure for online-voting. Three basic procedures are possible:

i. Open votes if unanimous or strongly biased decision can be expected
ii. Semi-anonymous votes via the chat function of the teleconference system: Votes are communicated privately to the recording secretary who counts the votes cast. The identity of the voters is disclosed to the recording secretary, but to no one else,
iii. Fully anonymous votes via an appropriate online voting system, which basically sends out mails to the members of the voting body with a temporarily valid link for casting the vote

The choice of the respective voting procedure is up to the president, in collaboration with the Secretary General and the Recording Secretary.
These preliminary procedures are not fully worked out yet, but will be refined in collaboration with the Recording Secretary and, once finished, be included in the procedures manual. It is strongly recommended to the Union to buy a full version of a teleconference system which includes the possibility to create break out rooms and maybe also a proper polling option, so that online voting may be possible by using only one system.
I would like to offer my personal thanks to all those who helped me to develop and implement the above preliminary procedures, especially to the President, Anouk Galtayries and to the Recording Secretary, Ana G. Silva who were reliable and competent partners in these hard times.

6 Conclusion

In conclusion, I would like to thank all of you who have helped to make my task easier on the past Triennium. Of all the persons I had the pleasure to work with, I would once again like to thank Ana G. Silva for her important work as Recording Secretary. To provide consistent minutes from our Executive Council Meetings is an essential task for all legal matters concerning the Union and therefore a vital part of our collaborative work.

Christoph Eisenmenger-Sittner
July 2022

Awards and Scholarship Committee (ASC)
Report for the Triennium 2019-2022

Chairman: Martin Wüest, Vice-Chairman: Andrej Vincze

Members: Anouk Galtayries, Anton Stampfl, Anton Tadich, Manfred Leisch, Christoph Eisenmenger-Sittner, Pedro Nascente, Sylvie Bourgeois, Ana G. Silva, Pär Omling, Jay Hendricks

The Awards and Scholarships Committee (ASC) is set up by the President and is responsible for administration and organization of international awards and prizes in the scientific and technical areas covered by the Union.

ASC meetings were held in conjunction with all ECM meetings between the International Vacuum Congresses in Malmö and Sapporo

Additional reporting occurred during regular Officer's meetings, established during the COVID pandemic as regular Zoom meetings on a more or less monthly basis.

IUVSTA Prizes

IUVSTA Prize for Science is awarded to recognize and encourage outstanding internationally acclaimed research in the fields of interest to the Union. IUVSTA Prize for Technology is awarded for outstanding experimental and/or theoretical research in vacuum science, technique or its applications.

Endowment for the Prizes is provided by generous donations from Canon Anelva Corp., Funai Electric, Intevac, Inc., Kratos Analytical, Oerlikon Balzers, Oerlikon Leybold Vacuum, Omikron nanotechnology, Osaka Vacuum, Physical Electronics, SAES Getters, TAV S.p.A., Ulvac Inc., VAT vacuum valves AG, IOP Publishing, and Varian Associates.

The 2022 IUVSTA Prize for Science was awarded to Christian Mitterer, Professor, Functional Materials and Materials Systems, Department of Materials Science, Montanuniversität Leoben, Austria, for his seminal contributions to the materials science of protective coatings and thin films for flexible electronics and hydrogen storage.

The 2022 IUVSTA Prize for Technology was awarded to Ian Gilmore, Professor, National Physical Laboratory, Teddington, United Kingdom, for pioneering advances in vacuum instrumentation enabling innovative multidisciplinary research and development.

Members of the Prize Evaluation Committee were: Martin Wüest, Sylvie Bourgeois, Anton Stampfl, Jay Hendricks, Pedro Nascente, François Reniers, Ana G. Silva, Pär Omling, Andrej Vincze.

IUVSTA Welch Scholarship

The M.W. Welch International Scholarship supports younger scientists working abroad in vacuum science and technology. The scholarship was made possible since the late 1960ies by support from M.W. Welch and the Welch family. Now, the Scholarship is funded by Mr. Kenneth M. Bro (grandson of M.W. Welch) and his sister Beth Howard.

The 2019 Welch Award was given to Clio Azina. Coming from the University of Linköping, Thin film Physics Division, she moved in January 2020 to the Materials Chemistry group of Prof. Jochen Schneider at the RWTH University Aachen where she worked on the interfacial stability of MAX phases onto Zr-based substrates. Her return to Sweden was delayed due to the COVID lock-down in Germany. Since then she received a Marie Sklodowska-Curie Individual Fellowship from the European Horizon 2020 program.

The 2020 Welch Award was given to Pierre Vinchon from the University of Montreal. He intended to spend time with Prof Satoshi Hamaguchi at the Center for Atomic and Molecular Technologies, Graduate School of Engineering, Osaka University starting in June 2020. However, the pandemic interfered and Japan's border were closed. Only in mid-April 2022 he could travel to Osaka. In the meantime, he also won a Japan Society for the Promotions of Science (JSPS) short-term postdoctoral fellowship. This JSPS fellowship took precedence and the Welch period will be subsequent.

Many schools and workshops did not happen due to the COVID pandemic. IUVSTA decided to use these funds to fund an additional Welch Award in 2021. The two scholarships went to Rémy Delaporte-Mathurin and Yanela Mendez González. For the first time, a short Welch Award ceremony was organized at the EVC-16 opening ceremony in November 2021.

Rémy Delaporte-Mathurin from the University Sorbonne Paris Nord (Institute Galilée) spent time at Massachusetts Institute of Technology (MIT) (Prof. Michael Short, Department of Nuclear Science and Engineering) from early January 2022 to end of March 2022. He used his Finite Element Simulation of Tritium In Materials (FESTIM) code to determine whether proton injection is responsible for the observed increase in corrosion in experiments using molten salts, an important activity in the development of molten salt reactors.

Yanela Mendez González from the University of Havanna, Institute of Science and Technology of Materials, Cuba, started her stay at the Autonomous University of Madrid (Prof. Miguel Manso Silván, Department of Applied Physics) mid-February 2022 investigating transition metal dichalcogenides, especially $MoTe_{2-x}Se_x$ alloy transistor structures and their bio-functionalization.

The 2022 Welch award applications are currently in evaluation.

The IUVSTA Welch Committee members tasked with selecting the awardees were: Anton Stampfl (Australia), Jay Hendricks (USA), Arnaud Delcorte (Belgium), Jennifer MacLeod (Australia), Enrico Maccallini (Italy) and Ana G. Silva (Portugal).

IUVSTA-Elsevier Student Awards

The aim of these awards is to give partial financial support to younger research students to help them to attend IUVSTA meetings and conferences at which they are presenting a paper. ("Young scientist" means that the date when the young scientist has received her/his first academic degree shall be within seven years before the start date of the conference.) Each selected conference receives a total of EUR 2000 (twice the amount for the IVC) to give a travel award of about EUR 500 to typically 4 students.

During the 2019-2022 triennium, the following conferences were selected for support in the Memorandum of Understanding (MoU) with Elsevier: 2020: ICTF-18 (Budapest, Hungary), VASSCAA-10 (Shanghai, China); 2021: EVC-16 (Marseille, France), ECOSS-36 (Luxemburg); 2022: IVC-22 (Sapporo, Japan). However, the pandemic caused postponements of many conferences or a switch to virtual or hybrid mode, and the selected conferences were no exception.

The 18th International Conference on Thin Films (ICTF) jointly organized by 18th Joint Vacuum Conference (JVC) took place between 22-26 November 2020. The conference was scheduled originally in June but due to the worldwide COVID-19 cases it was postponed to November 2020. It was planned as a conventional conference. However, travel restrictions unfortunately did not allow the face-to-face meeting, therefore the Hungarian Vacuum Society, as the organiser of this joint conference, had no other possibility than to switch to a fully online event – for the first time in the history of both conference series. Due to the virtual format, 15 young scientist received support to participate in the conference and present their latest results in form of oral or poster presentations.

The Vacuum and Surface Sciences Conference of Asia and Australia (VASSCAA) was scheduled originally for October 2020. Due to the pandemic, the conference was postponed by one year to October 2021. Due to the immigration policy, the conference was held as a hybrid event, with scholars residing in China participating in Shanghai, while scholars outside China participating remotely. Seven Chinese students were selected as recipients of the IUVSTA Elsevier award.

The European Conference on Surface Science 35 (ECOSS) was originally scheduled for August 2020. It was postponed because of the pandemic by one year to early September 2021 (taking the place of ECOSS 36) and was then postponed again to August 2022. Due to the strict budget year rules at Elsevier, the Elsevier award funds were transferred in September 2021 from Elsevier to IUVSTA as an intermediary to be transferred to the conference organizers in 2022.

The 16th European Vacuum Conference (EVC-16) in Marseille was moved due to the pandemic from June 2021 to November 2021. It was held as an in-person conference. Six awardees were selected.

The International Vacuum Congress (IVC-22) in Sapporo will be held as planned in September 2022 as an in-person conference, although now in view of the still existing travel restrictions foreign participants are allowed to present their work and participate remotely.

A new MOU for 2022-25 has been prepared. The Elsevier travel award rules were designed to support the travel to attend a conference. With the shift to hybrid or virtual conferences, it was agreed that the award rules will allow the conference organizers to be more flexible what the award will pay in order to accommodate students that participate remotely. The support by the publishing house Elsevier will remain EUR 12000 within the triennium.

IUVSTA EBARA Award

Every three years in conjunction with the International Vacuum Conference, the award is given to a young scientist that contributed in the development of environmentally friendly vacuum technologies. The award is sponsored by the Japanese vacuum company EBARA. The second recipient of this award is Deep Jariwala, Assistant Professor, Electrical and Systems Engineering, University of Pennsylvania, Philadelphia, USA for his research on novel thin-film materials and heterostructures for energy-efficient electronics and photonics. An award ceremony will be held at IVC-22 in Sapporo with EBARA company representatives present.

The members of the IUVSTA EBARA Award Committee were: Sylvie Bourgeois (France), Shinichi Sekiguchi (EBARA representative, Japan), Julia Scherschligt (USA), Pedro Nascente (Brazil) and Jörg Patscheider (Switzerland).

IUVSTA Peter Barna Award

The newly initiated Peter Barna Award for young scientists (PhD-level) is for best conference presentation at the International Conference on Thin Films (ICTF) and consists of a certificate and a cash prize of EUR 200. It is named in honor of Peter Barna (IUVSTA Honorary President, since 2021).

Radovan Vranik (Johannes Kepler University, Austria) received his price for his excellent presentation entitled “Pi-Radical as potential candidate for Radio Frequency Scanning Tunneling Microscopy Study”.

And Šárka Batková (University of West Bohemia, Czech Republic) received the prize for her excellent presentation “Effect of positive pulse voltage in bipolar reactive HiPIMS on crystal structure, microstructure and mechanical properties of CrN films”.

Martin Wüest

Chairman ASC

Congress Planning Committee Report for the 2019-2022 Triennium

A. Stampfl, chair of CPC 2016-2019

Committee Members:
Sylvie Bourgeois, Anouk GALTAYRIES, Anton Tadich, Manfred Leisch, Christoph Eisenmenger-Sittner, Francois Reniers, Maja Mičetić, Ivana Capan, Stanislav Novák, Ute Bergner, László Óvári, Fabrizio Giorgis, Yasunori Tanimoto, Geun Young Yeom, Emmanuel Haro Poniatowski, Leszek Markowski, Ana Gomes Silva, Carlos Tavares, Suzana Petrović, Andrej Vincze, Miran Mozetič, Pär Omling, Martin Wüest, Joe Greene, Jay Hendricks

Triennium 2019-2022 (see Fig. 1) ushered in a tumultuous period of uncertainty for IUVSTA events and meetings, that only in 2022 has stabilised to some level, with in-person events being run. The period also ushered in the possibility of purely virtual events through a wide range of on-line platforms. An informal Officers and Chairpersons monthly Zoom meeting sprung up almost immediately that allowed everyone to stay in-touch with one another and plan a steady course for IUVSTA. The pandemic stopped us meeting in-person but technology saved the day by bringing us much closer together, in virtual-space.

The second half of the year 2019 proceeded as normal with a short ECM-131 and GM-20 being held in Malmö that saw the change over to the new executive and council. The next ECM, ECM-132 was scheduled to be held in Annecy, France from March 20-22, 2020. Around the start of March it became very clear that the world was in the beginnings of the corona-virus pandemic. A few weeks later and the French Vacuum Society had to cancel the meeting which was instead held entirely virtually through zoom. Such was the seriousness of the pandemic that all ECM's from that time on have been held virtually. Only ECM's 135 (Marseille) and 138 (Sapporo) were held in hybrid mode. Moving forward allowing all ECM's to be either fully virtual or hybrid does make a lot of sense as it allows all councillors and interested parties to participate. How one deals with the multiple time zones, in the opinion of this author, does need to be worked on, along with the days set for the meetings. To date the meeting hasn't been recorded and perhaps this may be a potential way forward to alleviate the problem of having to participate in meetings at extremely inconvenient times. Making recordings available in a timely manner is indeed possible and can potentially allow participation, despite the delays due to disparate time-zones, via delayed chat and polling.

The period of the pandemic has placed IUVSTA conferences (see Fig. 2) under strain forcing event organisers to debate and worry over whether to go ahead or not with their events, and if to go ahead, whether they should be fully virtual or hybrid.
ICTF-18 in Budapest was postponed a couple of times through 2020 and held in November of that year as a fully virtual meeting in November. The organisers did a very good job on their virtual platform, Whova, attracting several hundred participants. The next fully virtual conference was ICN+T held in Vancouver in July 2021. This meeting was originally planned to run in 2020 and after a couple of attempts to run in as a hybrid event was run fully virtually. Again the organisers did very well and attracted a healthy number of participants running into the hundreds. Additionally this conference series has been decided to be discontinued as it has been deemed that the field has split into a few different areas that can be better served by other meetings.

The first hybrid meetings started with VASSCAA-10 in Shanghai in October 2021, which was postponed by one year. This was a combined meeting with the Chinese Vacuum Societies local meeting that involved many hundreds of participants. All international participants were virtual. VASSCAA-11 is being held in Sapporo jointly with IVC-22. EVC-16 was also a hybrid meeting held in November 2021 in Marseille. There were a few hundred participants to this meeting and ECOSS-35 was postponed by two years and just held at the start of September 2022. Today, as I write, IVC-22 is being held in Sapporo, Japan. On-time and as a hybrid meeting. Nine-hundred participants, with around 600 in-person delegates in attendance, and a large vibrant exhibition of 60+ exhibitors. A blend of both virtual and in-person presentations. The The Japan Society of Vacuum and Surface Science has shown it is possible conduct a well organised hybrid event that attracts a large in-person and virtual audience that acts as a good example of how to run a successful hybrid event.

Finally in 2022 the CPC accepted two proposals to host IVC-24, in 2028, from the Portuguese and Polish vacuum societies. Both proposals were of very high standard. The CPC recommended the Portuguese bid, to be held in Braga. The council voted on the recommendations and IVC-24 will be held in Braga. It is clear that some virtual component for all events will be considered going forward. The pandemic has forced this possibility upon us but because of it we have now the possibility to reach a much wider and larger audience.

Dr Anton P.J. Stampfl, CPC Chair 2019-2022

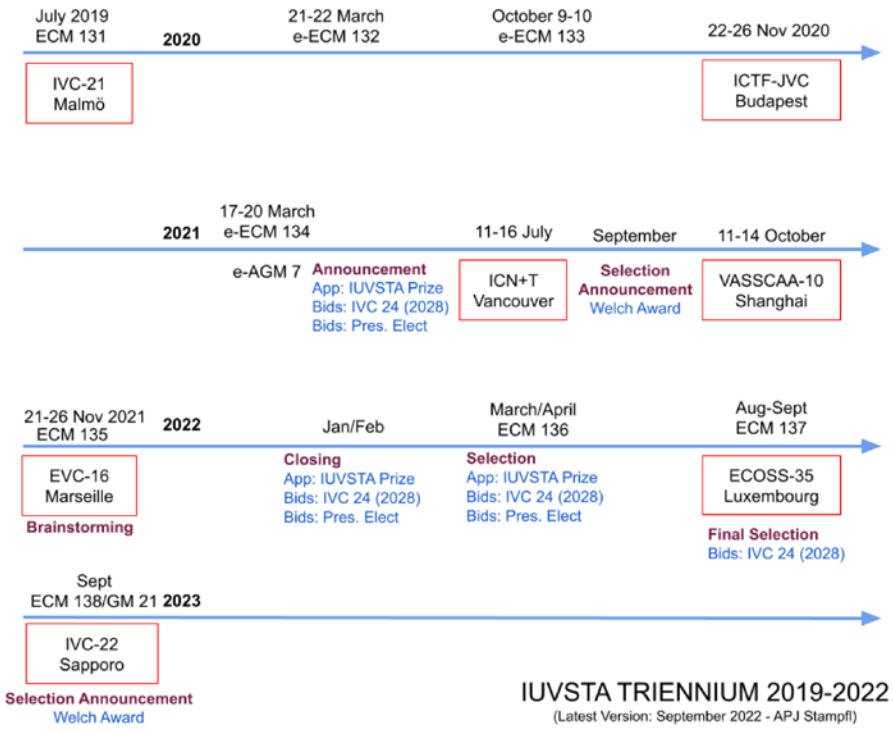


Figure 1: The Triennium 2019-2022

IUVSTA conferences at a glance : 2018-2022 v. Sept 2022

	IVC (CPC)	EVC (VST)	ICTF (TF)	ECOSS (SS)	VASSCAA (SS)	ICN+T (NS)
Period	3 years	3 years	3 years	1 year	2 years	2 years
2018	-	EVC-15 Geneva (CH) 17-22 June	-	ECOSS-34 Aarhus (DK) August 26-31	VASSCAA-9 Sydney, Australia, August13-16	Brno, Czech Rep, July 22-27
2019	IVC-21 Malmö (S), 1-5 July	-	-	Joint with IVC	-	-
2020	-		ICTF-18 Budapest(H) 22-26 November	(postponed)	(postponed)	(postponed)
2021		EVC-16 Marseille (F) 21-26 Nov	-	(postponed)	VASCAA-10 Shanghai (CHINA) October 11-15	Vancouver, (CAN) July 11-16
2022	IVC-22 Sapporo, (JP)		-	ECOSS-35 Luxemburg, August 30-September 3	Joint with IVC	

Figure 2: IUVSTA Conferences 2018-2022

EDUCATION COMMITTEE

Report for the triennium 2019 – 2022

Chairman: Alberto Tagliaferro, Secretary: Sylvie Bourgeois

Members: Anouk Galtayries, Anton Stampfl, Anton Tadich, Christoph Eisenmenger-Sittner, Francois Reniers, Diederik Depla, Pedro A. P. Nascente, Stanislav Novák, Yasunori Tanimoto, Geun Young Yeom, Yong Min Kim, David Ruzic, Ana Gomes Silva, Andrej Vincze, Janez Kovač, Miran Mozetič, Miguel Manso, Maria Carmen Asensio, Martin Wüest, Joe Greene, Jay Hendricks

In the triennium Schools and Technical Training Courses have been funded. For the detail of this activity please refer to the STD report.

The main focus of the EC has however been to start the IUVSTA Webinars Program. An agreement has been established with IOP Publishing in which IOP takes care of organizing, advertising and broadcasting the webinars selected by the EC at no cost for IUVSTA.

Internal calls for webinars are periodically issued by the EC and distributed to the Divisions and the Member Societies for further actions.

The first webinar was broadcasted in February 2021. 10 webinars have been broadcasted from that date, that add to 3 broadcasted previously, when the Program was not yet running.

The average attendance has been of about 100 persons, some of which have agreed to receive information about IUVSTA activities. The mailing list has currently more than 560 entries.

IUVSTA Integrating new Societies Committee Report for the 2019-2022 Triennium

Members:
Chair: Pedro Nascente, Brazil
Vice Chair: Hernando Salapare, The Philippines
Anton Stampl (Australia), Anton Tadich (Australia), Christoph Eisenmenger-Sittner (Austria), François Reniers (Belgium), Maria Sanchez (Cuba), Sylvie Bourgeois (France), Fabrizio Giorgis (Italy), Emmanuel Haro Poniatowski (Mexico)< David Ruzic (Philippines), Ana Gomes Silva (Portugal), Carlos Tavares (Portugal), Andrej Vincze (Slovakia), Miran Mozetič (Slovenia), Miguel Manso (Spain), Maria Carmen Asensio (Spain), Joe Greene (USA), and Jay Hendricks (USA).

For the most part of this period, we have not had presential meetings, and only few contacts have been made during this triennium:

Jaime A. Perez Taborda, President of the Colombian Physical Engineering Society, professor at the Universidad de los Andes, Bogota, Colombia. We have exchanged some email messages, but I have not received any news lately.

Ludvik Martinu, professor at the Polytechnique Montreal, Canada. We met during the last ICMCTF in San Diego in May 2022, and will meet again in Foz do Iguacu, Brazil, in September 2022. Canada is part of the AVS.

IUVSTA Industry Meets Science Committee Report for the 2019-2022 Triennium

Chair: Ute Bergner
Ex Officio: Anouk Galtayries
Members: Anton Stampfl, Anton Tadich, Manfred Leisch, Christoph Eisenmenger-Sittner, Francois Reniers, Sylvie Bourgeois, Servando Aguirre Tostado, Ana Gomes Silva, Andrej Vincze, Miran Mozetič, Maria Carmen Asensio, Martin Wüest, Jay Hendricks

Within the Triennium 2029 – 2022 the still ongoing Covid-19 pandemy severely impacted this newly founded committee. Industry had to cope with severe obstacles imposed by lockdowns and other measures, which left little time for establishing useful contacts to scientists or scientific institutions. Therefore the committee remained inactive during the last Triennium.

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Respectfully submitted

Ute Bergner

Report for the Long Range Planning Committee
Report for the triennium 2019 – 2022

The members of the Long Range Planning committee for this triennium are: François Reniers (Chair), Anouk Galtayries, Anton Stampfl, Anton Tadich, Christoph Eisenmenger-Sittner, Sylvie Bourgeois, László Óvári, Yasunori Tanimoto, Yong Min Kim, Emmanuel Haro Poniatowski, David Ruzic, Ana Gomes Silva, Carlos Tavares, Vladimir Rajić, Andrej Vincze, Pär Omling, Martin Wüest, Jay Hendricks.

During these 3 years where IUVSTA, as the rest of the world, was hit by the COVID pandemic, the regular business of the Union deeply suffered from the situation. Many of the IUVSTA main activities (workshops, schools, …) were postponed, cancelled, or transformed to virtual events. In parallel, the member societies faced the same difficulty. The individuals, members of the LRP committee, including the president, had to spend most of their energy on running their regular job in these circumstances. In parallel, the IUVSTA officers focused on keeping the UNION alive during these 3 years, reorganizing the way meetings were run, taking care of the essentials of IUVSTA. As a consequence, there were no many meetings of the LRP committee during this triennium.

The points that were discussed, and will possibly enter into force during the new triennium, are the followings. Most of them were extracted from the statement of president-elect "a vision for IUVSTA"

1. ECMs should lead to a larger exchange of ideas

We will try to put less administration, and more science and education DURING ECMs. More specifically, the interest of ECM is that people meet together from all over the world. We used to socialize (before Covid) and exchange ideas about, sometimes everything, in the evenings, during coffee breaks, …. Most of the "business time" of a roughly 2 days ECM is occupied by administrative things. The intention is to transform the equivalent of ½ day into a brainstorming session about selected topics, or to organize a scientific/educational event.

2. ***Rethink fundamentally the way to communicate***

IUVSTA will use more and more the modern ways to communicate (Twitter, LinkedIn), and the website will be improved to offer more services to the national member societies. Up till now, scientists and officials barely know that IUVSTA exists and what IUVSTA is doing. That does mean that we must set up a strategy for a better internal AND external communication. The communication committee will be in charge of preparing this new strategy. This should contain : what message do we want to give to the external and the internal community ; what are the targets (national societies, members of these national societies, academic, industry, politics, general public), by which means (can depend on the message and/or the target), for which budget.

3. Increase the ***societal impact of IUVSTA***

This part is already going on, by the contribution to the International year for basic sciences.
We could go further however: IUVSTA being an ***educational*** and ***scientific*** society, we should use our scientific skills for the benefit of the society. Challenges are huge: increasing world population, health of old people in more developed countries, climate change, pollution of the air, ….., not speaking the current COVID pandemic. IUVSTA could federate strengths of national societies and their members to address such challenges. This could go through joint research and/or educational programs, in conjunction with public/private funding agencies.

Also, IUVSTA should be the lighthouse for state of the art research topics in its domain, and it is not these days: for instance, the "plasma roadmap" is published every X years, with the help of some IUVSTA members, but it is not driven by IUVSTA. The same can be said for all topics. Our strength is that we are a worldwide organization, we should take benefit of this. Initiatives were taken by Miran Mozetic, a few years ago, and should be strengthened.

4. ***increasing the number of members, and take care of the existing ones, especially the new ones***
Increasing the number of members has been put "on hold" during the pandemic. The virtual meetings were useful to keep contact with the members during these difficult times. This tool will continue to be used after COVID for regular exchanges with member societies.

5. ***A more proactive approach, and accompanying process***

The scientific director and the scientific secretary were very efficient in accompanying candidates for workshops and schools. This is one of the added values of IUVSTA. After 3 years of pandemic, and with new members in the IUVSTA divisions, this action is more ueful than ever.

6. ***The website should also become a gateway*** for scientists.
During the next triennium, it is proposed that the communication committee work on an appropriate strategy.

7 . ***IUVSTA, as a Union must offer this extra added value to its member societies.***
A major brainstorming is required here, IUVSTA could feed the national societies with funding opportunities (education and/or research). IUVSTA could integrate the "national" vacuum societies meetings into its calendar (to be delegated to the CPC), it can disseminate better the information from national societies (i.e. call for meetings,…).

8. ***reinforce the link with the IUVSTA conferences***
The pandemic has shown that there is room for improvement in the communication between IUVSTA and its related conferences. The CPC has paved the road to improve this during this triennium, and this should be continued.

Finally, some questioning regarding the format of meetings (conferences, workshops, schools, ECMs, GMs) took place, initiated by the current pandemic. This turned to be a driving force to rethink the way we organize workshops and meetings. Because of circumstances, virtual meetings are now taking place. Although, in the future, they will probably not "replace" physical meetings, all these new tools may bring new opportunities (reaching more people in developing countries, giving more visibility to IUVSTA workshops, developing webinars,…), that should be investigated. In parallel, our procedures should be refreshed to take all these new ways to share science into account.

Everything will not be done, priorities will be given, and strategies will be elaborate.

IUVSTA Communications Committee Report
Triennium 2019-2022

Communications Committee Membership
Chair: Ivan Petrov
Vice Chair: Jennifer MacLeod
Members: Ex Officio - Anouk GALTAYRIES, Anton Stampfl, Anton Tadich, Christoph Eisenmenger-Sittner, Francois Reniers, Ivana Capan, Ana Gomes Silva, Andrej Vincze, Martin Wüest, Jay Hendricks, Hernando S. Salapare III

Communications Committee activities:

1. Maintaining the IUVSTA website
2. News bulletin
3. News Flashes
4. Social Media Presence
5. Future directions

1. Maintaining the IUVSTA website

The main purpose of the IUVSTA web-site has been to facilitate communication among the active IUVSTA members. It houses official minutes and records in the members only area, dating back to 2001, which is constantly updated by the Secretary General Christoph Eisenmenger-Sittner, Scientific Secretary Katsuyuki Fukutani, and the Recording Secretary Ana Silva.

By clicking to MEMBER SERVICES on the main menu bar running at the top of the web-page you can gain access to the minutes and records using:

Username: iuvsta Password: 1qaz2wsx

Please, do not change the username and password.

The web-site is structured in three horizontal sections: top one, containing the main menu bar and rotating banners, middle section with news, and bottom section with IUVSTA events and IUVSTA Events Calendar.

The website provides general information about the Union, its history, governing documents, scientific and educational activities, IUVSTA publications and awards and prizes. News Bulletins and News Flashes are posted on the website. The website is updated by the communication committee members and maintained/developed by webmaster John Koudelka. John is available to assist Committees and Divisions who whish to use the web-site as a means of communication for their activities.

The following IUVSTA Divisions have updated their pages on the web-site during this triennium: APPLIED SURFACE SCIENCE, PLASMA SCIENCE AND TECHNOLOGIES, SURFACE SCIENCE, VACUUM SCIENCE AND TECHNOLOGY. All divisions are encouraged to do so in the upcoming triennium. You can send the updated information to the web-master John Koudelka, john.koudelka@gmail.com.

2. IUVSTA News Bulletin

Eight News Bulletin issues with numbers from 182 to 189 were published during the 2019-2022 triennium. One News Bulletin is published following each Executive Council Meeting. The Bulletin is gaining popularity not only with the organizers of IUVSTA events, but also with Member Societies and IUVSTA endorsed conferences.

3. IUVSTA News Flash

The IUVSTA News Flash was developed as means of rapid communication. 22 newsflashes, numbers 16 through 37, were distributed during the triennium. The News Flashes typically announce calls for awards, IUVSTA events, webinars etc.

The Bulletin and newsflashes are distributed to all IUVSTA active people – the Officers, Councilors and Alternate Councilors and the members of the IUVSTA Divisions. They are encouraged to make the information available to the IUVSTA Member Societies. The Communication Committee Chair, Ivan Petrov acts as the editor for the newsbulletin and newsflashes. Divisions, Committee, Member Societies are encouraged to submit articles to petrov@illinois.edu.

4. Social Media Presence

The Communications Committee Vice-Chair, Jennifer MacLeod maintains the Union's social media presence. We continue to use our Twitter and LinkedIn social media accounts to relay information from the IUVSTA News Flashes, and to promote webinars and events. Both accounts continue to attract new followers (currently 104 followers on Twitter and 115 on LinkedIn). So far in July 2022, we have had over 9000 impressions on our Twitter posts (tweets), indicating a strong growth in our potential audience from our previous impression record of 2000. We continue to welcome suggestions for social media campaigns or initiatives.

Hernando S. Salapare III from the Philippines Vacuum Society recently joined the Social Media team.

President Anouk Galtayries established a WhatsApp "IUVSTA Friends" group which has many members and proved to be a popular venue for instant communication, sharing, and keeping in touch. To be included in the WhatsApp group, colleagues can send their phone number to Anouk via an email at anouk.galtayries@chimieparistech.psl.eu.

The communication committee maintains a Wikipedia entry on IUVSTA. Wikipedia savvy people are encouraged to update and enrich that entry.

5. Future directions

President Elect (2022-25) Francois Reniers launches an initiative to improve the visibility of IUVSTA, to offer more services to the national member societies, and to be better visible internally (to member societies) and for the outside world. Indeed, at present, external scientists and officials barely know about the existence and activities of IUVSTA. The new committee will be in charged to develop an appropriate strategy and to implement it.

Ivan Petrov
Communications Committee Chair

Jennifer MacLeod
Communications Committee Vice Chair

Statutes Committee Report to GM-21
on
Triennium 2019-2022
Sapporo, Japan, 14th September 2022

This report covers the period from, Wednesday, 3rd July 2019 till the official end of the triennium on Wednesday, 14th September 2022. It also supplements all reports that should have been given to the Executive Council Meetings during this time. This period was heavily influenced by the Covid-19 pandemy, which put the formal activities of the statutes committee in the background and made it necessary to adapt the format of our meetings, ECMs, AGMs and General Meeting to virtual or hybrid frameworks. The major activities of the Statutes Committee during this period therefore were concentrated towards immediate action and consisted of the following items:

- organization of the Executive Committee Meetings with special attention to frequently changing boundary conditions imposed due to the Covid-19 pandemy.
- organization of GM21 in conjunction with the organizing agents for the International Vacuum Congress, with special respect to adapting the General Meeting to a virtual framework.
- keeping track of procedural changes and adaptions due to the pandemy and updating the procedures manual

The most important task of the committee was the adaption of our biennial Executive Council Meetings to the necessities imposed by the pandemic situation. The following Executive Council Meetings have been held during the Triennium

- ECM 131 Malmö, Sweden, 3 July 2019
- ECM 132 Online, 21 March 2020
- ECM 133 Online, 10 October 2020
- ECM 134 Online, 19 March 2021
- ECM 135 Hybrid, Marseille, France in conjunction with EVC 16, 20 November 2021
- ECM 136 Online, 26 March 2022
- ECM 137 Online, 2 September 2022

As the above list shows, most of our Executive Council Meetings were fully online. Concerning the online meetings, after some iteration a format for Executive Council Meetings of two half days duration emerged. A meeting time from approx. 13:00 – 18:00 CE(S)T was found suitable for all delegates in the different time zones. During the first half day, (i) selected committee meetings are held, with the selection based on the activities of the respective committees, and (ii) after the committee reports, STD is meeting with the vote on proposed workshops, schools, technical training courses and short courses. The second half day is devoted to the Meeting of the Executive Council, and, if necessary to the Annual General Meetings of the Union in which the yearly budgets are ratified. This schedule can be extended to three days if time-consuming matters like the bid-selection for the International Vacuum Congress are on the agenda. In this case, Committee Meetings will be held on two half days, with STD on the second half day and ECM on the third one.
An essential part of these meetings is a suitable procedure for online-voting. Three basic procedures

are possible:

i. Open votes if unanimous or strongly biased decision can be expected
ii. Semi-anonymous votes via the chat function of the teleconference system: Votes are communicated privately to the recording secretary who counts the votes cast. The identity of the voters is disclosed to the recording secretary, but to no one else,
iii. Fully anonymous votes via an appropriate online voting system, which basically sends out mails to the members of the voting body with a temporarily valid link for casting the vote

The choice of the respective voting procedure is up to the president, in collaboration with the Secretary General and the Recording Secretary. A similar format will be applied to our General Meetings, with a special focus on the fact that, in this case, for a secret vote, different member societies have a different number of votes, in relation to their contributed shares. Statutes Committee in collaboration with the Recording Secretary has worked out a possible procedure which will be used in GM 21 in case a secret vote is required.
These preliminary procedures are not fully worked out yet, but will be refined in collaboration with the Recording Secretary and, once finished, be included in the procedures manual. Finally, I would like to express my thanks to all members of Statutes committee for their support. Although there were no formal committee meetings, all members were available for discussion whenever needed. Also, I would like to thank Ana G. Silva for her important work as Recording Secretary who always provides consistent minutes from our various Meetings.

Christoph Eisenmenger-Sittner
September 2022

Christoph Eisenmenger-Sittner, Chair

STD Report for book of reports Triennium 2019 – 2022, IUVSTA ECM 131 – ECM 137

The IUVSTA Scientific and Technical Directorate was led by Dr. Jay H. Hendricks as STD Director and supported by Dr. Katsuyuki Fukutani as Scientific Secretary of IUVSTA. Beside them the STD members are the division chairs, vice-chairs or secretaries of the 9 IUVSTA divisions, and also the IUVSTA Educational committee chair/vice chair holds the right to vote.

As the name of the scientific directorate suggests, the most important item in the agenda of the STD is the Workshop and School proposal evaluations, from the scientific point of view. The Director started the triennium with a message to the division chairs with the following key elements.

1. STD Motto for Communications: "Serve as the international communication "hub" that connects vacuum science and technology scientists from around the world."
2. STD would be committed to a central mission of Education. These would be high quality Workshops, Schools, Technical Training Courses and Short Courses.
3. IVC Scientific Program: Work with IVC and Division Chairs to develop the IVC-22 program.
4. Society Impact: Work to find applications where our science has a positive impact for society and be supportive for the development of science in less developed countries of the union.
5. Develop Focus Topics
   Quantum Science, Photonics and Nano Photonics, Roles of Sensors and Sensor Science (AI, Self-Driving Cars), Technologies for Sustainability (clean water and air), Next Generation Energy (Fusion, Solar, new materials and enabling technologies, batteries, etc.)

   The triennium started off with the Scientific Director working with the Education Committee to develop a table that clarified the differences between Workshops (WS), Schools (SCH), Technical Training Courses (TTC) and Short Courses (SC). A table was developed and is shown here as Figure 1. As was voted at GM20, the 2016-2019 triennium budget was increased for STD, so more activities can be supported, and additionally, the funding maximum was increased from 6,000 Euro to 9,000 Euro for Workshops and Schools. At ECM 132 the PSD was officially changed to PSTD "Plasma Science and Technology Division'. And then the Pandemic hit, this impacted ECM 132 with the first ever all virtual ECM. This did not slow IUVSTA down, there were 10 proposals submitted at the ECM (5 workshops, 1 school, 3 technical training courses and 1 short course). There was much discussion of the pros and cons for virtual events. It was encouraged that new proposals be put forward for virtual events. ECM133 saw the first ever all virtual events being proposed. The 96th IUVSTA workshop on "HiPIMS Today-Recent Development of High-Power Impulse Magnetron Sputter" was the first such IUVSTA workshop. This was followed by the 24th IUVSTA Virtual Technical Training Course, which was approved, and was successfully deployed by the relatively new IUVSTA member, the vacuum society of the Philippines (VSP). ECM-134, also a virtual event, saw the first virtual school "IUVSTA Virtual School on Physics at Nanoscale" and it was approved. ECM 135 was the first hybrid, taking place in-person and as a virtual event. Presentations were given on successful past virtual events. ECM 136 was back to a virtual only event, yet still successful with 2 short courses, and 3 technical training courses approved.

	WS **Workshops**	**SCH** **Schools**	**TCC** **Technical Training Course**	**SC** **Short Course** (may adapted to webinar)
Submission:	TO: Scientific Secretary CC: SD + organizers	TO: Scientific Secretary CC: SD + organizers	TO: Scientific Secretary CC: ECC/ECVC/ECS/SD + organizers	TO: Scientific Secretary CC: ECC/ECVC/ECS/SD + organizers
Summary/ Purpose:	To ***advance*** scientific knowledge in a field; rather than be educational of existing knowledge	To ***educate*** on existing knowledge	To ***educate at the beginner level***, generally not same topic in sequential years	To ***educate on existing knowledge*** "state of the art "in a specific field
Organized by/Underwriter	Organized IUVSTA Division(s)/National Vacuum Society or university	Organized IUVSTA Division(s)/National Vacuum Society or university	Organized IUVSTA Division(s)/National Vacuum Society or university	Organized IUVSTA Division(s)/National Vacuum Society or university
Format:	Format should be like that of a ***"Gordon Conference"*** with no publication of proceedings.	Format is a ***school*** with Intense instruction on a specific topic with learning/educational materials provided.	Format Example: ***Practical*** vacuum science for the regional technician /engineer	***Held in conjunction with existing scientific meeting***. Example AVS Short Courses
Location:	Remote location (not large city) in a hotel, hostel, university campus, or small town.	Typically, University campus	Regional	Regional to Main scientific meeting
Size/Duration	40-50 delegates 4-6 days	40-80 students 1 to 2 weeks	Any 1-3 days	any 1-2 days
Participation:	Organizers invite 10-20 talks of ***International*** experts	***International*** teaching experts in the field	***Regional*** experts and students	***Regional*** experts and students
Program:	Dominated by **single session** oral presentations by invited speakers. ***Lots of unstructured discussion*** space in program and time for questions (opposite of a conference style with little time for questions).	Intense instruction/school on a specific topic with learning/ educational materials provided often in the form of textbook	***Dominated by regional experts*** in the field and often taught in the local language.	1-2 days ***held in conjunction with a main scientific meeting***.
Max Funding:	**9,000 Euro**	**9,000 Euro**	**2,500 Euro**	**2,000 Euro**
Language:	Typically, English (French/German permitted)	Typically, English (French/German permitted)	Local/regional language is encouraged	English (French/German permitted), maybe regional if main conference is regional language (unusual).
Approval Route	STD→ECM	STD→ECM	EC→STD→ECM	EC→STD→ECM

Figure 1: Table showing the differences between Workshops (WS), Schools (SCH), Technical Training Courses (TTC) and Short Courses (SC).

SS=Scientific Secretary; SD=Scientific Director; ECC=Education Committee Chair; ECVC=Education Committee Vice Chair, ECS=Education Committee Secretary

The following list contains the places of the **IUVSTA workshops, schools, technical training courses and short courses approved for funding in the triennium 2019 - 2022.**

(A) Workshops:

92nd IUVSTA Workshop
"Workshop on Advanced Spectroscopy and Transport for 2D Materials at Surfaces"
Location: Okinawa, Japan
Date: 18-21 September, 2022
Web: https://hasegawa.issp.u-tokyo.ac.jp/workshop

93rd IUVSTA Workshop
"Advances in the characterization of surface engineering structures, coatings, and thin films"
Location: Castle Seggau, Austria
Date: October 15-19, 2023

94th IUVSTA Workshop
"Reliable sensing and control of reactive plasmas"
Location: Cerklje na Gorenjskem, Slovenia
Date: 29th May to 2nd June, 2022
Web: https://www.plasmadis.com/wp/94th-iuvsta-workshop/

95th IUVSTA Workshop
"Plasmonic Thin Films: Theory, Synthesis and Applications"
Location: Guimarães, Portugal
Date: 20-23 June, 2022
Web: https://www.lab4nano.com/home/index.php/95th-iuvsta-workshop

96th IUVSTA Workshop
"HiPIMS Today-Recent Development of High-Power- Impulse Magnetron Sputtering"
Location: Sweden (on-line)
Date: 20-22 January, 2021

(B) School

"Physics at Nanoscale"
Location: Skalský Dvůr, Czech Republic (Hybrid)
Date: May 31-June 4, 2021
Web: https://www.iybssd2022.org/en/physics-at-nanoscale/

(C) Technical Training Courses

TTC 21 "Vacuum technology, principles and applications"
Location: Štrbské Pleso, Hotel Trigan
Date: 13-16 October, 2020
Web: http://svs.stuba.sk/svt22/ttc.html

TTC 22 "IUVSTA TTC on Vacuum Technology Applications"
Location: Islamabad Hotel, Islamabad, Pakistan
Date: April 14-16, 2020

TTC 23 “Introduction to Vacuum Science, Technology, and Applications: from Nano science to outer space”
Location: Universidad Nacional de San Martin, Argentina
Date: cancelled

TTC 24 “Plasma and Society”
Location: Quezon City, Philippines (online)
Date: 15-16 April, 2021

TTC 25 "Vacuum, Plasma, Surfaces, and Thin Films"
Location: Sorocaba, SP, Brazil
Date: 08-9 August, 2022

TTC 26 "Fundamentals of Vacuum Technique and Technologies"
Location: Ljubljana, Slovenia
Date: 25,26 May, 2022

TTC 27 "Science and Technology of Vacuum"
Location: Spain
Date: Spring. 2023

(D) Short Courses

IUVSTA Short Course “Low Energy and PhotoEmission Electron Microscopy”
Location: Spain
Date: 26 September, 2022

IUVSTA Short Course “Gas flows under vacuum conditions: from theory to applications “
Location: Marseille, France (Hybrid)
Date: 22-25 November, 2021 (included in EVC 16)

IUVSTA Short Course “8 courses associated with IVC-22”
Location: Sapporo Convention Center, Hokkaido, Japan
Date: 10, 11, 16, Sep. 2022
Web: https://ivc22.org/index.html

IUVSTA Short Course “Secondary Ion Mass Spectrometry Short Course”
Location: Hyatt Regency, Minneapolis MN, USA
Date: 18-23, Sep. 2022

Figure 2: ECM 133 one of the many all-virtual ECM's held during this triennium.

In all, 17 events were approved from ECM 132-136 for a total of 55,730 euro:
5 workshops (funded for 30,200 euro); 1 School (4,000 euro); 7 technical training Courses (funded for 14,530 euro); 4 short courses (funded for 7,000 euro). Overall, IUVSTA managed and survived the global pandemic that started in the fall of 2019.

Jay Hendricks, Sept. 24th,2022

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Jay Hendricks

Scientific Director, 2019-2022
IUVSTA

Katsuyuki Fukutani, Sept. 24th, 2022

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Katsuyuki Fukutani

Scientific Secutary, 2019-2022
IUVSTA

Applied Surface Science Division
Triennial Report (2019-2022)

Leszek Markowski (Poland) - Chair, John T. Grant (USA) - Vice chair

Division Representatives: Octavio Furlong (Argentina), Jennifer MacLeod (Australia), Wolfgang Werner (Austria), Rony Snyders (Belgium), Mauricio A. Algatti (Brazil), Katia Vutova (Bulgaria), Mladen Petravić (Croatia), Jiří Čapek (Czech Republic), Jari Koskinen (Finland), Olivier Renault (France), Michael Kopnarski (Germany), David Scurr (Great Britain), József Tóth (Hungary), Iris Visoly-Fisher (Israel), Francesco Ghezzi (Italy), Jiro Matsuo (Japan), Cheolho Jeon (Korea), Pierre Giovanni Mani-González (Mexico), Zafar Iqbal (Pakistan), Jenica Rozette Y. Uy (Philippines), Zhen-Chao Dong (P.R. China), Carlos Jose Macedo Tavares (Portugal), Dušan Pudiš (Slovakia), Alenka Vesel (Slovenia), A. Gutierrez (Spain), Johan Gustafson (Sweden), Johannes Schwenk (Switzerland)

Conferences:

1. 11-th Symposium on Vacuum based Science and Technology, November 19-21, 2019, Kołobrzeg, Poland
(https://svbst.tu.koszalin.pl/summary-of-11-th-symposium-on-vacuum-based-science-and-technology/**)**
The 11th Symposium on Vacuum based Science and Technology was organized by the Faculty of Mechanical Engineering and Koszalin University of Technology under auspices of the Polish Vacuum Society, German Vacuum Society, Clausius Tower Society and in collaboration with the BalticNet PlasmaTec, and with support of the ASSD of IUVSTA. During the Symposium the full-day tutorial course: *Fundamentals of High Power Impulse Magnetron Sputtering (HIPIMS)* was offered in the framework of the Society of Vacuum Coaters Educational Program. The Symposium gathered almost 80 attendees.

2. Surface Analysis 2020
which was organised by the ASSD of AVS was scheduled to be held 2-4 June 2020 at the Colorado School of Mines in Golden, Colorado. Unfortunately, due to the COVID-19 pandemic, the meeting was cancelled.

3. The 2021 Iberian Vacuum Meeting

Due to COVID-19, most of the events were postponed. Nevertheless, the 2021 Iberian Vacuum Meeting (RIVA Online (4-6th October 2021) https://aseva.es/conferences/riva-online/) was held online, with a combined organisation from the Spanish (ASEVA) and Portuguese (SOPORVAC) Vacuum Societies. The Iberian Vacuum Conference, (Reunión Ibérica de Vacío, RIVA) is a joint meeting of the Portuguese Vacuum Society (SOPORVAC) and the Spanish Vacuum Society (ASEVA), and follows the series started in Braga, Portugal, in 1988, with alternating location between Portugal and Spain. The main goal of this conference is to cover the fields of vacuum and its applications, hosting fundamental and applied sciences under a common umbrella, including applied surface science.

4. The Vácuo 2021 Workshop,

The Portuguese Vacuum Society, SOPORVAC, and its ASS division, held an in-person meeting, under the series of annual national workshops in Vacuum: Vacuo (November 9th at the Instituto Pedro Nunes in Coimbra).

5. The RIVA XII Iberian Vacuum Conference (https://www.riva2022.pt/)

The Iberian Vacuum and Applications Conference, RIVA, organized by the Portuguese Vacuum Society (SOPORVAC) and its ASS division, is a biennial joint meeting of the Spanish Vacuum Society (ASEVA) and (SOPORVAC), and follows the series started in Braga, Portugal, in 1988, alternatively changing the location between Portugal and Spain. The RIVA XII was organized in Braga (Portugal) during May 16-17 2022. The event is of high relevance in scientific fields related to surface science and engineering, biointerfaces, plasma science, materials processing technologies involving vacuum equipment, such as thin films, nanostructures, amongst other fundamentals and applications in vacuum science technology.

Other Conferences:

1. 3rd International Symposium of the Vacuum Society of the Philippines (ISVSP 2020), January 8-10, 2020, University of San Carlos, Cebu City, Philippines, with principal themes of the event: Raising the bar for Industry 4.0 and Vacuum Technology, was endorsed by Applied Surface Science Division.

2. The ASSD co-supported the IUVSTA workshop (submitted by Surface Engineering Division and Austrian Vacuum Society) entitled: **"Advances in the characterization of surface engineering structures, coatings, and thin films".** The aim of the workshop is to focus on the characterization techniques for nanostructures, composition, and properties of surface engineering structures, coating, and thin films. The workshop is planned to be held in spring fall of 2021 in Scholss Seggau, Austria.

3. The 67th International Symposium and Exhibition (https://avs67.avs.org/)
scheduled for October 2020 in Denver, Colorado was cancelled by the Convention Center. However, AVS has organized an online virtual showcase for 27-29 October 2020 which was available without any registration fee.

4. The 67th International Symposium and Exhibition (https://avs67.avs.org/)
scheduled for 24-29 October 2021 in Charlotte, North Carolina was converted to a virtual symposium due to COVID-19. Some sessions were held live, and consisted of both invited and contributed talks with live Q&A.

Other events:

1. Twenty-first International Summer School on Vacuum, Electron and Ion Technologies (VEIT 2019), 23 – 27 September 2019, Sozopol, Bulgaria (http://www.veit.ie-bas.org/)

This School is organized with the aim to act as a forum for interchange and dissemination of knowledge and ideas on the latest developments in electron-, ion- and plasma-assisted technologies. The scientific program included 5 topic lectures and 19 progress reports. VEIT 2019 was attended by 126 participants (32 students and young researchers) from 17 countries. The School Proceedings has been published in a special issue of Journal of Physics: Conference Series **1492**, 2020 (http://jpcs.iop.org)

2. Twenty-second International Summer School on Vacuum, Electron and Ion Technologies (VEIT), 20 - 24 September 2021, Bulgaria (http://www.veit.ie-bas.org/**)**
Because of the problematic Covid-19 pandemic situation, VEIT 2021 was in online format only. The School Proceedings has been published in a special issue of Journal of Physics: Conference Series **2240**, 2022.

3. The AVS ASSD Business Meeting
This Meeting was held virtually on 8th November 2021. Mark Englehard was the Chair for 2021, Greg Fisher is the Chair for 2022, and Alex Shard is the Chair-Elect. During the Business Meeting, presentations were given in memory of two of our members who had passed away, Martin P. Seah and Charles S. Fadley. Alex Shard gave the presentation in memory of Martin and Greg Herman gave that in memory of Chuck. It was mentioned that M. Tom Thomas passed away in 2021. The AVS elevated 12 of its members to Fellow in 2021, and we were proud that 4 of them are from the ASSD.

4. During the ECM-130 the bid proposal for the **IVC-23** (2025) was presented by the chair of the ASSD L. Markowski (local organiser - Institute of Experimental Physics, University of Wrocław and the Polish Vacuum Society).

Forthcoming events:

1. AVS 68th International Symposium & Exhibition (https://avs68.avs.org/)

The AVS 68th International Symposium & Exhibition is planned for Pittsburgh, Pennsylvania, as an in-person event, 6-11 November 2022. The weeklong Symposium fosters a multidisciplinary environment that cuts across traditional boundaries between disciplines, featuring papers from AVS Technical Division, Groups, Focus Topics on emerging technologies and more. An extensive Exhibition of related equipment, tools, materials, supplies, chemicals, services, consulting, technical literature, and new technologies are showcased during the week.

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Unfortunately, due to the Covid-19 pandemic many planned events have been cancelled or postponed to later dates.

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Acknowledgements

I would like to express my thanks to the members of the ASSD Divisional Committee and ASSD Divisional College, as well as to the officers of IUVSTA for their continuous support over the past triennium.

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Respectfully submitted, **August 19th, 2022**

Leszek Markowski - Chair of the Applied Surface Science Division of IUVSTA

3 Years Activity Report from IUVSTA BI division: 2019- 2022

Chair: Dmitri Petrovykh, vice chair: Miguel Manso, Secretary: Carlos R. Grandini

Major activities of BID included:

- a webinar on “Surface analysis of Nanomaterials: Needs & Challenges”;
- an application for external funding for a summer school;
- examination of GDPR compliance for IUVSTA mailing lists;
- Joined the program committee for IVC-22;
- Participation in the scientific committee for EVC-16;
- Participation in VVC-21 virtual conference.

1. The vice-chair of BID, Giacomo Ceccone, delivered a webinar on “Surface analysis of Nanomaterials: Needs & Challenges” on February 25, 2020. The presentation highlighted the importance of a detailed surface characterization and analysis for nanomaterials and nanoparticles and provided examples of how surface analysis techniques, such as XPS and ToF-SIMS, can be applied to these types of samples.

2. Miguel Manso, Dmitri Petrovykh, and Virginia Pérez Dieste have submitted a proposal for external funding for a summer school on “Nearly atmospheric pressure/environmental characterization with electron/ion techniques and their application to catalytic, energy and biomedical systems”. The application was approved, but the summer school could not be organized due to the pandemic situation.

3. The chair of BID, Dmitri Petrovykh, analyzed the available platform options for moving mailing lists to a solution compliant with GDPR (General Data Protection Regulation, EU), CCPA (California Consumer Privacy Act), and other emerging regulations. While these regulations are not yet enforced, the provisions are very strict and do not allow for a continuity or “grandfathering” approach, so it is important to future-proof this aspect of IUVSTA operations. Mailchimp was used to test setting up on a platform that provides a compliant solution. Unfortunately, Mailchimp was bought by a larger entity (Intuit) that offers only limited privacy considerations in handling the user data.

3 Years Activity Report from IUVSTA EMPD division: 2019- 2022

- Due to the pandemic, most of the activities were online.
- Members of the Disivison have expressed their opinions regarding Workshop, Short Courses and IUVSTA endorsments, through emails exchange.
- Invited speakers for EVC-16 in Marseille, France (November 21 – 26, 2021) have been proposed.
- Invited speakers for IVC-22 (Sapporo, Japan) have been proposed.

Respectfully submitted, August 2022.

Ivana Capan
EMPD Chair (trienium 2019-2022)

Triennium Divisional Report 2019-2022 - IUVSTA Nanometer Structures Division (NSD)

This report covers the main activities in between ECM 131 (Malmö) - ECM 137 (Virtual, 1-2 September 2022).

The Officers of the NSD in the triennium 2019 (July) - 2022(September):

Chair: Ana G. Silva, Portugal
Vice-chair: Shuji Hasegawa, Japan
Scientific Secretary: Carla Bittencourt, Belgium

Country	Members	Country	Members
Argentina	Silvina BENGIO	Italy	Andrea Lamberti
Australia	Lars Thomsen	Japan	Shuji Hasegawa
Austria	Christian Teichert	Korea	Youn Sang Kim
Belgium	Carla Bittencourt	Mexico	Víctor Hugo Méndez-García
Brazil	Alvaro José Damião	Pakistan	Asghari Maqsood
Bulgaria	Nikolay NEDIALKOV	Philippines	Sidney B. Palardonio
Croatia	Maja Mičetić	P.R. China	Hongjun Gao
Czech Republic	Antonín Fejfar	Poland	Ryszard Czajka
Finland	Kai Arstila	Portugal	Ana Gomes Silva
France	Frédéric Wiame	Slovakia	Štefan Luby
Germany	Tobias Voss	Slovenia	Rok Zaplotnik
Great Britain	Steven Schofield	Spain	Y. Huttel
Hungary	György Zoltán RADNÓCZI	Sweden	Magnus Borgström
Israel	Sidney Cohen	USA	Nancy A. Burnham

Ana G. Silva, Chair of NSD division, would like to acknowledge Shuji Hasegawa and Carla Bittencourt, Vice-Chair and Secretary of NSD division, respectively, for their support. Moreover, Ana G. Silva acknowledge the NSD members which contributed for the visibility and activities of NSD division, as reported below.

Special thanks: Ana G. Silva would like to give special thanks to former NSD officers, Christian Teichert and Sidney Cohen for their constant and valuable support, for active participation in discussions and for sharing their experience.

Report

Workshops and schools expected for 2020, were postponed due to the pandemic situation (Covid-19) between Feb 2020 until March 2022, during which travelling, and meetings in-person were not allowed or under heavy restrictions rules. To avoid overlapping, careful management of the dates for the previously planned activities was done and implementation as 100% online or hybrid events was adopted. Nevertheless, although the pandemic period, the members of the division were very active and successful implementing 100% virtual or hybrid scientific events.

NSD Division COMMITTEE MEETINGS

- Divisional committee meeting (in-person) on 4th July 2019 at IVC-21, Malmö, Sweden, with the presence of Ana G Silva (Chair), Sidney Cohen of Israel Vacuum Society, Miroslav Kolibal and Tomas Sikola both of Czech Vacuum Society. Several matters were discussed such as support organization of summer schools, endorsements of symposiums and promotion of webinars. All members the division for this triennium were invited.
- Virtual meeting of current and former NSD officers, promoted by Ana G Silva, to discuss perspectives regarding future NSD + (ICN+T) steering committee in IVC congresses beyond 2022. Ana G Silva, Shuji Hasegawa, Carla Bittencourt, Sidney Cohen, and Christian Teichert joined the meeting. Minutes of this meeting with the opinions of the NSD officers was sent to the chair of ICN+T steering committee, Sander Otte.
- Virtual meeting of current and former NSD officers, promoted by Ana G Silva, to discuss the participation of NSD members and officers in the ICN+T Conference when held together with IVC, particularly in the next IVC-22. Ana G Silva, Shuji Hasegawa, Carla Bittencourt, Christian Teichert and Sidney Cohen, joined the meeting. Minutes of this meeting was sent to the chair of IVC-22, Katsuyuki Fukutani, which acknowledged NSD officers for their effort and contribution for the success of IVC22.
- Virtual meeting, promoted by Ana G Silva, to discuss the organization, among NSD members and officers in the IVC 22 committee, regarding abstracts reviewing and selection processes and the organization of the several topics. Shuji Hasegawa, Ana G Silva, Sidney Cohen, and Carla Bittencourt joined the meeting.

IUVSTA WORKSHOPS and SCHOOLS

- 90th IUVSTA Workshop "**Tuning properties of advanced energy materials using modern theoretical and experimental methods**" proposed by IUVSTA Surface Science division (SSD, Maria Carmen Asensio) and Nanometer Structures division (NSD, Ana G Silva) expected to be 24th-28th May 2020 in Valencia, Spain. https://www.uv.es/temtem20/ Postponed: expected for September 2022 in-person. https://zh-cn.facebook.com/df.fct.nova/posts/90-iuvsta-workshop-tuning-properties-of-advanced-energy-materials-using-modern-t/2520883761459717/

- 91st IUVSTA Workshop **"Surface Chemistry of Catalytic Systems"** chaired by Baran Eren, Weizmann Institute of Science, Rehovot, Israel, at The David Lopatie Conference Centre, Weizmann Institute of Science, planned to be 7-11 June 2020. http://www.weizmann.ac.il/conferences/SCCS2020/. Postponed and held between 27-28 February 2022 as hybrid event.

- 92nd IUVSTA Workshop on **"Advanced Spectroscopy and Transport for 2D Materials at Surfaces",** chaired by Shuji Hasegawa, vice-chair of NSD division, to be held at Okinawa Institute of Science and Technology Graduate University, Okinawa, Japan, planned to be 13-17 September 2020. Postponed for 19-22 September 2022, in-person.

- 18th IUVSTA School: Summer School on **"Physics at Nanoscale"** [part of school series, with previous schools at 2017 (as 16th IUVSTA school), 2014, 2011 (10th), 2008 (9th), 2005] cochaired by Tomas Sikola, Brno University of Technology and CEITEC, and Antonín Fejfar, member of NSD division, to be held at Skalský Dvůr, Bystřice nad Pernštejnem, Czech Republic, planned to be 31 May and 6 June 2020. Ana G Silva invited member of the program committee. http://surfaces.fme.vutbr.cz/news/iss-international-summer-school-2020/ Postponed and held between May 31st – 4th 2021 as hybrid event, https://www.skalskydvur.cz/. Participants from Czech Republic could attend in person, within a limited number.

IUVSTA CONFERENCES

- **IVC 22 (2022)**: The IUVSTA NSD division, officers, and members, while members of the NS subcommittee of the IVC22 Programme Committee, has been very active and strongly involved contributing for the organization of IVC22 suggesting and proposing Plenary, Keynote and Invited speakers and proposing topics for the several sessions, in the process of reviewing and selection of abstracts submitted for oral and/or poster presentation. Shuji Hasegawa and Ana G Silva, respectively vice-chair, and chair of the NSD, are the domestic chair and international vice-chair of the NS subcommittee of IVC22.
- **ECOSS** The 35th European Conference on Surface Science: Carla Bittencourt, was involved in the organization of ECOSS which was postponed to 2021 https://ecoss2020.uni.lu/, and in the organization of **EVC 16** also to be held in 2021: 30 May – 4 June 2021, Marseille, France, EVC 16 16th European Vacuum Conference https://www.evc16.org/.
- **IVC 24 (2028):** Ana G Silva joined the Organizing Committee of the Portuguese Proposal for organizing IVC-24, 2028, in Braga, Portugal. The proposal for IVC -24 was submitted and presented by Carlos Tavares, President of the Portuguese Vacuum Society, SOPORVAC.

OTHER SCIENTIFIC ACTIVITIES developed by the NSD Members

- Workshop on "**Electron Microscopy and its applications**" organized by Ana G. Silva (NSD) and Carla Bittencourt (NSD), endorsed by NSD and Electronic Materials and Processing (EMP) IUVSTA divisions, and supported by the Materials Institute of UMONS, was held on 28 and 29 April 2021, 100% online. https://web.umons.ac.be/materiaux/event/electron-microscopy-and-applications-workshop/
- Hybrid "**International Symposium on Nanoscale Research**" organized by Christian Teichert, of Austrian Vacuum Society. The Symposium was held between 20th – 21st September 2021 (two full days), Montanuniversität, Leoben, Austria. The Symposium was very well attended (140 registrations) in-person and virtually.
- Sidney Cohen, of Israel Vacuum Society, reported on several activities related with Nanometer science. The **Israel Vacuum Society** set up over the past year a series of webinars on nanotubes, graphene, atomic-scale investigation of battery surfaces, etc. They are all on this website (Dec 2021). https://www.ivs.org.il/IVS2016/Templates/showpage.asp?DBID=1&LNGID=1&TMID=84&FID=3501 All talks are archived and can be watched.
- Sidney Cohen, reported on The Israel annual conference online which contained sessions on nano (Nov 2021https://www.ivs.org.il/IVS2016/Templates/showpage.asp?DBID=1&LNGID=1&TMID=84&FID=2434

- Workshop on "**Synthesis of nanoparticles: applications and new perspectives**" Condensed matter in Madrid, to be held at School of Engineering, Madrid, Spain, 31 August - 4th September 2020, online. The workshop was proposed by Yves Huttel, Spain, member of NSD division. www.cmd2020gefes.eu/28512/programme/2020-joint-conference-of-the-condensed-matter-divisions-of-eps-cmd-and-rsef-gefes.html
- Workshop proposed by J. L. de Segovia, member of the Spanish Vacuum Society and IUVSTA Nanometer Structures division (NSD, Ana G Silva) on "**Metal-oxide ultrathin films and nanostructures**" Salamanca (Spain), 6th and 10th July 2020. Proposal supported by the Spanish Vacuum Society and sponsored by the IUVSTA Surface Science division (SSD) and Applied Surface Science division (ASSD). Cancelled.
- The **7th Congress of Polish Vacuum Society**, Wrocław, Poland, July 4-5, 2019. During this congress Prof Dr hab. Ryszard Czajka started his triennial cadency as the PVS President. The Congress was co-organized by PVS, Wroclaw University of Technology and Committee for Electronics and Telecommunication of Polish Academy of Sciences.
- Workshop proposal: Carla Bittencourt and Ana G Silva, had intentions of submitting a workshop proposal to be held in Trieste. Due to Covid-19 pandemic situation it was decided to postpone the proposal.
- "The Turn of Events, Bringing Business Events Back Virtual Platform" organized by Arinex Team: Ana G Silva was attending, virtually. The opportunity was kindly offered by Nicole Walker CEO of Arinex Team. It was a good opportunity to join a hybrid international event, especially appropriate in pandemic situations.
- Wojciech Koczorowski, of Polish National Vacuum Society provided information to the Polish Vacuum Society members regarding the activities of the NSD and the possibility of obtaining support for organizing workshops and technical training courses and schools.
- Lamberti Andrea of Italian National Vacuum Society provided information to the members of Italian Vacuum society and scientific networks about the activities of NSD division and IUVSTA.
- Ana G Silva, member of Scientific committee, of RIVA XI, 2021, Iberian Vacuum Meeting, 4-6 October 2021, 100% online. As member of the committee Ana G Silva suggested names for potential invited speakers, reviewed and selected abstracts for oral/poster presentations. https://aseva.es/conferences/riva-online/committees/
- Ana G Silva, member of Scientific Committee, of RIVA-XII, 2022, Iberian Vacuum Conference, 16-17 May 2022, Braga, Portugal, in-person. As member of the committee Ana G Silva suggested names for potential invited speakers, reviewed and selected abstracts for oral/poster presentations. https://www.riva2022.pt/conference/committees

EDUCATION – IUVSTA WEBINAR's

- Dr Giacomo Ceccone, IUVSTA Webinar, within NSD and SSD scientific divisions, on "**Surface analysis of nanomaterials needs and challenges**", 25 Feb 2020, 14:00 CET.
- Dr José Miguel García Martin, Instituto de Micro and Nanotecnología, Consejo Superior de Investigaciones Científicas. Spain, IUVSTA/IOP Webinar on "**Nanocolumnar films: applications in medicine, energy and aerospace**", 02 November 2021. Webinar promoted by Yves Huttel (NSD). Nanocolumnar films: applications in medicine, energy and aerospace – Physics World
- Dr Yves Huttel (NSD), Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas. Spain: IUVSTA/IOP Webinar on "**Past, present, and future of Gas Aggregation Source for Nanoparticle Synthesis. A unique tool for fundamental studies and applications**", 25th November 2021. Past, present and the future of gas aggregation sources for nanoparticle synthesis – Physics World

ENDORSEMENTS

- Virtual Vacuum Congress, VVC 21, 6-8 October 2021, Chair Anton P. J. Stampfl, President of Australian Vacuum Society.
- 93rd IUVSTA Workshop on "Advances in the characterization of surface engineering structures, coatings and thin films" organized by Austria Vacuum Society and proposed by Ivan Petrov, to be held in October 2022 in-person.

IUVSTA NSD New member society

- During last triennium Serbian Vacuum Society (SVS) integrated for the first time NSD division. Dr. Vladimir Rajić, Vinča Institute of Nuclear Sciences of University of Belgrade, is first divisional representative of Serbian Vacuum Society (SVS). The Chair of NSD, Ana G Silva, welcomed and established contacts and discussions with Dr. Vladimir Rajić regarding the procedure to submit proposals providing him guidelines for the purpose.

Election of the NSD Officers for the triennium 2022(September)-2025

The Chair of NSD division for the triennium 2019-2022, Ana G Silva, promoted the election of the NSD new officers for the next triennium 2022-2025, starting in September 2022. There was a period given to the Members to express their interest and to volunteer to serve as officer of NSD division followed by a period for voting. There was one volunteer for chair position, Carla Bittencourt and one volunteer for vice-chair position, Yukio Hasegawa. For secretary there were two volunteers: Wojciech Koczorowski from Polish Vacuum Society and Yuyang Zhang from Chinese Vacuum Society. Chair and Vice-Chair were both elected among the nominated NSD members for the triennium 2022-2025, with no objections. As for the secretary Wojciech Koczorowski was elected by majority of the votes.

The NSD officers for next triennium 2022(September)-2025 are:
Chair: Carla Bittencourt, national representative of Belgium Vacuum Society.
Vice-Chair: Yukio Hasegawa, national representative of Japanese Vacuum Society.
Secretary: Wojciech Koczorowski, national representative of the Polish Vacuum Society.

Ana G Silva

Chair of the NSD for the triennium 2019-2022

Lisboa, 22. August 2022

Divisional triennium report 2019 - 2022
Plasma Science and Technique Division

Chair: Satoshi Hamaguchi (Japan)
Vice Chair: Deborah O'Connell (Great Britain)
Secretary: Miran Mozetič (Slovenia)

Summary of PSTD activities from 2020

1. WS/Sch/TTC/SC by PSTD

   - 94th IUVSTA Workshop on reliable sensing and control of reactive plasmas (29 May-2 June, 2022. Kranjska Gora, Slovenia)

2. Applications for WS/Sch/TTC/SC from PSTD

   - "IUVSTA Workshop on plasma-assisted conversion of gases for a sustainable future" (Cerklje na Gorenjskem, Slovenia, Dec. 2023) by Slovenian Vacuum Society
   - TTC "Plasma and Society II" Jan. 2023 by Vacuum Society of the Philippines

3. Division Officers for 2023-2025 Triennium

   Chair: Miran Mozetič (Slovenia)
   Vice Chair: Deborah O'Connell (Great Britain)
   Secretary: Satoshi Hamaguchi (Japan)

4. Applications for WS/Sch/TTC/SC from PSTD

   - "IUVSTA Workshop on plasma-assisted conversion of gases for a sustainable future" (Cerklje na Gorenjskem, Slovenia, Dec. 2023) by Slovenian Vacuum Society
   - TTC "Plasma and Society II" Jan. 2023 by Vacuum Society of the Philippines

5. Ongoing Online Seminars in the PST area

   - GEC International Online Plasma Seminar – IOPS; https://www.apsgec.org/main/iops.php
   - Online Low Temperature Plasma (OLTP) Seminar Series; https://mipse.eecs.umich.edu/ltp_seminars.php
   - Physics informed Artificial Intelligence in Plasma Science (PiAI) Seminar Series; http://www.ppl.eng.osaka-u.ac.jp/JSPS_Core/seminars.html

6. The following on-site/hybrid international meetings were held recently in the PST area

- Sherwood Fusion Theory Conference (4-6 April, Santa Rosa, CA, USA)
- 4th International Symposium of the Vacuum Society of the Philippines (ISVSP 2022) (20 to 22 April 2022) online
- 65th Annual SVC Technical Conference (2-5 May 2022, Long Beach, CA, USA).
- 94th IUVSTA Workshop on reliable sensing and control of reactive plasmas (29 May-2 June, 2022. Kranjska Gora, Slovenia)
- ALD/ALE 26 -29 June, Ghent, Belgium
- The 9th International Conference on Plasma Medicine, 27 June to 1 Jul. 2022, Utrecht, Netherlands
- The 48th EPS on Plasma Physics, 27 June to 1 July 2022 (online conference)
- Gordon Research Conference: Plasma Processing Science (24-29 July 2022, Proctor Academy, NH, USA)
- The 25th Europhysics Conference on Atomic and Molecular Physics of Ionized Gases (ESCAPMPIG 2020): 19-23 July 2022, Paris, France.
- *The 29th Symposium on Plasma Physics and Technology (originally scheduled for 20-23 June 2022, Czech Republic.) was cancelled. It may take place in 2024, according to its webpage.*

7. Currently, two COST actions are running in the PST area;

CA19110 – Plasma Applications for Smart and Sustainable Agriculture (Oct. 2020-Oct. 2024)

CA20114 - Therapeutical applications of Cold Plasmas (Sept. 2021-Sept. 2025)

8. The following meetings are scheduled in 2022 and 2023;

- The 23rd International Conference on Gas Discharges and their Applications (GD2022), 28 Aug. -2 Sep. 2022, Greifswald, Germany
- Workshop on ion chemistry and plasmas (30, 31 Aug. 2022, Bratislava, Slovakia)
- 9th Central European Symposium on Plasma Chemistry (CESPC-9) & COST Action CA19110 workshop Central Europe (4-9 Sep. 2022, Vysoke Tatry, Slovakia)
- The 22nd International Vacuum Congress (IVC-22), 11-16 Sep. 2022, Sapporo Japan.
- 18th International Conference on Plasma Surface Engineering (PSE2022) (12-15 Sept. 2022, Erfurt, Germany)
- 25th International Plasma School on “Low Temperature Plasma Physics: Basics and Applications” (October 1-5, 2022) and its Master Class “Electric Propulsion” (October 6-8, 2022).
- 11th International Conference on Reactive Plasmas/ 2022 Gaseous Electronics Conference (3-7 Oct. 2022, Sendai, Japan)
- 64th Annual Meeting of the APS Division of Plasma Physics (17-21 Oct. 2022, Splane, WA, USA)
- NANOCON (19-21 Brno, Czech Republic)
- AVS 68th International Symposium & Exhibition (6-11, Nov. 2022, Pittsburgh, PA, USA)

- 31st International Toki Conference on Plasma and Fusion Research (ITC31) (8-11, 2022, online)
- 43rd International Symposium on Dry Process (DPS) (24-25 Nov. 2022, Osaka, Japan, Hybrid)
- 29th International Congress on Plasma Physics (ICPP 2022), (27 Nov – 2 Dec. 2022, Gyeong Ju, Korea.)
- 24th Symposium on Application of Plasma Processes (SAPPXXIV)/13th EU-Japan Joint Symposium on Plasma Processing (JSPP-13), 27 Jan. 1 Feb, Strbske Pleso, Slovakia.
- 15th International Symposium on Advanced Plasma Science and its Applications for Nitrides and Nanomaterials (ISPlasma2023)/16th International Conference on Plasma-Nano Technology & Science (IC-PLAMTS2023) (5-9 Gifu, Japan).
- 4th International Conference on Data-Driven Plasma Science (ICDDPS-4/14th EU-Japan Joint Symposium on Plasma Processing (JSPS-14), 16-21 Apr. 2023, Okinawa, Japan
- The 25th International Symposium on Plasma Chemistry (21-26 May 2023, Kyoto, Japan)
- The 35th International Conference on Phenomena in Ionized Gases (ICPIG) (9-15 July 2023, Egmond aan Zee, the Netherlands).
- 20th International Symposium on Laser-Aided Plasma Diagnostics (10-14 Sep. 2023, Kyoto, Japan)
- PLATHINUM (11-15 Sept, 2023, Antibes, France)

Satoshi Hamaguchi

Chair of the Plasma Science and Technologies Divisional Committee

3 years Divisional Report 2019-2022:
IUVSTA Surface Engineering Division
Ivan Petrov

1. The Surface Engineering Division sponsored the 96th workshop entitled “HiPIMS Today - Recent Development of High-Power Impulse Magnetron Sputtering” which took place entirely on-line event for three half days on January 20-22, 2021.

There were 272 participants from 36 countries. The program included two one-hour oral sessions per day with three speakers in each hour. There were three one-hour mingling sessions, one before, one in the end, and one in-between the oral session. The total length of a workshop day is then five hours. There were 17 invited presentations, 20 min long, and each speaker was given a breakout room during the mingling session following the oral session. There were also 15 breakout room presentation. The four exhibitors, too, gave breakout room technical presentation, after which they were able to interact with participants.

The workshop covered a range of topic which currently are actively investigated: bipolar HIPIMS, recent development in pulsed plasma diagnostics tools, optimization of HiPIMS process parameters, and the role of metal ions irradiation for low temperature film growth. The main feature of the workshop, which attracted a great attention from the participants, was the mingling sessions after each invited lecture, having very intense and fruitful discussions in view of understanding of HiPIMS plasma physics and its impact on the film growth, connecting it to the novel process development. On the feedback questionnaire from the participants, 95% of the respondents think the interactions with the invited speaker in the mingling session were valuable, and all respondents wish to hold the workshop in near future. Having such a positive feedback, the workshop was a great success. Thanks are due to the workshop chairs **Ulf Helmersson, Tetsuhide Shimizu, and Daniel Lundin.**

The final report of the 96th workshop can be found here

https://iuvsta.org/main/wp-content/uploads/2021/10/96thWorkshop.pdf

2. The Surface Engineering Division is working on one approved workshop – the 93rd workshop “Advances in the characterization of surface engineering structures, coatings, and thin films” which will take place at Schloss Seggau Castle near Graz, Austria. Initially the workshop was planned to be held in October 2021. Because of the uncertainty with the pandemic, the Division and the Austrian hosts decided to reschedule the 93rd IUVSTA workshop for October 15 – 19, 2023.

3. The SED has been working with Professor Eiji Kusano on the SE/ISSP(4) and SE/ISSP/PST(4) joint sessions with respective keynote and invited speakers at IVC22.

4. We have been working with Francois Reniers on organizing the IUVSTA highlight seminar in the honor of Joe Greene at IVC22

5. The election of officers for the SED for 2022-2025 triennium resulted in the following slate:

SED Chair: Professor Christopher Muratore, USA

SED Vice-Chair: Professor Peter Schaaf, Germany

SED Secretary: Professor Dr. Monika Jenko – Slovenia

Surface Science Divisions Triennial Report (2019-2022)
for the 21st General Meeting of IUVSTA

The Surface Science Division has cooperatively achieved many goals during this past Triennium. The SSD's main activities have been focused on promoting IUVSTA's Workshop and School as well as on the supervision and support of a wide range of scientific actions realized by its members. A detailed list of Workshops and Schools approved during the Triennium has been addressed in separate partial reports of the Division. For more information on each scientific event sponsored and supported by the SSD, please see the Website: http://iuvsta.org/scientific-activities/.

During the Triennium 2019-2022, the elected division officers were: Prof. Maria C. Asensio, Prof. Mario Rocca, and Prof. Fumio Komori, as SSD Chair, Vice-chair, and Secretary, respectively.

The SSD members have been particularly active in the following activities during 2019-2022:

- Update the current Scope and the main Topics of the Division. The Topics of the SSD have been discussed and redefined, considering highly prosperous new scientific research areas such as surface states in topological material, nano-structured surfaces, and surfaces in quantum materials. A formal document has been prepared and sent to the IUVSTA STD officers with the main Topics of the Division to be discussed with similar documents produced by the other IUVSTA Divisions.

- Significant scientific contribution and expert advice to the programs to the IUVSTA general conferences and the scientific agenda of the following general meetings: VASSCAA, ECOSS, EVC, and IVC held during the past Triennium.

- On the SSD website of IUVSTA, the SSD members have contributed to including content introducing themselves briefly and their scientific activity in diverse SSD fields to increase the visibility of SSD.

- In particular, the SSD members have worked closely with the program committee of IVC-22, Sapporo, by inviting the plenary and invited speakers, organizing sessions of Focus Topics in collaboration with NDS, ASSD, and VSTD, and evaluating the contributed papers. The number of contributed papers submitted to SSD of IVC-22 is the largest of the divisions and Focus Topics.

- The SSD has actively supported the IUVSTA workshop 92 in Okinawa, Japan, on Advanced Spectroscopy and Transport for 2D Materials at Surfaces with Prof. Shuji Hasegawa, vice chair of the NSD. The workshop will be held in a hybrid form as the satellite meeting of IVC-22 for four days from Sep. 18. The number of participants will be 60~70, including 40 in-person participants from France, Germany, the US, Korea, Taiwan, and Japan.

- The SSD has supported the 34th Symposium on Surface Science (3S22) which took place from Mar. 13 to Mar. 19, 2022, in St Christof am Arlberg (Austria), organized by Ulrike Diebold and Fritz Aumayr of the Technical University of Vienna. It counted about 80 participants and was a total scientific success.

- The SSD has participated scientifically at the 5th international conference on Applied Surface Science (ICASS 5), organized by Elsevier, which took place in Majorca (Spain) from Apr. 25 to Apr. 28, 2022. It saw the participation of some 500 participants, out of which many were pure Surface Scientists. It had four parallel sessions. Also, in this case, the level of the presentations and the discussions was very high.

- The SSD has contributed to the conference series of the European Congress on Surface Science (ECOSS) was restarted after the pandemic. The previous edition was in 2018. The next conference (35th edition) will take place from Aug. 29 to Sep. 2, 2022 in Luxembourg. It will have five parallel sessions.

- The SSD members contributed to them 2nd international Symposium on Confinement controlled chemistry between Sep. 19 and Sep. 21, 2022 at the Ruhr University in Bochum, organized by Karina Morgenstern.

- The SSD members have contributed to the scientific content of the 5th edition of the Workshop on Scattering of Atoms and Molecules from Surfaces (SAMS 5) will take place in Cambridge from Sep. 12 to Sep. 15, 2022.

- We continue the collaboration with Prof. Ana G Silva, Chair of the NSD, Prof. María C. Asensio, Chair of the SSD, and Prof. Juan Sanchez as co-chairs of the IUVSTA workshop 90#-IUVSTA Workshop: "Tuning properties of advanced energy materials using modern theoretical and experimental methods," which due to the pandemic problems will be held end 2022, with a similar venue to the initially planned in Valencia, Spain.

Elections of the SSD officers for the Triennium 2022-2025

The SSD officers have participated in and supervised the Chair, vice-chair, and secretary electoral process of the SSD division for the next Triennium. The ballot was conducted among the new SSD Electoral College members through E-mail. The results indicate that the SSD officers for the next Triennium (2022-2025) are: Prof. Maria C. Asensio, Prof. Mario Rocca, and Prof. Fumio Komori, as SSD Chair, Vice-chair, and Secretary, respectively.

Acknowledgments

All the SSD officers would like to sincerely thank the members of the SSD Divisional Committee and SSD Divisional College, as well as all the officers of IUVSTA committees and scientific divisions, for their continuous support and very positive contributions over the past triennium.

Respectfully submitted by Prof Maria C. Asensio, Chair of the Surface Science Division, with the help

of the secretary and vice chair of the SSD, Prof. Komori and Rocca, respectively.

Madrid, 19th August 2022.

Report Thin Film Division Triennium 2019-2022

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In August 2019 I was elected as a Chair of Thin Film Division of IUVSTA. In past period, on the Croatian Vacuum Society meetings and assembly I was presenting information on the possibility of sponsoring a workshop or school by IUVSTA and, as elected Co-chairmen of the 18th International Conference on Thin Films & 18th Joint Vacuum Conference / ICTF-JVC 2020, I was encourage scientist for the participation on the conference.

Because of the verious reasons and possible problems due to Corona virus on 19th February this year I was organised a meeting with the conference Co-Chair Dr. Béla Pécz and the Chair of Local Organizing Committee Dr. Attila Csík in Budapest. We have discussed the existing problems mainly related how to increase of number of applications and how to manage the conference if the problem with Corona virus will be escalated. We have concluded that the extension of the abstract submission and registration deadlines have to be prolonged and that, with our personal contacts, we have further invited the scientists to the conference. After this meeting I send an invitation to the thin films and vacuum scientific community in Croatia and invite personally more international scientists to the ICTF-JVC 2020. I was also applied for the participation on the ECM-132 meeting that was recenty cancelled.

The Thin Film Division (TFD) during the last period (since ECM 132) was focus to keep the incentive the members to participate with new idea for opportunities of the participation on 18th International Conference on Thin Films & 18th Joint Vacuum Conference / ICTF-JVC 2020 and to keeping informed the national vacuum and thin film socieates on the TFD activities. We have informed the division members with a IUVSTA Workshops and Schools call for proposals that will be due. Besides we keep improving the interaction of the members of the national societies and professional institutions offering the IUVSTA framework as relevant resource to expand thin film technology science.

A special event for our The Thin Film Division (TFD) in the previous period was holding of the 18th International Conference on Thin Films & 18th Joint Vacuum Conference / ICTF-JVC.The ICTF is one of the tri-annual conference series endorsed and co-organized by the Thin Film Division of IUVSTA. The JVC is the Joint Vacuum Conferences organized at two-year periods by the Austrian, Croatian, Czech, Hungarian, Slovak and Slovenian national vacuum societies. The main purpose of these conferences is to exchange ideas in vacuum sciences and technology. These conferences have been traditionally face-to-face and held in the real world that involves live presentations and a lot of personal contacts. Due to coronavirus pandemic for the first time under the IUVSTA, such big conference was organized

on-line by internet. As a co-chair of the conference I was in contact with organizers - prof. József Gyulai, prof. Béla Pécz and dr. Attila Csik - from the Hungarian Vacuum Society in order to support them for their tremendous efforts to switch from standard way of organizing conference to the completely virtual scheme of organization. This was for the first time in the history of IUVSTA that the conference was held fully online. Besides, this was also an opportunity to create a productive scheme for possible future conferences. We have encouraged participations of national societies on such electronic conference to achieve good scientific impact with the meetings that are “virtual” via remote/teleworking technology. Here, I also enclose my welcamme speech at the conference:

“Dear host, dear collleges,
On behalf of the Thin Film Division of the International Union for Vacuum Science, Technique and Applications (IUVSTA), it is my pleasure and privilege to welcome all the distinguished participants to this 18th International Conference on Thin Films which will be organised together with 18th Joint Vacuum Conference. The ICTF is one of the tri-annual conference series endorsed and co-organized by the Thin Film Division of IUVSTA. The JVC is the last of the Joint Vacuum Conferences, which are organized at two-year periods by the Austrian, Croatian, Czech, Hungarian, Slovak and Slovenian national vacuum societies.

These conferences have been traditionally face-to-face and held in the real world that involve, travel, hotel stays, conference halls, live presentations and a lot of personal contacts. The coronavirus pandemic is profoundly changing our consciousness and societal norms. Therefore, we are encouraging applications to consider how we could achieve scientific impact with meetings that are “virtual” via remote/teleworking technology or by a “hybrid” event with both in person and remote options running simultaneously. Although these are tough times, our history has proved that tremendous breakthroughs have been made in such times of trial. We should consider the current situation as a chance to create a productive scheme for the future conferences. Basically, the main purpose of these conferences is to exchange ideas in vacuum sciences and technology and participating in this exchange will be, on the one hand, younger researcher and, on the other, high level experts of international repute. The science and technology of thin films cover various scientific fields from semiconductor science to life science and medicine including applied research that supports the general public. The commitment by each member of national societies of Thin Film Division is by transmission and exchange through IUVSTA’s international conferences, Schools, Short Courses and Technical Training Courses, playing an important role in the future as the driving forces behind the progress of science and technology beyond the boundaries of the various fields of science.

At the end I would like to express my sadness that we are not in such beautiful city Budapeset that I personally visit very often. We can only thank to organiser of the conferences to prof. József Gyulai, prof. Béla Pécz and dr. Attila Csik - from the Hungarian Vacuum Society for their trimendous efforts to switch from standard way of organising conference to the completely virtual scheme of organisation. This is for the first time in the history of IUVSTA that the conference will be hold fully online.
Thank you.”

We have also worked on how to pay tribute at the huge contributions of Peter Barna to the organisation of the ICTF and JVC conferences – essentially, he was established both. We have prepared a speciall letter to include in the IUVSTA publications and which part was presented at the opening ceramony of the ICTF-JVC 2020 congres in Budapest.

During last three years period I have continued to inform the membership of our division on the opportunities provided by IUVSTA regarding financial support holding international conferences, schools, short courses and technical training courses, about the opportunities provided by IUVSTA regarding financial support in holding schools, conferences and workshops, as well as about scholarships and awards to which members can apply.

Regarding organisation of the next ICTF2023 we have received two bids from France and Spain among the Spain was winer. The conferece will be held at Burgos, Spain. September 26-29th 2023.

At last, in August 2022, I was involved in the procedure for the IUVSTA election of Division Officers for the next 2022-2025 triennium.

Mile Ivanda
Chair of Thin Film Division of IUVSTA

VSTD Report Triennium 2019-2022

Marcelo Juni Ferreira, Chair; Martin Wüest, Vice-Chair; Joe Herbert, Secretary

The Vacuum Science and Technology Division (VSTD) during the last period since ECM 132 until 137 was focus to incentive more interaction among members and possible opportunities of interaction. This period was coincident with the pandemic period and had strong impact on events and their organization arrangements.

Most of the interaction were based on the local possibilities for each IUVST membership society, reflecting in a considerable decrease of usual requests for IUVSTA support for events as schools, workshops or conferences. Even with the hybrid or virtual option the number of participants were also affected.

The available option for a presential event in IVC Sapporo organization, indicate the next triennium will show the return of events including the virtual participation, what it presents as an improvement as option for interactions.

The new division officers received an expressive list of welcome communication for the new triennium, what already shows the new members (several new-commers) already pointed for a good environment for the next period.

President Inaugural Statement: François Reniers

Three years ago, when the Belgian Vacuum Society proposed my name as future president for IUVSTA, I was full of ambitious goals for the Union. In my “vision”, that I will only briefly summarize here, I wanted to take advantage of the multicultural and worldwide nature of IUVSTA to generate new ideas through extended exchanges between people. To do that, I proposed to modify the format of ECMs to allow more time for brainstorming and discussions.. I had also the ambition for IUVSTA to have a higher ***societal impact***, by being more involved in societal challenges, such ***as climate change, sustainability, diseases, ageing of part of the world population,…***I proposed to better interact with ***international organizations***, increase the number of members, and take better care of the existing ones. I also suggested to ***rebuild the communication strategy*** for the benefit of the members, and to work, together, on how to increase the number of workshops and schools. Finally, there was a chapter on a ***better coordination*** of IUVSTA – conferences.

And then COVID came….

During three years, the activities of the Union have been strongly reduced. Thanks to the impulse and the energy of the President of the 2019-2022 triennium, Anouk Galtayries, the Union could survive, through monthly virtual meetings between the officers, through virtual ECMs and General assemblies, and through a few hybrid meetings. The help and the huge work of the Secretary General, Christoph Eisenmenger-Sittner, to organize all the new virtual procedure were immense. All the officers, Jay Hendricks, Scientific Director, Katsuyuki Fukutani, Scientific Secretary, Arnaud Delcorte, Treasurer, Lars Montelius, past-President, did their duties in very difficult times. The help of the recording secretary, Ana Silva, was greatly appreciated. Some workshops and schools also took place, but in a new format. The IUVSTA prizes, Ebara award, and Welch awards have been awarded thanks to the award and scholarschip committee headed by Martin Wüest, and the IUVSTA communication is more active than ever thanks to the communication committee headed by Ivan Petrov. Webinars have been launched thanks to the Education committee headed by Alberto Tagliaferro. The congress planning committee, headed by Anton Stampfl, gives us now a clear view of future events, avoiding overlapping between conferences.

Remarkably, some major changes, that were listed in my “vision”, already started: 2022 is the International Year of Basic Sciences for Sustainable Development (IYBSSD2022). IUVSTA is one of the founding actors for this decision of the United Nations. A new informal workgroup dedicated on sustainability was launched…

The ***direction*** for IUVSTA doesn’t change, only the roads are different. On top of the COVID pandemic, we are now facing in most parts of the world an economic crisis. This is making the core business of IUVSTA more difficult than ever. Therefore, my main duty as president, for the next 3 years, will be to help IUVSTA and its member societies, together with the officers, the divisions, and the members of ECMs, to go over these trouble waters. For most of the member societies, the regular activities have been, at best, transformed to virtual events, at worst, postponed or even cancelled. In all our laboratories through the world, research was basically stopped during at least 6 months. Teaching went to virtual in most schools and universities, and we already see now the psychologic disaster for the young population in many countries. We should take care of this: young people are the future of the society. Human beings are social animals, and being forced to interact through computers and screens only is against our profound nature. More than ever, ***Science*** and ***Education***, the two main businesses of IUVSTA, are necessary. Therefore, during the 3

coming years, starting now in Sapporo, we will work on getting IUVSTA back to ***enthusiasm, creativity, imagination***. We are lucky, as we build on an already solid base, thanks to what has been done during the current triennium and before. More specifically, together with the Scientific director, we will continue to work on increasing the number of workshops and schools. The Union has already increased twice the budget for workshops and schools and, despite this, this budget is never fully used. The last triennium is of course exceptional, but the total amount available is not the key. In the last triennium, we decided to increase the maximum amount allowed by event, to facilitate their organization. Unfortunately, we could not validate the efficiency of this decision due to the pandemic. We will continue with the same amount per event this triennium, and we will accompany the candidates to promote more workshops and schools. To broaden the attendance to our events, to reach new people, to be an example for new generations, IUVSTA will promote ***diversity*** and ***inclusivity*** in all the events that will carry the IUVSTA logo

Sustainability is not only a keyword for many of our research projects, it should also be reflected in our management. Therefore, the organization of virtual or hybrid events will be favored, with appropriated funding. Webinars, especially for teaching will continued to be promoted. When possible, it will be asked that ECMs are attached to a scientific meeting, in order to combine Science and IUVSTA management.

The sustainability workgroup will be established as an “informal” division of IUVSTA, working in close coordination with the other divisions, and will be encouraged to submit proposals for events (workshops, schools, TTC, others…).

IUVSTA will listen to the needs of its member societies, and, within its missions, help them. Specific attention will be given to the new members, to fully integrate them in the Union, and to help them developing their activities.

The IUVSTA community is made of scientists, engineers, industrials active in domains that are of crucial importance for building a better world. Nanotechnologies, plasmas, coatings, electronic materials, biointerfaces, vacuum, thin films, catalysis, tailored surfaces and interfaces, advances in surface analysis, …. all these areas are essential to solve the world challenges. We must be proud of what we have done already, and of what we will do: members of the IUVSTA community do not “palaver” about the world challenges and they do not palaver about how to solve them, they ***act*** daily on finding these solutions, in their work.

IUVSTA is a “union”, and the moto of my native country is “Unity is strength”. We should use this strength to pursue the objectives of the Union, for the benefit of the member societies, and for the benefit of Society.

Prof. François Reniers

A short introduction to IUVSTA

This short introduction aims to give a brief survey of the IUVSTA background, particularly for those delegates who have little knowledge of the functioning mechanisms of the Union.

IUVSTA (International Union for Vacuum Science, Technique and Applications) is a Union of national member vacuum societies whose role is to stimulate international collaboration in the fields of vacuum science, techniques and applications and related multi-disciplinary topics including solid-vacuum and other interfaces.

General operational decisions and the associated discussions take place at meetings of the **Executive Council**, typically every 6 months, The Executive Council comprises the Officers (President, Past President, President Elect, Scientific Secretary, Scientific and Technical Director, Treasurer and Secretary General) and one representative of each member society, either the Councillor or the Alternative Councillor.

Associated with the Executive Council meeting there are meetings of several **Committees** where much of the debate takes place and a meeting of the **Scientific and Technical Directorate (STD)**.

The S**cientific and Technical Directorate** has it own Director and Secretary, provides a forum of discussion for the general scientific and technical activities of the Union and is responsible for the programme of IUVSTA Scientific Workshop and Schools, selecting topics and venues from the proposals made by the Divisions. STD also makes decisions on endorsement and sponsorship of Conferences and supervises the scientific organization of the IUVSTA Vacuum Congress. The STD comprises eight **Divisions**: **Applied Surface Science, Biointerfaces, Electronic Materials & Processing, Nanometer Structures, Plasma Science & Technique, Surface Engineering, Surface Science, Thin Film, Vacuum Science and Technology.** Each Division has a representative for all the national member societies.

The **Awards and Scholarships Committee** is responsible for overseeing the award of the M.W. Welch International Scholarship which was established in 1965 to support younger scientists working abroad in vacuum science and technology. The Committee selects also the conferences at which Elsevier Student Awards will be made and is responsible for the organisation and for the selection, through and ad hoc panel, of the winners of the triennial IUVSTA Prize for Science and of the triennial IUVSTA Prize for Technology. A new development is the World Transfer Program to encourage young researchers to work in another laboratory for short periods.

The **Congress Planning Committee** oversees the arrangements for the organization of the forthcoming triennial International Vacuum Congress and at the same time seeks and evaluates bids for the future IVC making recommendation to the Executive Council meeting.

The **Communications Committee** oversees IUVSTA publications, and the web page http://www.iuvsta.org

The **Education Committee** oversees the activities of education. This includes visual aids programme, short courses associated with scientific meetings sponsored by IUVSTA and the Technical Training Course Programme.

The **Emerging Societies Committee** is responsible for liaising with the scientific community in countries where IUVSTA is not represented and encouraging there interactions and activities which might lead to the creation of a society which could apply for membership of the Union.

The **Finance Committee** is chaired by the Treasurer and monitors the investments of the financial resources of the IUVSTA and prepares the triennial budget.

The **Long-Range Planning Committee** is chaired by the President Elect and provides a forum of wide –ranging discussions in structure and news activities for IUVSTA,

The **Statutes Committee** oversees the Statutes, By-Laws and working practices of the Union and ensures that they are modified to take account of changing situations.