

Report of the Applied Surface Science Division to the ECM-132
Annecy, France, February 20 – 22, 2020

A) Past events

1. The 9th International Workshop on Surface Physics - Nanostructured surfaces, IWSP-2019, June 24-28, 2019, Trzebnica. This is an interdisciplinary meeting which highlights a wide range of aspects of surface science and its applications. This time the theme of the IWSP-2019 was 'Nanostructured surfaces'. The idea of this kind of workshop is to provide an overview of the current state of research in this field, report the latest achievements, show perspectives and discuss the most probable paths of progress of nanoscience. The workshop was held as a accompanying conference a week before IVC21 (Malmö). The conference was be organized by the Institute of Experimental Physics, University of Wrocław, Poland, under the auspices of the Polish Vacuum Society and the ASSD of IUVSTA (was also co-supported by Nanometer Structure Division), and was as one of the 60th anniversary of IUVSTA celebration event. To help to organise the workshop a financial support with amount of €6000 has been also received from IUVSTA.

2. 11-th Symposium on Vacuum based Science and Technology, November 19-21, 2019, in Kołobrzeg, Poland

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. The mission of the Symposium is to provide a forum for presentation and exchange of research results and expertise in the field of vacuum and plasma science and foster cooperation within the vacuum and plasma science community. The symposium topics has been addressed by invited lectures of internationally recognized scientists and are as follows: Plasma physics and techniques, Vacuum science and techniques, Protective coatings and thin films, Characterization of surfaces and thin films, Thin films for solar cells and sensors, Plasma based surface treatment technologies, New trends and concepts in plasma based deposition processes – HiPIMS technology. During 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 attendances.

3. 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/>)

The 2019 edition of The International Summer School on Vacuum, Electron and Ion Technologies (VEIT) was the 21st in a series of events 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 topics of the school include: Thin films deposition; Surfaces and thin films processing and analysis; Coatings for advanced applications; Plasma-surface interaction and plasma diagnostics; Modeling and computer simulation. The scientific program included 5 topic lectures and 19 progress reports. Contributed papers were presented mainly in 3 poster sessions and 11 oral presentations. VEIT 2019 was jointly organised by the Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria

and the Dutch Institute for Fundamental Energy Research (DIFFER), Eindhoven, The Netherlands, with the support of the National Science Fund of Bulgaria, Ministry of Education and Science of Bulgaria, the company HIDDEN and IUVSTA. VEIT 2019 was attended by 126 participants (32 students and young researchers) from 17 countries on three continents: Algeria, Belgium, Bulgaria, France, Germany, Portugal, Romania, Russia, Singapore, Serbia, Slovenia, Sweden, The Czech Republic, The Netherlands, Turkey, Ukraine, UK. The School Proceedings will be published in a special issue of Journal of Physics: Conference Series (<http://jpcs.iop.org>)

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).

5. **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.

B) Forthcoming events

1. The ASSD co-support 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 topical key areas of the workshop will be divided into three groups, namely, microstructural, chemical and residual stress characterization, nanomechanics as well as in situ/in-operando studies and thermal properties. The workshop is planned to be held in spring fall of 2021 in Scholss Seggau, Austria.

Proposed goals for the Applied Surface Science Division for the 2019-2022 triennium

To sponsor a IUVSTA School and Workshops in a non-member country (preferably with intention to be a member country) and to enhance the Applied Surface Science related information available at the IUVSTA website (e.g. to make accessible the ISO Vocabulary on Surface Chemical Analysis).

Respectfully submitted, March 12, 2020

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

Activity Report from IUVSTA BI division for ECM-132 (March 20-22, 2020)

In the last semester, activities of BID included:

- a webinar on “Surface analysis of Nanomaterials: Needs & Challenges”;
- an application for external funding for a summer school;
- continued work on a review paper;
- examination of GDPR compliance for IUVSTA mailing lists.

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”. If the application for the primary funding is successful and depending on the approved budget, the organizers may request a contribution from IUVSTA.

3. BID continued work on a review article on surface analysis and modification of biointerfaces, coordinated by Miguel Manso. Good progress has been made: substantial pieces have been drafted by the coauthors.

4. The chair of BID, Dmitri Petrovykh, after a discussion of the mailing list logistics with Jay Hendricks, is analyzing 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.

IUVSTA ECM-132

EMP Division report

- E-mail correspondance between Division members;
- Activities regarding the IUVSTA endorsements, and proposals for schools and workshops;
- EMPD supports the proposal for IUVSTA Workshop on reliable sensing and control of reactive plasmas (Plasma Science & Technique Division);

Activities report of the IUVESTA Nanometer Structure Division (NSD) to ECM 132

This written report has been prepared by the division officers for the ECM 132 and covers the period between ECM 131 (3rd July 2019, Malmö in Sweden) and ECM 132 to be held between 20-22 March 2020, Annecy, France.

OFFICERS of the Nanometer Structures division NSD for the triennium 2019-2022:

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

IUVESTA-NSD New members national representatives

Dr. hab. Eng. Wojciech Koczorowski, from Poznan University of Technology, Faculty of Materials Engineering and Technical Physics, is the new divisional representative of Polish Vacuum Society. On behalf of former and current officers of NSD division, I would like to acknowledge and sincerely thanks to Prof Dr hab. Ryszard Czajka, President of Polish Vacuum Society, for his most valuable cooperation and contributions for the scientific and educative activities of the NSD division, in general for the activities of IUVESTA, contributing for its visibility and impact and, I wish Dr. hab. Eng. Wojciech Koczorowski representing PVS, the most success in the NSD division.

Dr. Vladimir Rajić, Vinča Institute of Nuclear Sciences of University of Belgrade, is the new and the first divisional representative of Serbian Vacuum Society (SVS). I wish Dr. Vladimir Rajić representing SVS, the most success in the NSD division.

The Chair of NSD, Ana G Silva, already established some contacts and discussions with Dr. Vladimir Rajić in order to explain in more detail the procedure to submit proposals providing him guidelines for the purpose.

IUVESTA - NSD Educational activities

The 2nd IUVESTA Webinar within NSD and SSD scientific divisions on “Surface analysis of nanomaterials needs and challenges” was presented by Giacomo Ceccone on 25 Feb 2020, 14:00 CET.

IUVSTA - NSD Workshops and Schools

90th IUVSTA Workshop on **“Tuning properties of advanced energy materials using modern theoretical and experimental methods”** chaired by Juan Royo, Valencia University, by the chair of IUVSTA-NSD division Ana G Silva and by the chair of IUVSTA-SSD division Maria C. Asencio, will be held at the House of Science (CSIC) in Valencia, Spain, between 24-28 May 2020. The list of confirmed invited speakers will be make available at <https://www.uv.es/TEMTEM20/>

91st IUVSTA Workshop on **“Surface Chemistry of Catalytic Systems”** chaired by Baran Eren, Weizmann Institute of Science, Rehovot, Israel, will be held at The David Lopatie Conference Centre, Weizmann Institute of Science, between 7-11 June 2020. The list of the invited speakers and the programme is available at <http://www.weizmann.ac.il/conferences/SCCS2020/>

Workshop proposal 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, between 13-17 September 2020, has been submitted for IUVSTA financial support.

Workshop proposal on **“Synthesis of nanoparticles: applications and new perspectives”** Condensed matter in Madrid, to be held at School of Engineering, Madrid, Spain, between 31 August and 4th September 2020, has been submitted for IUVSTA financial support. The proposal was submitted by Yves Huttel, member of NSD division, divisional representative of Spain. The list of invited speakers and the program is already announce at www.cmd2020gefes.eu/28512/programme/2020-joint-conference-of-the-condensed-matter-divisions-of-eps-cmd-and-rsef-gefes.html

Summer School proposal on **“Physics at Nanoscale”** cochaired by Tomas Sikola, Brno University of Technology and CEITEC, and Antonín Fejfar, member of NSD division, to be held at Skalsky Dvur, Czech Republic, between 31 May and 6 June 2020, has been submitted for IUVSTA financial support. The Chair of NSD division Ana G Silva is member of the program committee. The list of confirmed invited speakers and program is already available at <http://surfaces.fme.vutbr.cz/news/iss-international-summer-school-2020/>

Set of goals for the triennium

As chair of NSD division one of the goals is to enhance and promote educational and scientific interdisciplinarity activities within NSD division members and with other IUVSTA divisions. Not only in the form of webinars, workshop and schools, but also to explore the possibilities of joined scientific projects proposals. To promote joined activities in emergent fields (quantum materials, quantum engineering, production and characterization). To promote the discussion and the necessary actions within NSD division for the IUVSTA Highlights Review paper. Together with the vice-chair and the secretary of the NSD division, cooperate with the Chair of IVC22 Katsuyuki Fukutani regarding the organization of ICN+T within IVC22 in 2022.

Additionally, Shuji Hasegawa, Vice-chair of NSD division will be involved in the organization of IVC22 which will be held at Sapporo, Japan in 2022 and, Carla Bittencourt, Secretary of IUVSTA NSD division, is preparing one IUVSTA workshop to be held in Finland and, together with Ana G Silva (Chair of NSD) preparing one workshop other to be held in Trieste (ICTP).

ACTIVITIES developed by members NSD division within Polish Vacuum Society (PVS)

The 7th Congress of Polish Vacuum Society took place in 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, Wrocław University of Technology and Committee for Electronics and Telecommunication of Polish Academy of Sciences.



Ana G Silva

Chair of the NSD for the triennium 2019-2022

15 March 2020



12th March 2020

ECM-132 (originally scheduled at Annecy, France)
Teleconference
Divisional Report
Plasma Science and Technique Divisional Committee

XXXIV International Conference on Phenomena in Ionized Gases (ICPIG)/10th International Conference on Reactive Plasma (ICRP) was held at Hokkaido, Japan (14-19 July, 2019).

19th International Conference on Atomic Layer Deposition /6th International Atomic Layer Etching Workshop (ALD/ALE 2019) was held at Bellevue, WA, USA (21-24 July, 2019), organized by AVS.

Asian-European International Conference on Plasma Surface Engineering (AEPSE2019) was held in Jeju Island, Korea (1-5 Sept. 2019).

The 23rd International School on Low Temperature Plasma Physics: Basics and Applications was held at Bad Honnef, Germany (6-12 October, 2019).

AVS 66th International Symposium & Exhibition was held at Columbus, OH, USA (20-25 Oct. 2019), organized by AVS.

72nd Annual Gaseous Electronics Conference (GEC) was held at College Station, TX, USA (28 Oct - 1 Nov. 2019)

41st International Symposium on Dry Process (DPS) was held at Hiroshima, Japan (21-22 Nov. 2019).

The 3rd International Symposium of the Vacuum Society of the Philippines (ISVSP2020) was held at Cebu City, Philippines (08-10 January 2020), organized by Vacuum Society of the Philippines (VSP).

The following meetings have been postponed to future dates due to COVID-19 problems

47th IEEE International Conference on Plasma Sciences (ICOPS) will be held in Singapore (new dates, 6-10 Dec., 2020)

3rd International Workshop on Plasma Agriculture (IWOPA) at Greifswald, Germany (new dates: 28 Feb. 03 Mar, 2021).

3rd International Conference on Data Drive Plasma Science (ICDDPS)/12th EU-Japan Joint Symposium on Plasma Processing/15th Asia-Pacific Conference on Plasma Science and Technology (APCPST-15) at Okinawa, Japan (new dates: 28 March-2 April, 2021)

8th International Conference on Plasma Medicine (ICPM) will be held Incheon, Korea (14-19 June, 2020).

20th International Conference on Atomic Layer Deposition /7th International Atomic Layer Etching Workshop (ALD/ALE 2020) will be held at Ghent, Belgium (28 June – 1 July, 2020)

Miran Mozetič has proposed “IUVSTA Workshop on reliable sensing and control of reactive plasmas,” which will be held at Cerklje na Gorenjskem, Slovenia (7 – 12 March 2021), organized by Slovenian Vacuum Society, if approved.

12th March 2020

Satoshi Hamaguchi

Chair of the Plasma Science and Technique Divisional Committee

Surface Science Division report for the ECM132

20-22 March 2020

Annecy, France

The Surface Science Division has developed active and fruitful activities during these last six months. Indeed, during this first period of the Triennium, the greatest efforts of the SSD chair, vice-chair and secretary of the SSD have been focused to divulge and identify to main procedures and mechanisms by which the SSD activity is developed. Effectively, the primary objective was that everyone quickly possesses the information and tools to participate and contribute actively to the scientific activities of the IUVESTA.

Initially, the communication with all the members was not very fluid, but as they became increasingly informed, their responses and suggestions were received more frequently.

In particular, the SSD members have contributed to the following actions:

1.- The proposals of WS, IUVESTA schools and Short courses submitted to be evaluated at the ECM 132 in Annecy, have been evaluated by the SSD members and they have suggested by email a ranking, indicating the weaknesses and strengths of each proposal. This ranking and suggestions have been sent to the STD secretary.

But in general lines, they have missed that the Short Courses and the TTC proposal have not been treated in the same way as the WS and school proposals. Indeed, they have suggested that short courses may have to give more information about guest speakers and budget details. In addition, the TTC proposal may have to be distributed for evaluation to STD members as the WS and Schools proposals have done.

2.- In close collaboration with Prof. Ana G Silva, chair of the NSD and Prof. Juan Sanchez, several members of the Surface Science Division are participating in the organization of the workshop 90# IUVESTA Workshop: "Tuning properties of advanced energy materials using modern theoretical and experimental methods" to be held 24th - 28th May 2020, in Valencia, Spain.

3.- Also, the SSD has sponsored several proposals like IUVESTA WS, Short and TT courses, which will be evaluated at the STD meeting, in Annecy.

4.- In November, the Japan Society of Vacuum and Surface Science (JVSS) will hold the 9th International Symposium on Surface Science in Kagawa, Japan. (<https://www.jvss.jp/iss9/>) This series is one of the largest conferences on surface science in Asia. The symposium will highlight recent achievements in surface science and its related fields with 700 participants. Many members not only in SSD but also in ASSD, NSD, TFD and others will be interested in this conference. JVSS also progresses in the organization of IVC-22 in Sapporo, Japan.

5.- Finally the SSD officers have transmitted several documents to the IUVESTA Website responsible to be added to the link: <https://iuvsta.org/divisions/#ss>. The target is to update and make more attractive this WEBSITE adding information describing the structure and activities of the SSD.

Prof. Maria C. Asensio,
Chair of the Surface Science Division
5 March 2020, Madrid, Spain

Prof. Fumio Komori
Secretary of the Surface Science Division
9 March 2020, Tokyo Japan



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Zagreb, 16th March 2020

Brief report of activities over the last time period

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 recently cancelled.

Mile Ivanda
Chair of Thin Film Division of IUVSTA

20-22 March 2020
Annecy, France
Update: teleconference

Vacuum Sci. And Tech Division report for the ECM 132

The Vacuum Science and Technology Division (VSTD) during the last period (since ECM 131 Malmö to ECM 132 Annecy) was focus to incentive the new members for the Triennium to participate on effectively as a member and understanding of the possible opportunities of interaction through workshops, schools and courses. Until the moment, most of the activities and conversations are made with the more experienced members of the VSTD, with deeper connections on our society. Very fill countries still don't have members on clear communication with VSTD or even appointed members.

The most active members (and correlated institutions) relay on the IUVSTA environment to find common perspectives and create interaction covering specific project, grants applications and special research not cover by IUVSTA activities.

The main goal for the next period is to keep improving the interaction of the members (including the correlated national societies and professional institutions) offering the IUVSTA frame work as relevant resource to expand and spread the vacuum science in the community as production on industry, measurement/calibrations and analysis of/in vacuum. Effort to bring correlated science fields relevant for high impact science, national laboratories and future commercial projects present as the core of the next steps.

Best regards,

Dr. Marcelo Juni Ferreira
Chair of the Vacuum Science and Technology Division