



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

## Executive Council Meeting 115

**Ron Reid**, [iuvsta.secretary.general@ronreid.me.uk](mailto:iuvsta.secretary.general@ronreid.me.uk)

ECM 115 was held in Krakow, Poland, at the Hotel City between 5th and 7th April 2013 at the invitation of the Polish Vacuum Society. When we arrived, there was the evidence of winter around with piles of snow on the streets, but over the weekend this began to disappear as the temperature rose.

This was an important meeting with a number of major decisions to be made as we begin to look towards the end of the triennium and the General Meeting in Paris in September.

Selection of the IUVSTA Prize winners for 2013 took place, as reported elsewhere in this Newsletter.

The Executive Council had before it two excellent candidates for nomination as President Elect for the triennium 2013-16. Following interesting presentations by the candidates, the Council chose Prof Lars Montelius (Sweden) as its nominee.

It was a busy weekend for Lars since, in his position as chair of the Congress Planning Committee, he orchestrated presentations from four Societies as the first stage in their bid to host the International Vacuum Congress in 2019. All four bids, from India, Italy, Pakistan and Sweden were deemed to be technically acceptable and following further clarifications and updating will be presented to ECM 116 for the selection to be made.





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## Executive Council Meeting 115, continued

Another important matter was the approval of the draft agenda for the General Meeting, which has now been distributed to Societies in accordance with the timetable determined by the Statutes.

The General Meeting which is due to be held in Paris on 11th September 2013 will be in a slightly different format from those held previously, because of the new way of working imposed by the new set of Statutes adopted in Beijing and Namur. The General Meeting (number 18) will be followed immediately by the 2013 Extraordinary General Meeting. The two meetings have slightly different functions, but hopefully the whole thing will be seamless as far as National Society delegates are concerned.

Also to be decided the General Meeting will, hopefully, be the admission of a new member – Argentina and the approval of the formation of a new Division, Biointerfaces.

Minutes and reports are now available of the website, thanks being due to the recording Secretary for this.

We also need to express our thanks to the Polish Vacuum Society, especially Jacek Szuber and Monica Kwoka for making the arrangements and for hosting an excellent dinner in the Old Town on the Saturday evening.





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## From the Awards Committee

**Frank Richter**, f.richter@physik.tu-chemnitz.de

The purpose of the IUVSTA prizes is to recognize and encourage outstanding internationally-acclaimed research in the fields of interest to the International Union for Vacuum Science, Technique and Applications (IUVSTA). The nominees must have accomplished outstanding experimental and/or theoretical research in vacuum science, technique or applications within the ten years preceding the year in which the award is made.

The Prize consists of a cash award, a struck medal and a certificate setting forth the reasons for the award. It was awarded for the first time in 1998 to **Professor Johannes Friso van der Veen** of the University of Amsterdam. Since then, two prizes were awarded every three years by occasion of the International Vacuum Congress, one for science and one for technology.

The prize winners for science (S) and technology (T) were:

- 2001 (S): **Professor Kunio Takayanagi** of the Tokyo Institute of Technology,
- 2001 (T): **Professor Wolf-Dieter Münz**, Sheffield Hallam University,
- 2004 (S): **Professor Joost W. M. Frenken** of Leiden University,
- 2004 (T): **Dr. Martin P. Seah**, of the National Physical Laboratory, U.K.,
- 2007 (S): **Professor Albert L. Fert** of University of Paris Sud,
- 2007 (T): **Dr. Cedric J. Powell** of National Institute for Standards and Technology, U.S.A.,
- 2010 (S): **Professor Dr. Péter B. Barna**, Hungarian Academy of Sciences, Budapest,
- 2010 (T): **Professor Seizo Morita** of Osaka University

The Science Prize is endowed by generous donations by



The Technology Prize is endowed by generous donations by





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## 2013 IUVSTA Prize for Science:



**Professor Lars Samuelson**  
Lund University, Sweden

“for his groundbreaking and continuing scientific work on the mechanisms underlying epitaxial nanowire growth, enabling the bottom-up realization of radically new types of highly controlled nanostructures, as well as for the development of broad and important applications of nanowires in electronics, optoelectronics and life sciences”

**Lars Samuelson** obtained his Ph.D. in Solid State Physics at Lund University in 1977 followed by a Post-doc at IBM Research Laboratories in San José, CA. In 1986 he became Professor in Göteborg and returned in 1988 to a Professorship in Lund. He is since its start in 1988 director of the Nanometer Structure Consortium at Lund University (nmC@LU - [www.nano.lu.se](http://www.nano.lu.se)), today the primary interdisciplinary center for Nano-science in Sweden, engaging more than 175 scientists and PhD students. He is recognized for his research on low-dimensional structures and the physics and applications thus made possible. In recent years his research focuses on the formation of one-dimensional nanowires, studies of their physical properties, as well as applications of semiconductor nanowires. He has published about 600 papers in refereed journals and given about 250 invited/plenary talks at international conferences (h-index~69). In 2004 he became a Fellow of the Inst. of Physics in the UK, and in 2009 Fellow of the American Physical Society (Materials Physics). He is since 2006 a Member of the Royal Swedish Academy of Sciences, KVA (Physics) and since 2007 of the Royal Swedish Academy of Engineering Sciences, IVA. In 2008 he was awarded as “Einstein Professor” by the Chinese Academy of Sciences and in 2013 the IUVSTA Prize for Science of the Triennium 2010 - 2013. Beside his role as academic researcher and teacher, he has engaged himself in creation of spin-out companies and is the primary founder and Chief Scientific Officer (CSO) of the companies QuNano AB, GLO AB and Sol Voltaics AB.

**Lars Samuelson will present a plenary lecture at IVC19 in Paris entitled “NANOWIRES – MY “NARROW-MINDED” APPROACH TO MATERIALS, PHYSICS & DEVICES” scheduled at 9:55 am on September 10, 2013**





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## 2013 IUVSTA Prize for Technology:



**Dr. John T. Grant**  
**University of Dayton, Ohio, USA**

“for outstanding achievements in technology and technique development in Auger Electron Spectroscopy and X-Ray Photoelectron Spectroscopy, enabling their application to many practical technological problems”

**John Grant** is a Distinguished Research Scientist at the University of Dayton. After receiving his doctorate in physics at the University of New South Wales in Australia, he spent two years as a visiting scientist at the Aerospace Research Laboratories of the US Air Force in Dayton, Ohio, and then two years as a visiting scientist at the Philips NatLab in Eindhoven, The Netherlands. He then returned to the United States, and since then has worked as a contractor in materials-related laboratories for the US Air Force, the past thirty five of which have been through Air Force contracts with the University of Dayton.

He has worked in the field of surface analysis his entire career and contributed to many advances in Auger Electron Spectroscopy and X-ray Photoelectron Spectroscopy.

He is a Fellow of AVS International and a Life Member of the Institute for Electrical and Electronics Engineers.

**John Grant will present a plenary lecture at IVC19 in Paris entitled “APPLICATIONS OF AES AND XPS TO STUDY PRACTICAL TECHNOLOGICAL PROBLEMS” scheduled at 10:50 am on September 10, 2013**

# IUVSTA NEWS BULLETIN

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Union Internationale Pour La Science, La Technique et Les Applications du Vide  
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**Paris, France September 9-13, 2013**

[www.ivc19.com](http://www.ivc19.com)  
[www.icnt2013.com](http://www.icnt2013.com)  
[contact@ivc19.com](mailto:contact@ivc19.com)

- 19th International Vacuum Congress (**IVC-19**)
- International Conference on Nanoscience and Technology (**ICN+T 2013**)
- 15th International Conference on Solid Surfaces (**ICSS-15**)
- Innovations in Thin Film Processing and Characterisation (**ITFPC 2013**)
- Magnetron, Ion processing & Arc Technologies European Conference (**MIATEC 2013**)
- 19th International Colloquium on Plasma Processes (**CIP 2013**)
- 12th International Conference on Reactive Sputter Deposition (**RSD 2013**)

**IVC-19  
ICN+T 2013  
ICSS-15  
ITFPC 2013  
MIATEC 2013  
CIP 2013  
RSD 2013**

PARIS • SEPTEMBER 9-13, 2013

IVC-19 will be held in Paris (France) from 9 to 13 September 2013 (<http://www.ivc19.com>).

This major combined congress will incorporate the 19th International Vacuum Congress (IVC-19), the 15th International Conference on Solid Surfaces (ICSS-15), the International Conference on Nanoscience+Technology (ICN+T 2013) and four European meetings: Innovations in Thin Film Processing and Characterisation (ITFPC 2013); Magnetron, Ion Processing & Arc Technologies European Conference (MIATEC 2013); 19th International Colloquium on Plasma Processes (CIP 2013) and Reactive Sputter Deposition (RSD 2013).

To foster cooperation between European Vacuum Societies, this series of conference has been, for the first time, jointly organised by a consortium of 9 societies from Belgium, Croatia, Czech Republic, France, Hungary, Portugal, Slovakia, Slovenia and UK, coordinated by the French Vacuum Society

Over 1800 abstracts have been submitted from some 70 countries and the scientific programme has been arranged in 15 parallel oral sessions per day plus 3 poster sessions

(<http://apps.key4events.com/key4register/schedule.aspx?view=detailed&e=164>).

In conjunction with the scientific programme, an extensive technical exhibition, gathering over 100 exhibitors, will be conveniently located on the same floor as the lecture halls (<http://www.ivc19.com/exhibition-sponsorship/exhibitors-list.html>).

In addition, short (1-day) courses lectured by leading world experts will be held in parallel with the scientific sessions (<http://www.ivc19.com/scientific-programme/ivc19-short-courses-attractive-topics-lectured.html>).

**Jointly organised by:**

 Belvac Belgium	 BVC United-Kingdom	 HVD Croatia	 CVS Czech Republic	 SFV France	 HVS Hungaria	 Soporvac Portugal	 SVS Slovakia	 DVTS Slovenia
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On behalf of:



International Union  
for Vacuum Science  
Technique and  
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[www.iuvsta.org](http://www.iuvsta.org)



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## The 67th IUVSTA “CERAMAX” Workshop

John Colligon, J.Colligon@mmu.ac.uk

**The 67th IUVSTA “CERAMAX” Workshop on “High temperature amorphous and nanostructured ceramic coatings: challenges and opportunities” was held at The Cockcroft Institute, STFC Daresbury Laboratory, Daresbury, UK from 23 – 27 September 2012.**

The 27 delegates attending this workshop enjoyed extensive discussions during the following 12 topical sessions:

1. An overview of the properties of MAX phases and their existing and potential applications
2. Coating structure: advantages of amorphous and/or nanocrystalline materials
3. Effects of energy-assistance on nucleation and growth of ceramic coatings
4. Round Table discussion on the Industrial view of high temperature coating utilisation and requirements
5. Thermodynamic considerations of phase formation and computer simulation of multi-component ceramic systems
6. Bulk MAX phases and damage resistance
7. Relation between microstructure and properties of coatings
8. High resolution TEM studies of MAX phases
9. High temperature oxide ceramics: production, analysis and applications
10. Methods for formation of high temperature ceramic coatings and modeling
11. Growth of working structures; substrate considerations, barrier layers, interface layers
12. The influence of dopants on the formation of nanograin thin film materials.

The final session attempted to highlight some of the main conclusions drawn from the 4 days of discussion. The MAX phases were seen to be very versatile with some excellent properties but other materials were often already available which have similar performance in terms of a specific property, such as High Temperature Stability. However, some MAX phases appear to exhibit multiple properties, for example high temperature stability and radiation resistance. The most interesting development reported at the Workshop was the novel material where the ‘A’ material in the MAX phase had been etched out to form an open layered structure known as MXene. This may have special electronic properties and will provide a very interesting area for further study. It was agreed that a more thorough study of the multiple properties of MAX phases is needed and that members of this workshop group have the resources and experience to lead such a programme.

Outside the meeting room the event was complemented by a Welcome reception on the Sunday evening, for which our thanks are due to The British Vacuum Council. There was also a talk and tour of the facilities in STFC Daresbury to see the SuperSTEM, the Accelerators and Lasers in Combined Experiments (ALICE) facility, Electron Machine for Many Applications (EMMA) and Electron Beam Test Facility (EBTF). A memorable evening was held in Ruthin Castle in Wales where we feasted in Jacobean style to the sound of some beautiful Welsh singing and dancing.

Finally our thanks are due to Ms Sue Waller and her colleagues for excellent background support and organisation of this event.

The final report is posted at:

[http://iuvsta-us.org/iuvsta2/assets/docs/pdf/Final\\_Report\\_IUVSTA67.pdf](http://iuvsta-us.org/iuvsta2/assets/docs/pdf/Final_Report_IUVSTA67.pdf)



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## 68th IUVSTA Workshop

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### IUVSTA WORKSHOP 68

#### Multifunctional Surface Engineering for Advanced Energy Applications City University of Hong Kong, December 9-13, 2012.

The 68<sup>th</sup> IUVSTA workshop was held at the City University of Hong Kong, December 9-13, 2012 with 60 participants from 15 countries/regions: Canada, China, Czech Republic, France, Germany, Hong Kong, India, Japan, Mexico, Poland, Singapore, Sweden, Switzerland, Taiwan, USA.

The workshop was organized by the IUVSTA Surface Engineering Division and the IUVSTA Thin Film Division. The divisions gratefully acknowledge the superb organization by the local chair Juan Antonio Zapien and co-chair Wenjun Zhang from the City University of Hong Kong.

The delegates attending this workshop enjoyed extensive and very fruitful discussions during the following twelve topical sessions and three dedicated discussion sessions: Functional Materials I, II; Tribological Systems; Tailored Micro/Nano- Structures; Material Modeling; Smart Coatings I, II; Organic and Soft Matter I, II; Light for Mankind I, II, III; Discussion sessions: Challenges in Smart Photonic / Plasmonic coating Systems; Discussion sessions I and II: Challenges in Surface / Interface Engineering

The final report is posted at:

[http://iuvsta.org/iuvsta2/assets/docs/pdf/Final\\_Report\\_IUVSTA68.pdf](http://iuvsta.org/iuvsta2/assets/docs/pdf/Final_Report_IUVSTA68.pdf)





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## 69th IUVSTA Workshop

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### **69th International IUVSTA Workshop on Oxidation of organic materials by excited radicals created in non-equilibrium gaseous plasma (Cerklje na Gorenjskem, Slovenia, 9th – 13th December 2012)**

The workshop was organized in a remote Hotel Raj in Slovenian mountains not far from Ljubljana International airport. It addressed open questions in interaction between excited radicals created in non-equilibrium gaseous plasma and organic materials including biological cells, tissues, polymers and simple organic materials. The scope of the proposed workshop was to discuss possible interaction mechanisms. The workshop gathered together scientists working on detection and measurements of metastable oxygen particles, theoreticians working on production of metastables as well as their loss on surfaces, experimentalists working on etching of organic materials in plasma, early and late afterglows and scientists involved in development of novel technologies based on preferential etching of organic materials. Distinguished scientists from world leading groups in this field were invited to attend the workshop and we received good response. 19 leading scientists from all over the world presented recent achievements in this rapidly growing field, and discussed the results and prepared the roadmap for future research. The rest of 38 participants were predominantly PhD and postdoc students. Most of them presented their works in 2 poster sessions. Invited speakers came from Australia, Czech Republic, France, Germany, Japan, Korea, Portugal, Serbia, Slovenia, Spain, UK, USA. The list is presented in the attached table. The schedule was concentrated to 4 days. Ample time was dedicated to formal as well as informal discussions. Formal discussion was organized as topical round tables in four sessions while isolation of the hotel allowed for informal discussions.

The final report is posted at:

[http://www.iuvsta.org/iuvsta2/assets/docs/pdf/Final\\_Report\\_IUVSTA69.pdf](http://www.iuvsta.org/iuvsta2/assets/docs/pdf/Final_Report_IUVSTA69.pdf)





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## 1963 – 2013 : 50th ANNIVERSARY of BELVAC, Belgian Vacuum Society

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### BELVAC

BELGISCHE VACUUMVERENIGING vzw  
SOCIÉTÉ BELGE DE VACUOLOGIE asbl  
BELGISCHE VAKUUMGEMEINSCHAFT voe



Research and technical activities in the field of vacuum were already very well recognized in Belgium in the fifties: indeed, at the opportunity of the 1958 World Fair in Brussels, the very first INTERNATIONAL VACUUM CONFERENCE (IVC) has been organized in Namur, June 10-13. The creation of an international committee that would organize future such congresses in different countries has then been suggested by Mr. Medard W. Welch, President of the American Vacuum Society. This led to the formation of the International Organization for Vacuum Science and Technology (IOVST), that changed its name to the INTERNATIONAL UNION FOR VACUUM SCIENCE, TECHNIQUE AND APPLICATIONS (IUVSTA) in December 1962.

The BELGIAN VACUUM SOCIETY or BELVAC was founded slightly later, on May 16, 1963 by those two working groups who had been most active in organizing IVC-1. One was the section on Vacuum Techniques of the "Société Royale Belge des Ingénieurs et des Industriels, ASBL " founded in 1954, and the other was a contact group "Nuclear Sciences and Low pressures" of the "Institut Interuniversitaire des Sciences Nucléaires ", founded in Brussels in 1955.

The purpose of BELVAC is to promote the development of vacuum science and technology and contribute to its advancement in Belgium. It also has its objective to create and maintain interesting and useful relations between its members concerning vacuum and to provide relations with foreign vacuum societies and with international organizations having the same objectives. These meetings are sometimes organised together with either the French or the Dutch Vacuum Societies, and there is a close co-operation for the regular organisation of an annual joint meeting both with NEVAC, Nederlandse Vacuum Vereniging, (Netherlands) and with the SFV, Société Française du Vide, (France).



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BELVAC is a small but living Society, and as such its history has also periods of less activity (1975-1983). Then the belief in the future of BELVAC and the perseverance of Mr J. Dupont resulted in a rejuvenated BELVAC, reporting its activities in a magazine "BELVAC News", written in English and appearing every fourth month since 1984. BELVAC News contains also at least one article discussing a Scientific Topic, and contributions of Belgian and Foreign Vacuum suppliers which are highly appreciated.

BELVAC is a non-profit society with legal ASBL status. The organization consists of a council with a president and a vice-president, a secretary, 11 administrators and delegates to the IUVSTA Divisions.

BELVAC was the representative of the Belgian Standardization Organization in the six working groups of the International Standards Organization (ISO) TC 112.

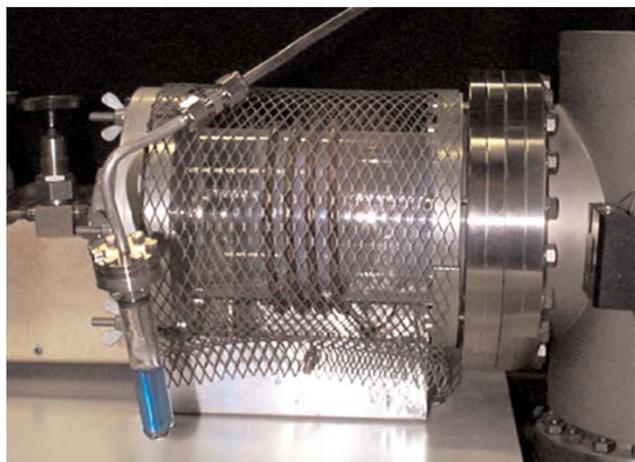
BELVAC also serves as a liaison between the IUSTVA Secretary General and the Belgian Ministry of Justice on the IUVSTA Statutes, and between the IUVSTA Treasurer and the Belgian Ministry of Finances on the IUVSTA revenues.

*BELVAC anniversary will be celebrated at the opportunity of a one-day scientific meeting organized by the 07/34 IAP (Interuniversity Attraction Program).*

*The symposium*

**« Fundamentals of plasma-surface interactions »**

*will be held in Antwerp, Congress center 't Elzenveld, on November 8, 2013, around the contributions of three invited speakers, Mark Kushner, Hachim Von Keudell and J. Christopher Whitehead.*



This picture, a RF discharge, illustrates the front page of the Belvac magazine