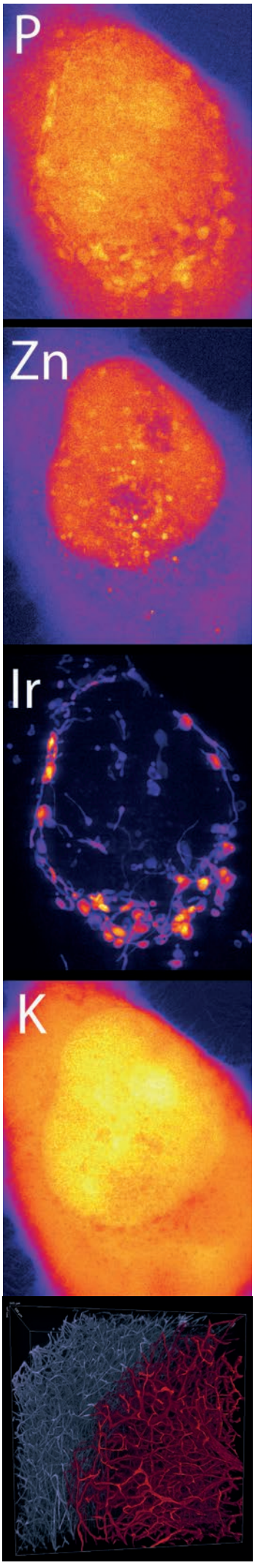
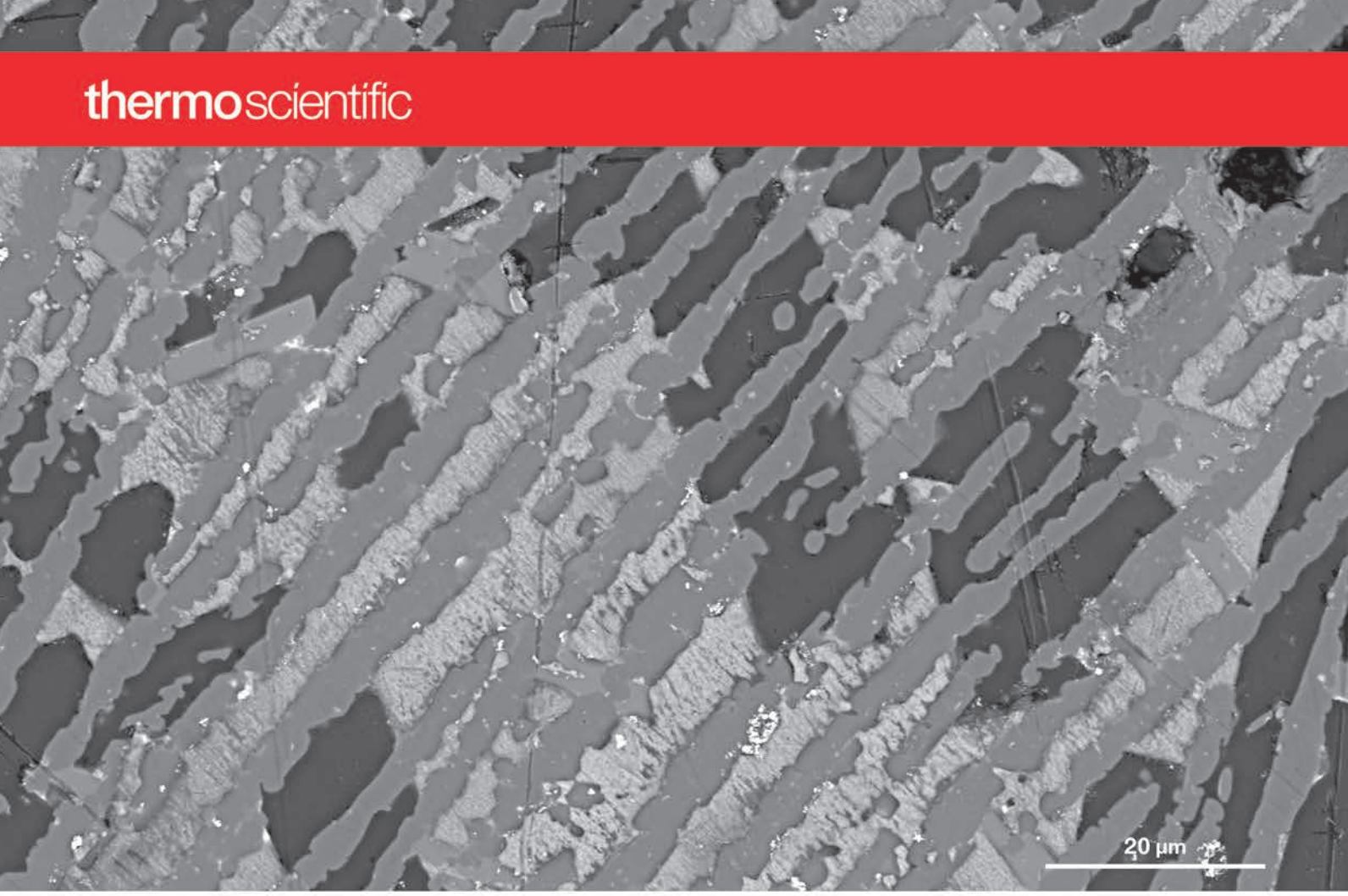


European Microscopy Society

Yearbook 2019

thermoscientific



Defects in glass due to the reduction of silica glass into silicon and the relative oxidation of metals (Fe, Cu and others) in their corresponding oxides.
Sample courtesy of Stazione Sperimentale del Vetro, Murano – Venezia.

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Hi. I'm Wayne Bonin, founder of Nanodyne Measurement Systems.

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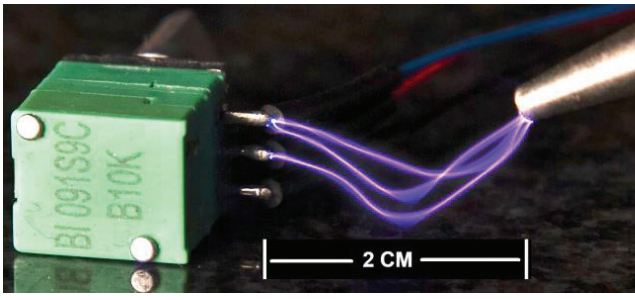
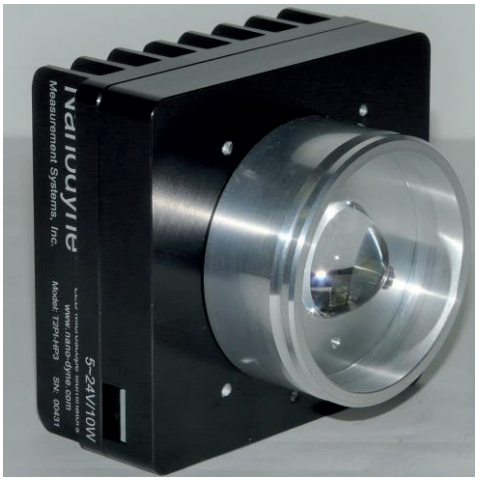
We have replacements for over 70 microscope models. If we don't have what you need, just tell us.



B&L Nicholas replacement is 27X brighter, with full intensity adjustment.

Ring light: Compact design for maximum access for assembly work. 3.5W matches 150W fiberoptic.

Nikon Labophot replacement: Original breakable plastic mount replaced by sturdy aluminum. 3.5W provides brighter light than original 20W halogen. Analog intensity control over 100,000:1 range **on all units**. No PWM flicker to interfere with video.



Olympus BX50/51 replacement: 9W provides brighter light than the original 100W halogen.

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(Edited for space. See unabridged versions on our website)

"We got the illuminator. The illuminator is awesome, you did a really really really good job. We really like it. Thanks."

Miroslav Pazdera, Optical Service s.r.o. (Czech Republic)

"Just finished the last of my 3 Labophot LED retrofits. The customer said the next time I communicated with you to be sure and tell you, because of the retrofits to their Labophot microscopes, it has saved them over $18K they would have had to spend on 3 new scopes. The techs now have plenty of phase contrast light intensity and love the color temperature. Thanks for a quality product!" *Cliff Bahn, Optec Scientific*

[A customer using a HAL100 illuminator needed lower noise for near-IR brain tissue imaging.] "The lamp is working great! I can see the tissue as well as with the HAL100, and there is no electrical noise." *Elyssa Margolis, University of California San Francisco*

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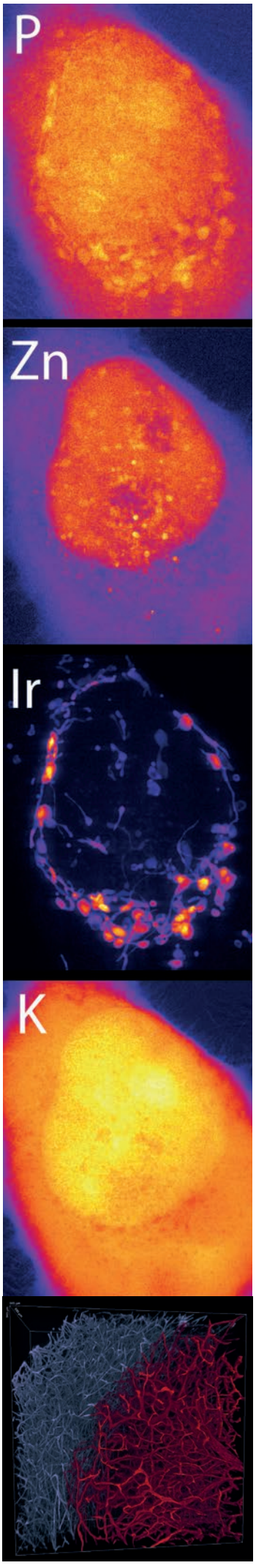
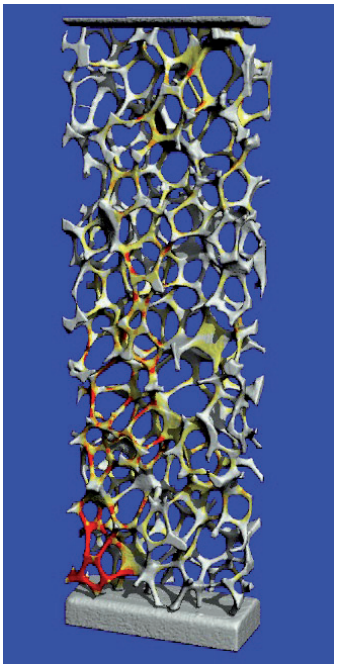


European Microscopy Society

Yearbook 2019

SCANCO MEDICAL

For decades, 3D x-ray micro-computed tomography (microCT) has been extensively and mainly used in biomedical research, in particular for investigating bones and other biological tissues such as brain, fat and lungs. Since now some years, an increasing number of researchers and industrial scientists are beginning to use microCT to image and assess a much wider range of materials.



Stress distribution in Al foam

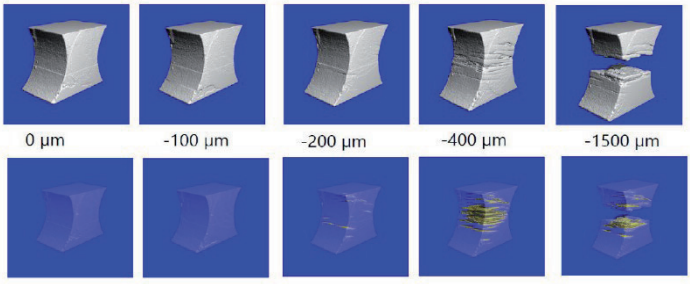
The obvious and main advantages of microCT are its non-destructive technology and its capability of reaching sub-micron resolutions. That way, scientists are now capable to precisely digitize the internal structure of materials without having to section and thus damage the samples.

Thanks to specifically developed software tools, the structures are computed and a surprisingly wide range of properties are extracted, giving precious information on the manufacturing process, and more important: a behavior prediction.

As an example: advanced imaging processing tools now allow to simulate the penetration of fluids within a porous structure, or the repartition of stress under a certain mechanical load.

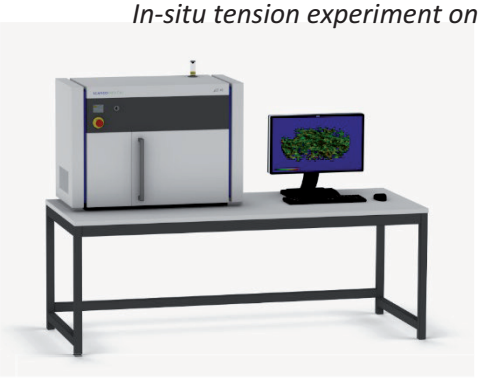
Capable of imaging samples up to 10 cm in diameter, and to reach resolutions down to 500 nm, the wide range of SCANCO Medical microCT scanners are the ideal tools for advanced non-destructive 3D imaging.

All scanners feature a sealed micro-focus x-ray tube, a CCD camera, a wide range of sample holders and can be equipped with an automated sample changer to increase throughput. Furthermore, dedicated in-situ stages can be operated to image samples under controlled physical conditions (mechanical load, temperature).



In-situ tension experiment on Polymer

Cabinet scanners:
Nominal resolution: 500 nm
Max. sample size: Ø100 mm x 160 mm
X-ray peak Energy: 130 kVp
Sample changer: 12 positions



Desktop scanners:
Nominal resolution: 1.25 µm
Max. sample size: Ø90 mm x 120 mm
X-ray peak Energy: 90 kVp
Sample changer: 20 positions

PREFACE

Dear EMS members,

Again, a remarkable microscopy year has passed.

It is our great pleasure to send you the EMS yearbook of 2019. As you expect it contains many information, as for examples reports from the EMC extension in Belgrade, EMS sponsored events, scholarships, and also, innovative this year, news about our national societies.

In April 2019, the EMS Executive Board met in Madrid, Spain. One of the subjects of highest interest was EMC2020, efficiently managed by conference chair Prof. Klaus Qvortrup. To our greatest regret due to the COVID19 pandemia the extraordinary General Council convoked in June 2020 decided to postpone EMC2020 to 2024. However, to keep the efforts already made by the organizers and by scientists who submitted abstracts, but also by our sponsors, EMS had decided to organize a short virtual meeting in autumn 2020. The second EMS Executive Board meeting of 2019 and the EMS General Assembly were held at the 14th multinational congress on microscopy, EMS Extension, in Belgrade, Serbia, on September 15-20, 2019. The congress was organized by Serbian Society for Microscopy together with Austrian Society for Electron Microscopy, Croatian Microscopy Society, Czechoslovak Microscopy Society, Hungarian Society of Microscopical Sciences, Italian Society of Microscopy, Slovene Society for Microscopy and Turkish Society for Electron Microscopy. A very well-designed and exciting scientific program was proposed, and an adequate exhibition of suppliers showed their interest.

Concerning the next EMC, 4 applications were received within December 31, 2019: Barcelona, Brno, Budapest and Maastricht. The application process had to be stopped and these bidders were encouraged to re-apply for EMC 2028.

Early 2019, the jury of the EMS Outstanding Paper Award went to a decision for the round of 2018. 28 papers of very high quality were nominated, more precisely:

6 Instrumentation and Technique Development papers, 12 Life Sciences papers and 10 Materials Sciences papers. The following were selected as award winners F. Houdellier & A. Arbouet (Instrumentation), M. Novak (Life Sciences), M. Kühne (Materials Sciences). Congratulations to the authors of these outstanding papers. We also thank the nominators of all other exceptional papers and look forward to a new round by next January 2020 for the 2019 papers.

In 2019, 8 outstanding level events where sponsored by EMS. Motivating reports are available in this yearbook. This 2019 EMS yearbook is printed and distributed by ERI company, free of charge for the Society. Thanks to the sponsors who advertise in our pages to support this edition.

Thanks also to all colleagues who have contributed to and for proof reading of this Yearbook. We look forward to new developments, announcements, and a fascinating time at EMS virtual meetings.

Virginie Serin
EMS Secretary

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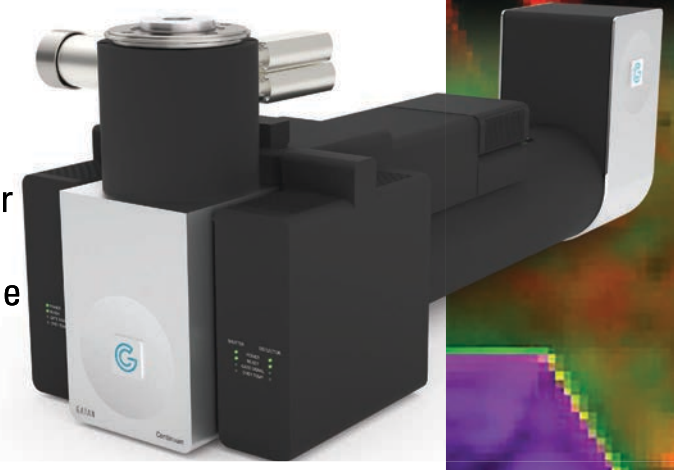

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LETTER FROM THE PRESIDENT

Dear EMS members,

With this yearbook you get – as you are accustomed to meanwhile – another volume of the EMS yearbook, this one for the year 2019.

As in the past years, the contributions in this yearbook have been collected and assembled by Prof. Virginie Serin, our EMS General Secretary.

Compared to earlier yearbooks, you may note that it becomes increasingly voluminous, reflecting the fact that it is recognized by our members as an attractive means to distribute news about activities going on in our society. We surely hope that also our readers find the content to be an up-to-date report on the newest developments throughout all of Europe's microscopy. Please consider this also as an invitation to contribute to our next volume, if within your area of responsibility microscopyrelated activities occurred which you would like to share with our society. Let me use this occasion to thank Virginie Serin for this time-consuming task of assembling all contributions, but also our board members Prof. Agnes Kittel and Prof. Serap Arbak for careful proof-reading its contents!

So far, the yearbook gave you an overview of activities going on within the EMS – starting with the new volume we - in addition - offer national societies the opportunity to inform about news from their areas. We hope that these news from national societies will help to understand each other better, to see where the focus of different societies lies on and possibly to learn which offers of a certain society might be worth to adapt for one's own society or the EMS. The offer to add news from national societies goes primarily to the national society's boards – if individual members want to contribute to this section, we kindly ask them to make sure that their national society is informed of the content be forehead.

For the planned European Microscopy Congress EMC2020, EMS together with the head of the local organizing committee, Prof. Klaus Qvortrup, made another important step forward in our world which is subject to increasing globalization. Obviously, many countries in the Asia-Pacific region nowadays have a very high level of equipment and expertise in all areas of (electron) microscopy.

While it is quite common for European scientists to visit the US American M&M conferences and we also are happy to see quite many US American scientists coming to our European conferences, this is still not standard for our eastern colleagues.

We have so far not accomplished to share the same amount of common scientific overlap between our societies, which we feel is really disappointing, as the scientific achievements from countries in the Asia-Pacific region, documented by a large number of high-level publications and scientific meetings, are well recognized in our part of the world. It seems odd to me that so far there is no culture of mutual conference visits established, which would certainly be to the benefit of all of us. I am certain that we can learn a lot from recent advances that have been achieved in the Asia-Pacific region and we think that this works in both directions, too. In this spirit, and to make a first step, we invited the Presidents of Societies for Microscopy in the Eastern part of the world to attend the next EMC congress and sincerely hope that this will be the start of a fruitful future exchange of scientific results, but also for increased mutual cooperation and better networking.

Due to the current situation, EMC2020 which was supposed to be held in Copenhagen this year has been postponed to 2024. However, a short virtual meeting will be organized towards the end of 2020. I hope to meet very many of you in Copenhagen in 2024, where a well-organized congress with an ambitious program and set of topics will await us ! ■

Prof. Dr. Josef Zweck
EMS President

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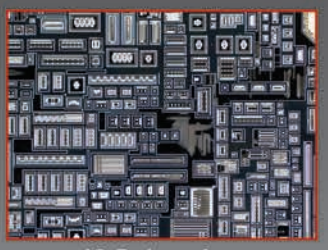
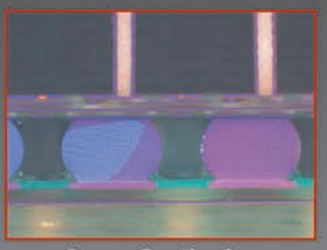

IC Delayering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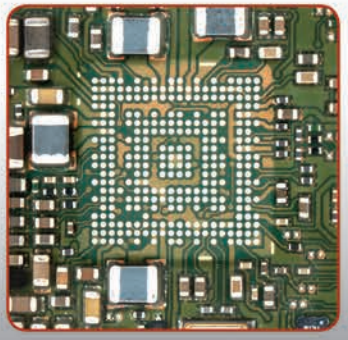
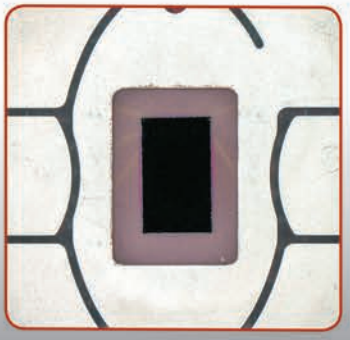
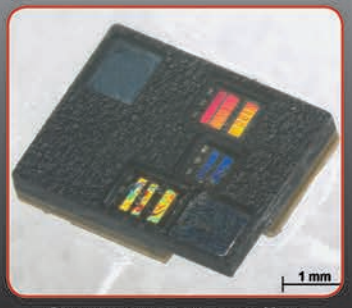
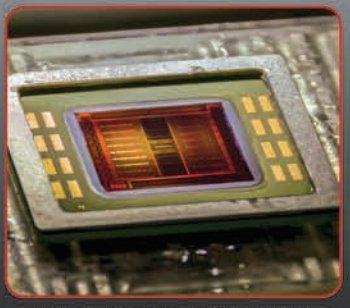

Mobile Phone "Chip-Off" Component Removal


Smart Card/Security Chip Thinned & Polished



Open areas as small as 100 x 100 µm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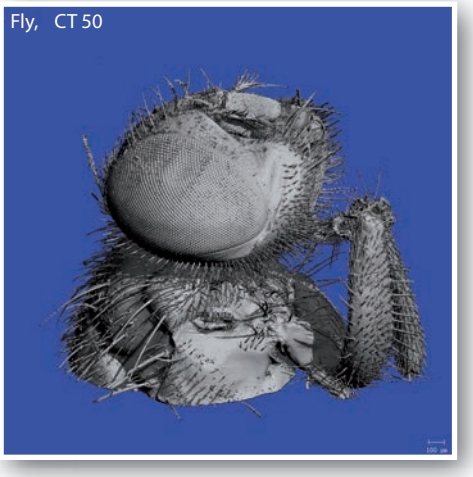

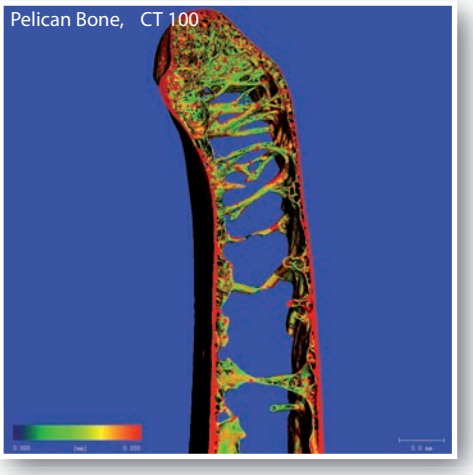

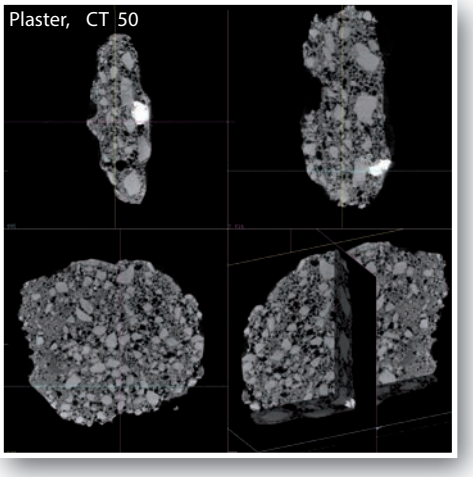

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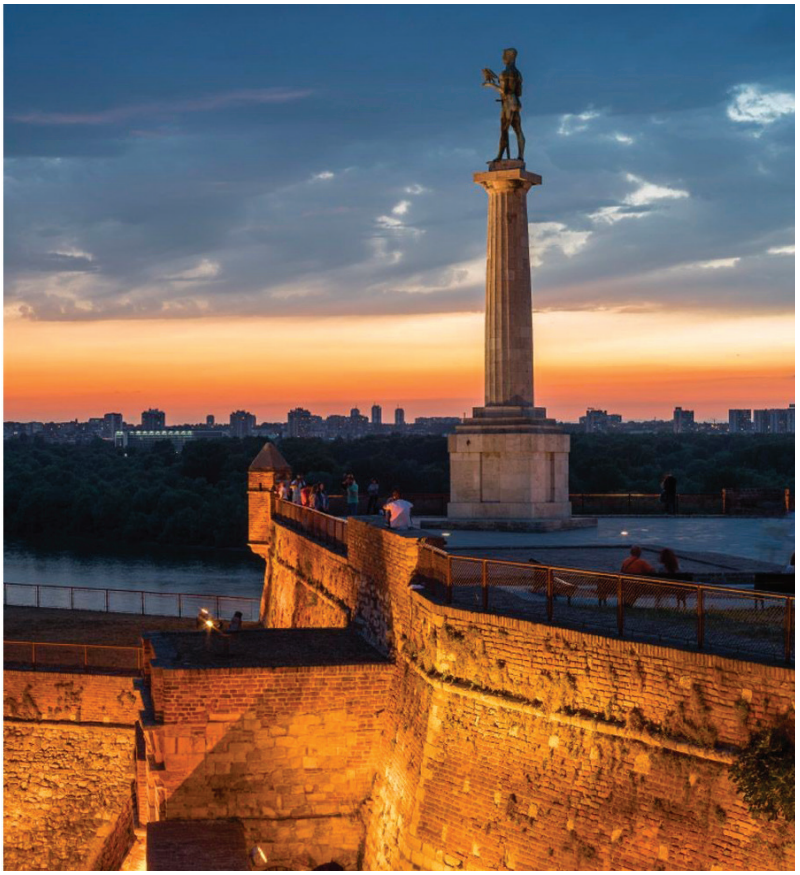
14TH MULTINATIONAL CONGRESS ON MICROSCOPY

SEPTEMBER 2019, BELGRADE

14TH MULTINATIONAL CONGRESS ON MICROSCOPY
September 15-20, 2019; Belgrade, Serbia



Belgrade, Serbia

14th Multinational Congress on Microscopy was organized by Serbian Society for Microscopy (SSM) together with Austrian Society for Electron Microscopy, Croatian Microscopy Society, Czechoslovak Microscopy Society, Hungarian Society of Microscopical Sciences, Italian Society of Microscopy, Slovene Society for Microscopy and Turkish Society for Electron Microscopy on September 15th -20th, 2019 in Belgrade. More than 400 participants were registered for the congress while more than 280 oral lectures and posters were presented during the Conference. Opening ceremony started on Sunday afternoon by inspired talk of Academician Prof. Dr. Vladimir Bumbaširević, past president of SSM followed by ''Atomistic Phenomena in Nanostructures for Energy Related Applications'' given by keynote speaker Academician Prof. Dr.Velimir Radmilovi.

Five plenary talks were presented in the main hall of Metropol Hotel. Session devoted to Instrumentation started with plenary talk "Quantum Sorting: a new paradigm of quantum measurement in electron microscopy" given by Dr. Vicenzo Grillo from Istituto di Nanoscienze, CNR (Consiglio Nazionale delle Ricerche), Modena, Italy. Dr. András Kovács from Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons, Forschungszentrum Jülich, Germany gave the talk "Using off-axis electron holography to measure magnetic properties of materials". Life science session started with two outstanding plenary talks: from Department of Experimental and Clinical Medicine, Center of Obesity University of Ancona (Politecnica delle Marche), Ancona, Italy Prof. Dr. Severio Cinti gave the lecture "Anatomy and Physiology of The Nutritional System", while from Division of Molecular Biology, Ruđer Bošković Institute, Zagreb, Croatia, Dr. Igor Weber spoke about ''Microscoping the amoeboid cell motility".

During 22 parallel sessions, more than 40 invited lectures were presented. The most important outcome of MCM2019 is the fact that 30% of session chairs were young postdoctoral and doctoral fellows. Further, we have offered young researchers a possibility to present their results in the form of mini oral presentations during poster sessions. In order to promote the scientific results, the posters were also available in electronic form in the hotel lobby, for the entire Conference duration.

Thermo Fisher Scientific, JEOL, Zeiss and Nanomegas were protagonists of well-attended lunch workshops on Monday, Tuesday and Thursday. Monday afternoon was devoted to Chipscope workshop ''Micro-nano technologies for integrated microscopy''. Amatek, Brucker, RMC, MCLABOR, DiATOME, TESCAN, Mikrolux, Analysis, Anton Parr, Delong instruments, Serbia Convention Bureau and Ministry of Education, Science and Technology of Serbia were among the major sponsors of the Event.

Plenary session

Board members after the General Assembly

MCM2019 had the extension of European Microscopy Society (EMS) and consequently a financial support for two plenary speakers. MCM2019 was host of EMS Board Meeting on Tuesday , 17.09.2019, while more than 50 members of EMS were participated at General Assembly on Wednesday, 18.09.2019.

At the Closing ceremony two best students' posters for Life sciences (Balasz Posfai, Hungary, for poster titled "A novel type of microglia-neuron interaction and the role of P2Y12 receptors") and Material sciences (Tijana Pantić, Serbia for poster titled "Microstructure and thermal behavior of Mg-V thin films for solid state hydrogen storage") were granted, while in session Instrumentation and Techniques the best oral presentation was awarded to Radim Skoupy, Czechoslovak Microscopy Society for the contribution titled "Assessing the thickness error rate of quantitative STEM measurements".

Thanks to the high quality of scientific presentations and positive atmosphere, the MCM2019 can surely be defined as a successful conference. We hope to see you all next time on MCM2021 in Austria. ■

Dr. Jasmina Grbović Novaković,
Full Research Professor
Center of Excellence for hydrogen and renewable energy, CONVINCE,
Vinča Institute of Nuclear Sciences,
University of Belgrade

Dr. Nataša Nestorović,
Full Research Professor
Institute for Biological Research
"Siniša Stanković" University of Belgrade

Dr. Dragan Rajnović, Assistant Professor
Faculty of Technical Sciences,
University of Novi Sad

EMC2020

SEPTEMBER 2020,

COPENHAGEN

COVID-19: EMC2020 BECOMES EMC2024

On April 22nd, the Executive Board of the European Microscopy Society (EMS) announced that the European Microscopy Congress (EMC2020) would not be held in Copenhagen in August.

The Board had been monitoring the situation in the hope that there would be some indication that lockdown measures would have eased enough for EMC2020 to go ahead. However, the Danish Government then announced that gatherings of more than 500 would not be allowed until September at the earliest.

The decision is a huge disappointment for the large team, headed by the Conference Chair, Professor Klaus Qvortrup. It had dedicated significant resources to making the event a success.

"It is the correct and only decision available, but it is still hugely disappointing," said Klaus. "SCANDEM has been aiming to bring a congress to Scandinavia since long before we submitted our bid in 2016. We were relishing the opportunity to welcome the microscopy community to Denmark. And, from a wider viewpoint, I feel most sorry for those who entrusted us with their abstracts and who were looking forward to showcasing their work in August. It is also a huge blow for the exhibitors who have been so supportive since the beginning, and I thank them for that."

Whilst Klaus sympathises with delegates and companies, his input should not be overlooked. Allison Winton is CEO of the Royal Microscopical Society – the organisers of EMC2020. She said, "Klaus has given so much of his time, and has been the driving force behind everything. In addition, he has done so with unrelenting enthusiasm and good humour. He had a vision, and together we came very close to achieving it."

EMC2020 had promised to be one of the largest events in the history of the series. An impressive 1,232 abstracts were submitted before COVID-19 intervened. Had it not, it is believed that a record number would have been received. In addition, 1,671 square metres of exhibition space had been sold to 95 companies. The Bella Centre promised to be an excellent host venue with its well-equipped and well-furnished lecture theatres surrounding the vast exhibition hall. Furthermore, Copenhagen is a city renowned for hospitality, history, and architecture. Alas, it was not to be, or at least not this year...

On May 27th, a virtual meeting of the General Council was called to decide the future of EMC2020. In recognition of the progress made towards making it a success, and the unfortunate circumstances that led to its cancellation, 94% of the voting members voted for the next congress to be held in Copenhagen. As a result, the bidding process for 2024 (which would have concluded at EMC2020) has been cancelled, and bidding countries are encouraged to resubmit in four years' time.

"We were all disappointed when we were forced to cancel," said Klaus. "Microscopy is important to us; we care about it and we wish for it to thrive. However, we can draw comfort and a degree of pride that we are part of a community that is playing an important role in the fightback against COVID-19. And, we will always have a part to play in preventing situations like this in the future. To microscopists everywhere, I wish that you stay safe. I am very grateful to the EMS General Council for its decision, and I look forward to welcoming you to Copenhagen in 2024. I can imagine that pathogens and immunology might feature quite strongly in the programme."

Details of the dates of EMC2024 will be made available as soon as they are confirmed. ■

Robert Flavin

REPORTS ON EMS SPONSORED EVENTS

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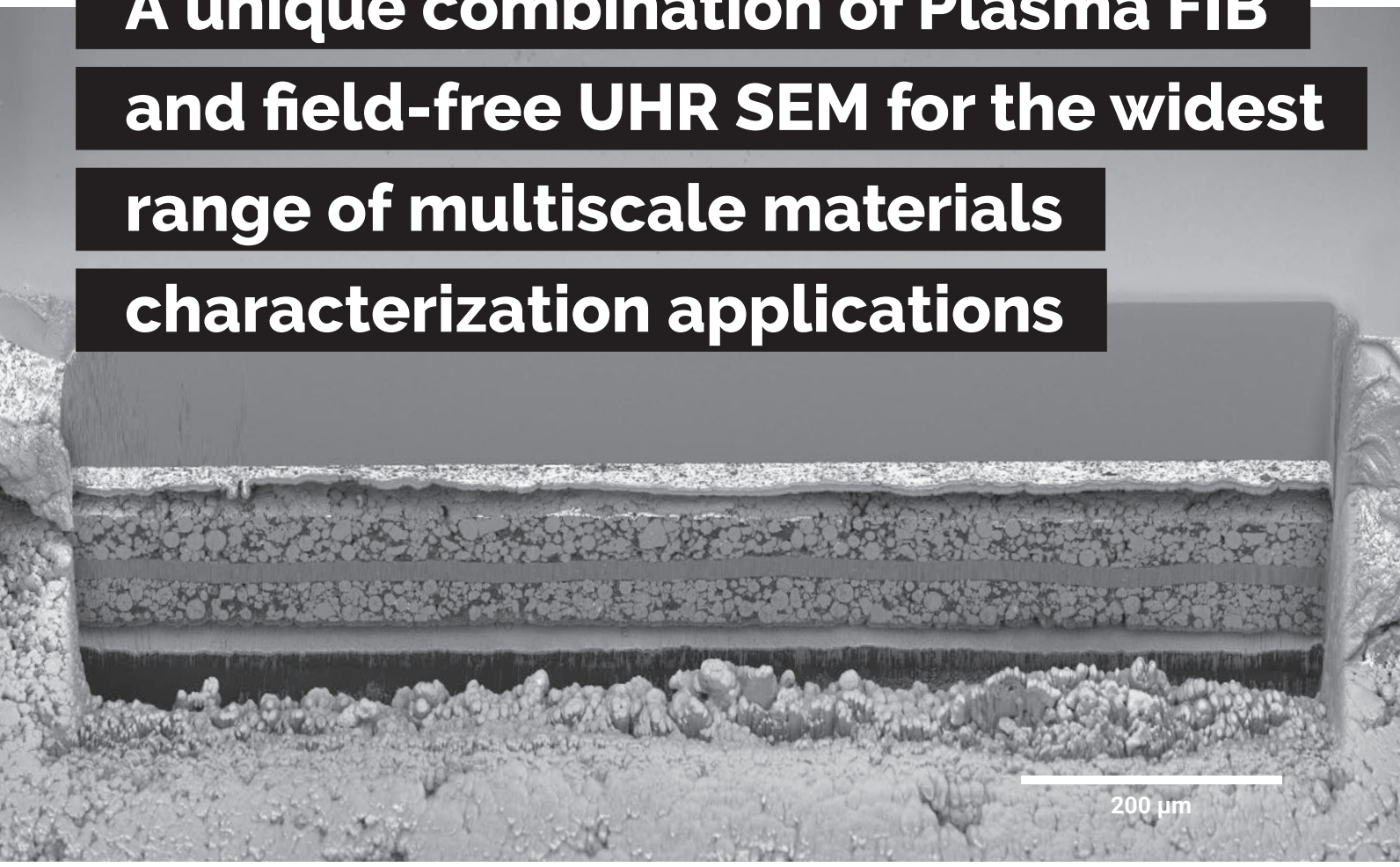

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REPORTS ON EMS SPONSORED EVENTS

SYMPOSIUM ON RECENT ADVANCES IN MICROSCOPY CHARACTERIZATION OF PHOTONIC AND OPTOELECTRONIC MATERIALS

April 10-11, 2019; London, United Kingdom

ADVANCED WORKSHOP ON CRYO-ELECTRON TOMOGRAPHY

May 11-17, 2019; Vienna, Austria

6TH ZOO MEETING ON CELL ADHESION AND MIGRATION IN INFLAMMATION AND CANCER

May 15-18, 2019; Rotterdam, The Netherlands

2019 INTERNATIONAL SCANNING PROBE MICROSCOPY (ISPM)

May 26-29, 2019; Louvain-la-Neuve, Belgium

4TH INTERNATIONAL WORKSHOP ON TEM SPECTROSCOPIES IN MATERIALS SCIENCE

June 17-19, 2019; Uppsala, Sweden

MICROSCOPY AT THE FRONTIERS OF SCIENCE. JOINT MEETING OF THE SPANISH AND PORTUGUESE SOCIETIES OF MICROSCOPY

September 11-13, 2019; Granada, Spain

RBSM MEETING 2019: MATERIALS AND LIFE SCIENCES: NEW INSIGHTS FROM QUANTITATIVE MICROSCOPY

September 9, 2019; Louvain-la-Neuve, Belgium

ADVANCED MICROSCOPY TECHNIQUES FOR PLANT-MICROBE INTERACTION ANALYSIS.

November 25-29, 2019; Tulln an der Donau, Austria

SYMPOSIUM ON RECENT ADVANCES IN MICROSCOPY CHARACTERIZATION OF PHOTONIC AND OPTOELECTRONIC MATERIALS

April 10-11, 2019; London, United Kingdom

This 2-day symposium focus on an emerging field of microscopy; the in-situ characterization of novel nanophotonic and optoelectronic systems and devices. Internationally known experts in the field of novel photonic and optoelectronic material development will join the symposium to discuss the most critical technological insights, discoveries and new practical applications in microscopy and micro-spectroscopy characterization of metamaterials, plasmonic and photonic crystal materials.

The symposium covered fundamental techniques such as optical microscopy, TEM, SEM, AFM, Raman, and FTIR for a wide range of possible applications, from chemistry and material fabrication to nanophotonic and optoelectronic systems engineering. The conference will also include workshop with hands-on demonstrations and possibility to test participant's samples on-site.

The symposium topics included:
2D materials
IV element-based photonic materials and devices
Chalcogenide materials
Quantum Dots and Nanowires
Organic materials
Liquid Crystals and Fluid Nanocomposites ■

Chair: Prof. Anna Baldycheva (University of Exeter) in partnership with the Royal Microscopical Society (RMS) and the European Microscopy Society (EMS)

ADVANCED WORKSHOP ON CRYO-ELECTRON TOMOGRAPHY

May 11-17, 2019; Vienna, Austria

Eighteen participants from seven European countries, China, Israel and the United States gathered at the Vienna Biocenter in Austria from May 11 to 17, 2019 for an advanced workshop on cryo-electron tomography. The event was jointly organised by the Electron Microscopy Facility of the Vienna Biocenter Core Facilities (VBCF) and Nexperion – Solutions for Electron Microscopy and consisted of a weekend pre-course for less-experienced participants teaching the basics of electron tomography, Linux and the image processing software IMOD and a five-day long main workshop. The later part focussed on all steps important for advanced cryo-electron tomography – beginning with cryo sample preparation, followed by recording of tilt series via SerialEM, tomogram reconstruction and visualization with IMOD to finally subtomogram averaging with PEET.

An ambitious scientific program of more than 50 lectures and hands-on practicals provided a balanced mix of theoretical knowledge and practical experience in all aspects relevant for cryo-electron tomography, and generated lots of ideas to be discussed in detail during multiple social and networking activities in the evenings.

Financial support by the European Microscopy Society as well as sponsoring by Diatome, Gatan, JEOL, Leica Microsystems, Sciences Services, Tescan, Thermo Fisher Scientific and TVIPS helped to put together an expert team of instructors including Drs. Ben Engel (Max Planck Institute of Biochemistry, Martinsried, Germany), Sharon Grayer Wolf (Weizmann Institute, Israel), David Mastronarde (University of Colorado Boulder, United States), Christiane Riedel (University of Veterinary Medicine, Vienna, Austria) and Florian Schur (IST Austria, Klosterneuburg, Austria) joining the organizers and complimented by several sponsored guest lecturers.

The next course is estimated to take place in May 2021 in Vienna, Austria. ■

Thomas Heuser,
VBCF-EM Facility
(http://www.vbcf.ac.at/em)

Günter Resch,
Nexperion E.U.
(https://www.nexperion.net)

6TH ZOO MEETING ON CELL ADHESION AND MIGRATION IN INFLAMMATION AND CANCER

May 15-18, 2019; Rotterdam, The Netherlands

This Zoo meeting, which was organised in the Rotterdam Zoo, hence its name, was the sixth in this series, of which the first was organized > 20 years ago. A number of 145 guests of which 36 PhD students visited the Zoo meeting. Due to the limited number of 145 attendees and the compact format of a 3,5 day meeting including a social BBQ music event on Thursday evening the attendees and speakers were able to network and discuss effectively on all scientific topics.

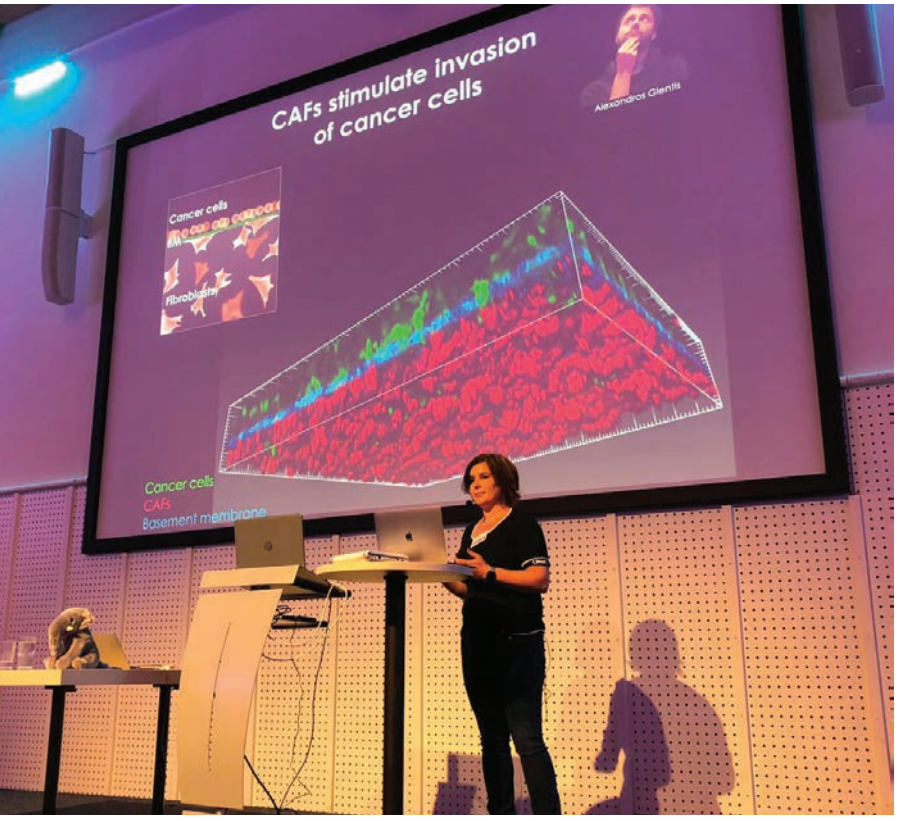
We had 28 invited speakers, which represented the forefront of this field of research. Novel life science techniques as well as live cell confocal imaging, super resolution imaging, modelling and quantitative imaging using innovative approaches and biosensors were the central topics during the presentations.

During the two poster sessions on Thursday and Friday afternoon 70 posters were presented. In the breaks and during the lunches several specialized biotech companies, such as LaVision, Ibidi, Alvéole Zeiss, Leica, Coherent and Gradientech showed the newest imaging technologies (life cell, confocal software and additional equipment and novelties such as sophisticated flow chambers, etc.)

At the end of the meeting we selected two posters for its best scientific impact and lay-out.

Some e-mail reactions of attendees (*names and e-mails of responders are available at the organisation committee):

“I just wanted to thank you and the organizing committee once again for the outstanding meeting, I thoroughly enjoyed it”.



"With this Mail I wish to finally thank you for making the effort to organize another ZOO meeting. I greatly enjoyed the meeting!! You chose great speakers and great topics and I consider the ZOO Meeting a meeting with excellent format and focus!!"

"Many thanks for a very nice and interesting meeting, I'm so happy we could attend."

Finally, we can conclude that we reached our mission and goals: this was a high scientific network meeting where new knowledge was shared and discussed. Short and long term (inter)-national cooperation can be expected which leads to scientific impact on the medical healthcare. ■

The organizing committee :
Linda Le Noble
Peter Hordijk
Alessandra Cambi
Peter Friedl
Marcel Spaargaren
Michael Sixt

2019 INTERNATIONAL SCANNING PROBE MICROSCOPY (ISPM)

May 26-29, 2019; Louvain-la-Neuve, Belgium

The International Scanning Probe Microscopy (ISPM2019) meeting was hosted by the Université Catholique de Louvain (UCLouvain) in Belgium and organized by Profs. David Alsteens and Yves Dufrêne. This was the 21st installment in a continuing series of conferences beginning in 1999 and featuring research on scanning probe microscopy (SPM), sensors and nanostructures. ISPM meetings aim to gather together researchers working on the development of SPMs as well as SPM users from diverse scientific and industrial disciplines, including materials sciences, physics, life sciences, the semiconductor industry and the energy industry to name a few.

The meeting brought together 140 participants from 18 countries on the UCLouvain campus in Louvain-la-Neuve. ISPM2019 assembled an impressive series of outstanding oral and poster contributions, covering nanobiology, nanophysics and novel SPM techniques with a keynote lecture of Prof. Hermann Gaub (LMU, München). The gala dinner took place in the famous and beautiful "Atomium" in Brussels. ■

Prof. David Alsteens and Prof. Yves Dufrêne

4TH INTERNATIONAL WORKSHOP ON TEM SPECTROSCOPIES IN MATERIALS SCIENCE

June 17-19, 2019; Uppsala, Sweden

Uppsala University hosted the "4th International Workshop of TEM Spectroscopies in Materials Science" between June 17th – 19th, 2019. The workshop brought together 50 researchers from 14 different countries to report on the state of the knowledge for the application of TEM based spectroscopy techniques such as Energy Dispersive X-Ray Spectroscopy (EDX) and Electron Energy Loss Spectroscopy (EELS) for the nano- to subatomic scale. The participants included 8 invited speakers and representatives from the 6 industry sponsors: FEI, JEOL, Oxford Instruments, Nordic Nanosolutions – Tescan, Zeiss and Gatan.

The workshop began Monday, with two tutorial sessions on the most widely used TEM spectroscopy techniques, EELS and EDX, held by Cécile Hebert (EPFL, Switzerland) and Nestor J. Zaluzec (Argonne National Laboratory, USA), respectively. Both these techniques are still in full development. In particular, the EDX technique, with its high acceptance angle detectors, bears new chances not only for the analysis of materials but also for the characterization of soft and biological matter as Nestor demonstrated in his talk. Session II focused on 3D spectroscopic tomography and data treatment with an invited contribution from Ling Xie (Uddeholm, Sweden). In sessions III and IV were dedicated to physical property measurements, spatial resolution and control of beam damage. Jan Rusz (Uppsala University, Sweden) presented achievements and new proposals for the analysis of magnetic samples using DPC and EMCD techniques, whereas Lewys Jones (Trinity College, Ireland) demonstrated how non rigid registration and template matching techniques lead to optimal data acquisition schemes. In the sessions V and VI, Per Persson (Linköping University, Sweden) convinced us that TEM spectroscopies are essential techniques to understand MXene based 2D materials and Axel Lübk (TU Dresden, Germany) demonstrated how powerful DPC techniques can be used to study inelastic momentum transfer. In session VIII, Fredrik Hage (SuperSTEM, UK) presented his latest work on atomic resolution studies of vibrational transitions.

Wednesday, 19th June was dedicated to the laboratory courses: Acquisition and Analysis of EELS, Experimental techniques on aberration-corrected Titan-Themis, New concepts and progress in EDX analysis, Strategies for data acquisition and data analysis, FIB – Advancing Capabilities in High Throughput 3D Analysis and Sample Preparation.

On behalf of the scientific organizing committee, Klaus Leifer, Jan Rusz and Hasan Ali would like to thank EMS for their generous support of the 4th International Workshop of TEM Spectroscopies in Materials Science. ■

MICROSCOPY AT THE FRONTIERS OF SCIENCE. JOINT MEETING OF THE SPANISH AND PORTUGUESE SOCIETIES OF MICROSCOPY

September 11-13, 2019; Granada, Spain

CLOSING REMARKS

MS: materials sciences; LS: life sciences; TD: technical developments

Microscopy at the Frontiers of Science (MFS2019), the biennial joint meeting of the Spanish Society for Microscopy (SME, http://www.microscopia.org) and the Portuguese Society for Microscopy (https://www.spmicros.com) took place on September 11th -13th 2019 at "Parque de las Ciencias" in Granada (Spain). Some figures about the meeting include the attendance of 154 registered delegates (127 academic and 29 company delegates). Nine institutions offered support and assistance to the activity, including the European Microscopy Society through an EMS sponsorship (2018 call), which helped to bring to the meeting several eminent incorporations from abroad the Iberian Peninsula. The meeting consisted of ten different sessions (4 corresponding to material sciences, 4 to life sciences and 2 related to technical developments) and included 4 plenary talks. Scientific communications (88 in total), with a high proportion of talks and invited talks (66.6%) were published within an abstracts book, freely available as a PDF file at the congress web site (https://www.mfs2019.com). Social activities included full catering and receptions in a typical "Granada's style bar", the "via Lactea" restaurant of Parque de las Ciencias, and a wonderful evening with gala dinner at the "Carmen de los Mártires", a lovely palace in the vicinity of the Alhambra. Excellent scientific contributions were presented all through the meeting and also included talks by the authors of three Ph.D. reports awarded by the SME in the fields of material and life sciences, and technical developments, respectively. Moreover, and as a satellite activity to the meeting, a workshop on "advanced microscopy imaging and image analysis" was organized on September 10th with the attendance of c.a. 30 scientists. Commercial exposition included the most recent advances in microscopy, brought to the meeting by 9 exhibiting companies who also had the opportunity to present their developments in flash talks to the whole audience. Finally, both societies had the opportunity to celebrate their plenary meetings and to interact in the preparation of future joint events, which also involve next MFS2021. ■

RBSM MEETING 2019: MATERIALS AND LIFE SCIENCES: NEW INSIGHTS FROM QUANTITATIVE MICROSCOPY

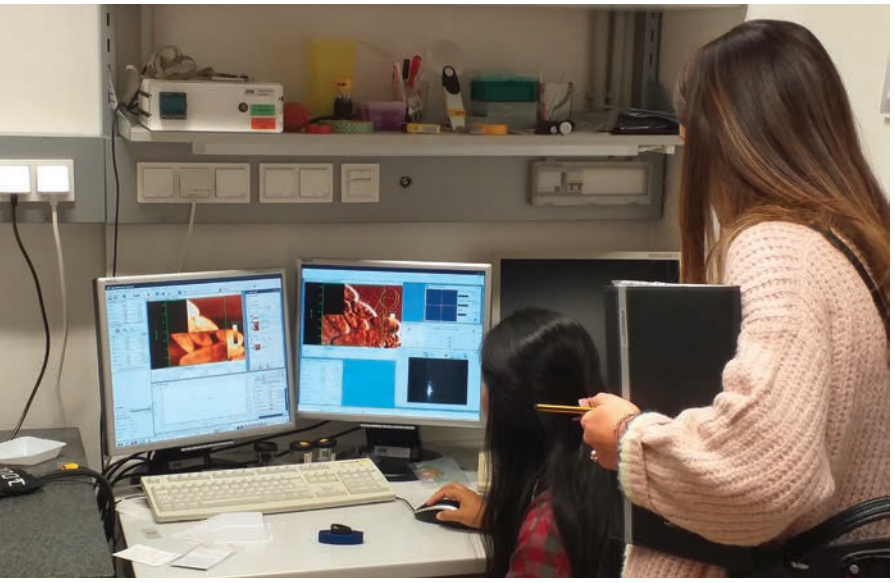
September 9, 2019; Louvain-la-Neuve, Belgium

The Royal Belgian Society for Microscopy (RBSM) is the voice of a large and growing community of microscopy developers and users in Belgium. Recently, the one-day annual meeting of the RBSM was held on September 9, 2019 at the Université Catholique de Louvain (UCLouvain). The Conference was organized by Hosni Idrissi (UCLouvain), Winnok De Vos (University of Antwerp), Marcel Ameloot (UHasselt), Pieter Vanden Berghe (KULeuven), Philippe Leclere (UMONS), Bernard Nysten (UCLouvain) and Stephane Godet (ULB). The topic of this conference focused on quantitative microscopy for the life science and materials science fields. Indeed, driven by technical advances and a surge in image informatics, microscopy has now left the anecdotical, descriptive era and has matured into a quantitative discipline. This is true for both the life science and the materials science fields, and the variety of microscopy technologies that are utilised therein. This conference aimed to highlight the most recent advances in the field with particular emphasis on intelligent, adaptive microscopy, multimodal imaging and deep learning. Two parallel sessions focusing on materials and life sciences were organized.

A first plenary lecture was given by Madeline Dukes (Protochips, USA), who gave an impressive overview of advanced methods in environmental transmission electron microscopy (TEM) that can be used by scientists from the materials and life sciences communities. After a set of selected talks on a variety of topics followed by a lunch, a keynote (for all) was given by Florian Jug (MPI–CBG, Germany), who gave an exciting overview of his contributions to machine learning in light and electron microscopy. Then, after a set of selected talks on a variety of topics, the day was concluded with an official celebration session dedicated to the winners of the best oral and poster presentations in the materials and life sciences sessions as well as the RBSM 2019 outstanding PhD awards. The objective of this conference was to bring together the protagonists in the field of microscopy development and microscopy-based research in materials science and life science. This, with the primary aim of exchanging insights in established and novel imaging methodologies. With 82 participants, 14 talks and 29 poster presentations on a variety of subjects, we believe this objective has been achieved. Therefore, we conclude that this one-day conference was a success. All information including the final programme can still be found online via the following URL: https://sites.uclouvain.be/rbsm2019/ ■

ADVANCED MICROSCOPY TECHNIQUES FOR PLANT-MICROBE INTERACTION ANALYSIS.

November 25-29, 2019; Tulln an der Donau, Austria



For the third time now, the AIT microscopy workshop was organized at Campus Tulln / Donau. Twenty scientists from all over the world took part in this year's event. Students, postdocs and scientists from industry from Austria, Australia, Belgium, the Czech Republic, Germany, Italy, Singapore, Japan, India and the USA came to complete an intensive one-week training course with us.

Hands-on training in small groups offered the opportunity to learn the latest microscopy techniques directly at a Confocal Laser Scanning Microscope, an Electron Microscope, an Atomic Force Microscope and a Fluorescence Stereo Microscope. Lab work included FISH and transformation of bacteria and fungi. Lectures on the basics of these techniques were an ideal addition to practice. Attractive guest lectures provided insight into the applications of the techniques learned for specific scientific questions. Prof. Hanns-Heinz Kassemeyer from the University of Freiburg presented his latest Cryo SEM results. Prof. Miroslav Ovecka from Palacký University in Olomouc offered fantastic insights into the world of plant development biology using light sheet microscopy. Prof. Levi Gheber (Ben Gurion University of the Negev, Israel) taught the physical basics of atomic force microscopy and gave a course in practical image analysis.

Additionally, we invited companies to present their newest devices: a tabletop electron

microscope from Hitachi with energy-dispersive X-ray spectroscopy for chemical elemental analysis of the samples by Videko and the digital fluorescence microscope from Keyence. Scientific exchange and lively discussions were initiated in a welcome event with a poster presentation and went on during the whole week. An evening at the Christmas market followed by dinner rounded off the week's demanding program. ■

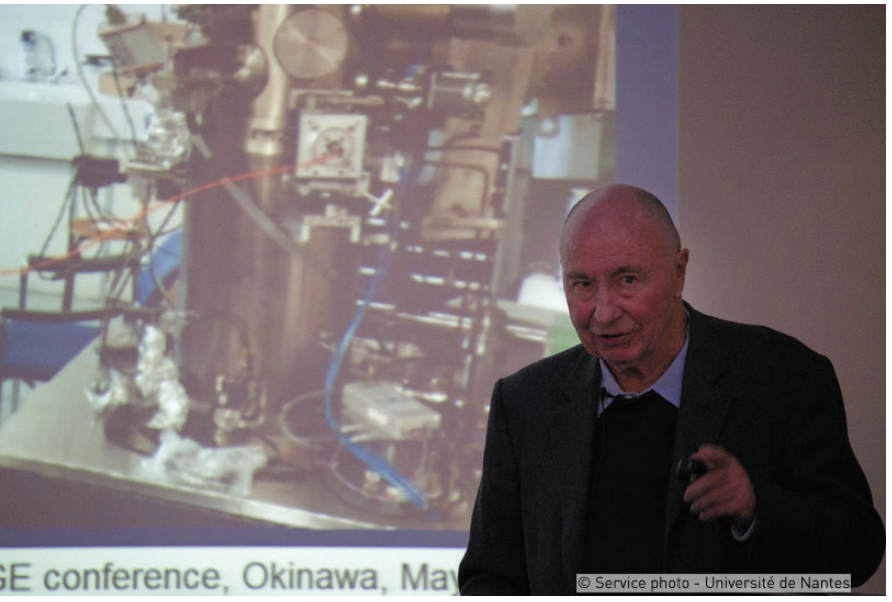
REPORT ON SPECIAL EVENTS

NANT'THEMIS INAUGURATION
February 7, 2019; Nantes, France

The Institut des Matériaux Jean Rouxel in Nantes (IMN), France, brings together teams developing a research based on the synthesis of new materials and their improvement for optimized properties (energy related materials, luminescent or RRAM applications...). Electron microscopy has always been an important characterization technique for the Institute, as well as for its partners in Nantes such as INRA or INSERM labelled labs. The project was thus to operate a high level S/TEM with a large panel of options susceptible to be applied to very diverse and strong topics developed in the Région Pays de la Loire.

This project was funded by Europe, the French government, the Région Pays de Loire, Nantes Métropole, and the CNRS. The microscope will be part of an electron microscopy platform named CIMEN for Centre Indisciplinaire de Microscopie Electronique de Nantes. Its multidisciplinary capabilities are already used by numerous academic laboratories and private companies.

The S/TEM Nant'Themis (Themis Z G3, Thermo Fisher Scientific) has been operational since December 2018 and the energy filter GIF Quantum (Gatan) since September 2019. Its configuration was designed to answer researchers needs in characterization of inorganic, metallic, composite, biological samples at nanoscale. It is equipped with a Schottky X-FEG, a probe corrector (60 pm @ 300 kV), a monochromator (energy resolution < 90 meV). Many techniques can be performed with this microscope such as differential phase contrast (iDPC), tomography (TEM, STEM, EDX), electron crystallography (with precession), phase and orientation mapping (ASTAR), EDX (with 4 SDD detectors), *in situ* imaging (up to 300 frames/s), strain mapping (4D STEM)... In addition to these techniques, *in situ*, cryo and environment preserved studies are made possible with dedicated sample holders.



Concerning Electron Energy Loss Spectroscopy (EELS), Nant'Themis was one of the first microscopes in Europe equipped with a configuration combining a very high resolution energy filter (Gatan GIF Quantum 966 ERS) with an electron direct detection camera (Gatan K2 Summit) in addition to the conventional CCD camera. This camera technology greatly improves the energy resolution and signal-to-noise ratio of EELS spectra compared to a CCD camera. A two days international Workshop on the contribution of Electron Direct Detection Cameras to EELS was held at IMN on October 2019.

About fifteen European scientists (England, Belgium, Spain, France, Switzerland) specialized in the EELS participated to this workshop co-organized with Gatan.

The inauguration occurred on February 7th 2019 and started with a live demonstration of a few capabilities of the microscope in front of the financial representatives in the command room and simultaneously in front of invited researchers in the IMN amphitheater. The afternoon was dedicated to talks given by five invited speakers: Christian Colliex (LPS, Orsay) and Quentin Ramasse (SuperSTEM Laboratory, Daresbury) gave an overview of EELS from its beginning to its new developments, Pascale Bayle-Guillemaud (IRIG-INAC, Grenoble) focused her talk on Li batteries characterization by S/TEM, Philippe Boullay (CRISMAT, Caen) highlighted new results concerning electron crystallography and Guy Schoehn (IRIG-IBS, Grenoble) presented cryo-electron microscopy results when applied to structural biology. ■

4TH SINO-GERMAN SYMPOSIUM ON ABERRATION-CORRECTED AND *IN SITU* ELECTRON MICROSCOPY AND SPECTROSCOPY IN THE AGE OF BIG DATA

October 8-12, 2019; Beijing, China

The 4th Sino-German Symposium on 'Aberration-Corrected and In Situ Electron Microscopy and Spectroscopy in the Age of Big Data' was held in the Beijing University of Technology in Beijing, China between October 8th and 12th, 2019. This 4-day symposium was organized by the Beijing University of Technology, Tsinghua University and the Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons in Forschungszentrum Jülich, in collaboration with an advisory board.

12 scientific sessions included more than 40 presentations given by invited speakers from China, Germany, Hong Kong and the United States. More than 270 participants discussed current developments and challenges of instrumental methods and recent results in the understanding of novel materials and devices and their properties resulting from the applications of advanced and in situ electron microscopy and spectroscopy in the age of big data. In particular, the symposium provided examples of the impressive progress that has been made possible by aberration-corrected electron microscopy.

The topics covered novel instrumentation for advanced TEM, high-resolution *in situ* and environmental TEM, minimum dose phase contrast tomography in STEM using pixelated detectors, ultrafast TEM for studies of phase transitions in materials, ptychography and 4D STEM, probing of surface phonon polaritons by STEM EELS, *in situ* imaging of magnetic solitons, phase imaging methods and methods of electron holography for quantitative measurements of charge density, electric and magnetic fields, electron phase shaping and the use of structured electron beams, atomic-plane resolved electron magnetic circular dichroism, time-resolved electron holography, studies of atomic-resolution dynamics in soft materials, correlative and multi-scale characterization, as well as developments in surface electron microscopy. Novel research was reported from areas such as energy technology, nanotechnology, nanoelectronics, information technology, transport, product development and environmental research. Examples of novel investigations included material reactions, ferroelectric oxides, superconducting materials, functional materials, defects, soft materials, low-dimensional magnetic materials, magnetic thin films, aluminium alloys, high entropy alloys, surfaces, water-splitting photoelectrodes, catalysts, solar cells, battery materials and device materials.

All of the participants, including the junior scientists, gave positive feedback about the choice of topical subject areas, the outstanding quality of the presentations and the smooth organization, which allowed for initiating contacts and discussions between newcomers and science leaders across a broad range of research fields. ■

Xiadong Han, Ang Li, Xiaoyan Zhong, Rafal E. Dunin-Borkowski, Wolfgang Jäger

IAMNANO 2019 INTERNATIONAL WORKSHOP ON ADVANCED AND *IN SITU* MICROSCOPIES OF FUNCTIONAL NANOMATERIALS AND DEVICES

October 27-30, 2019; Düsseldorf, Germany

Participants of the IAMNano2019 in Düsseldorf, Germany

The International Workshop on Advanced and In situ Microscopies of Functional Nanomaterials and Devices took place from October 27 – 30, 2019 at the Max-Planck-Institut für Eisenforschung (MPIE) in Düsseldorf, Germany. The workshop was jointly organized by the Max-Planck-Institut für Eisenforschung and the RWTH Aachen University, supported by an international advisory board. The German Science Foundation (Deutsche Forschungsgemeinschaft) supported the conference.

The international workshop IAMNano is a platform for scientists in the fields of advanced electron microscopy and materials science to exchange ideas and move their research forward. The topics range from state-of-the art development in instrumentation, scale bridging imaging techniques and tomography, aberration-corrected scanning transmission electron microscopy (S/TEM), electron holography, spectroscopic methods such as energy dispersive X-ray (EDX) and electron energy loss spectroscopy (EELS), *in situ*, *in operando*, environmental and low-voltage electron microscopy. Leading experts in instrumentation discussed the implementation of novel S/TEM related techniques with materials scientists to tackle fundamental questions for energy-related materials, catalysis, nanostructured materials, soft matter, and biomaterials. In addition, newest trends in correlative S/TEM with atom probe tomography techniques were presented a well as imaging and diffractions tools advancing scanning electron microscopy into areas formerly exclusively executed by S/TEM instruments. IAMNano 2019 was the seventh workshop and held for the first time in Düsseldorf. More than 130 participants from Europe, Australia, Canada, China, Japan, Korea, Singapore, South Africa and USA participated and presented their research in form of talks and posters.

The program consisted of more than 40 invited oral presentations of renowned speakers who gave an excellent overview in advanced electron microscopy and its application in various fields in physics, chemistry and materials science. The different sessions were dedicated to potentials of aberration-corrected STEM, electron holography and differential phase contrast imaging, *in situ*, *in operando* and environmental S/TEM, STEM imaging and analysis, spectroscopy, correlative microscopy and atom probe tomography. The sessions dealing with the application of these techniques were diverse and covering materials for energy application, structural materials such as alloys and steels, to biomaterials and soft matter. To trigger further discussion, the program was complemented by a lively poster session where more than 60 poster were presented by PhD students and postdocs. More details on the program can be found at www.mpie.de/iamnano2019.

Impressions from Düsseldorf and Coffee break at the IAMNano2019

The location within a former workshop hall used for hot rolling, which was reconstructed and hosts now the MPIE electron microscopy facilities and a space for meetings and conferences, led to an informal workshop where scientific discussions and exchange of ideas were fostered. The stimulating atmosphere and outstanding quality of presentations and posters were extremely well received by all participants, including the many junior scientists who participated. The participants' feedback on the scientific program, the poster presentations, and the choice of topical areas was very positive.

The excellent location, pleasant atmosphere, and very good organization triggered many fruitful discussions amongst the participants and initiated new contacts between scientists. ■

Gerhard Dehm, Christian Liebscher, Christina Scheu and Bernhard Völker
www.mpie.de/iamnano2019

esteem3

ENABLING SCIENCE AND TECHNOLOGY THROUGH EUROPEAN ELECTRON MICROSCOPY

THE 15 LABORATORIES IN EUROPE :

1. GEMINI TRONDHEIM
2. CMAL GOTHENBURG
3. WEMS CAMBRIDGE
4. OXTEM OXFORD
5. EMAT ANTWERP
6. ER-C JUELICH
7. IC-EM KRAKOW
8. LPS ORSAY
9. STEM STUTTGART
10. FELMI-ZFE GRAZ
11. JSI LJUBLJANA
12 CEMESTOULOUSE FRANCE
13. LMA ZARAGOZA
14. BEYONDNANO CATANIA
15. A-DME CADIZ

ESTEEM3 is an integrated infrastructure network of European Electron Microscopy Facilities providing transnational access for the academic and industrial research community in materials, physical, chemical and life sciences to the most powerful electron microscopy instrumentation and techniques available at the nanoscale.

Coordinated by Prof. Dr. Peter van Aken from the Max Planck Institute for Solid State Research in Stuttgart, Germany, the project has a term of four years, from January 2019 to the end of 2022, and is a follow-on-project of ESTEEM and ESTEEM2.

The project offers researchers in the private or public sector worldwide free Transnational Access to the best facilities and expertise in electron microscopy for the study of materials. Applications can be submitted online to https://www.esteem3.eu for one of the 15 laboratories in Europe, where applicants can request access to laboratories located in a different country than the applicant institution.

ESTEEM3 member laboratories and SMEs (Attolight, CEOS, DENS solutions and Nanomegas) also develop Joint Research Activities: one axis is to develop new techniques in electron microscopy, a second axis is devoted to the study of materials for ICT, energy, health and transport, and a third axis concerns automation and big data.

Additionally, ESTEEM3 deploys an education and training component by organizing schools, workshops and webinars on electron microscopy as Networking Activities.

“This project has received funding from the European Union’s Horizon 2020 innovation programme under grant agreement No 823717”. ■

OUTSTANDING PAPER AWARDS 2018

2018 EMS OUTSTANDING PAPER AWARD

The winners or their representant, and the chair Peter Nellist

Here we report on the EMS outstanding Paper Awards for 2018, which were chosen from a very strong field of entries and were awarded by Professor Peter Nellist (the Chair of the Jury) in Belgrade, Serbia, at MCM2019. The winners received a glass plaque plus a prize of € 1,000.

The following papers received the 2018 EMS Outstanding Paper Award in the respective categories:

Winners 2018 EMS Outstanding Paper Award:

1. Instrumentation and Technique Development: "Development of a high brightness ultrafast Transmission Electron Microscope based on a laser-driven cold field emission source", F. Houdellier, G.M. Caruso, S. Weber, M. Kociak, A. Arbouet, Ultramicroscopy 186 128–138, 2018 (award shared between the first and the last author)

2. Life Sciences: "The mitotic spindle is chiral due to torques within microtubule bundles", M. Novak, B. Polak, J. Simunić, Z. Boban, B. Kuzmić, A. Thomae, I. Tolić, and N. Pavin, Nature Communications 9, 3571, 2018.

3. Materials Sciences: "Reversible superdense ordering of lithium between two graphene sheets" M. Kühne, F. Börrnert, S. Fecher, M. Gorbani-Asl, J. Biskupek, D. Samuelis, A. V. Krasheninnikov, U. Kaiser and J. H. Smet, Nature 564, 234–239, 2018.

EMS extends its warmest congratulations to all winners.

OutPA 2017 – 2019 Jury Members (judging on papers in 2016 - 2017 – 2018 - 2019)

Erdmann Spieker (Institute for Micro- and Nanostructure Research, Erlangen, Germany)

Francesco Priolo (Università di Catania, Catane, Italy)

Paul Midgley (University of Cambridge, Cambridge, UK)

Bruno M. Humbel (University of Lausanne, Lausanne, Switzerland)

Catherine Venien-Bryan (Université Paris 6, Paris, France)

Jose-Maria Carazo (Universidad Autonoma, Madrid, Spain)

Chair: Peter Nellist (University of Oxford, Oxford, United Kingdom) ■

EMS
SCHOLARSHIPS 2019

EMS SCHOLARSHIPS 2019
MCM2019, September 2019; Belgrade, Serbia

Last Name	First Name	Society	Institution & Country
Martinovic	Tamara	SMS	University of Belgrade, Serbia
Costanzo	Manuela	SISM	University of Verona, Italy
Sadzak	Anja	CMS	Faculty of Science, University of Zagreb, Croatia
Knaislova	Anna	CSMS	University of Chemistry and Technology, Prague, Czech Republic
Moya	Arthur	RMS, EMAG, IOP	University of Oxford, United Kingdom
Akdemir	Ayşe Seda	IND	Istanbul University-Cerrahpasa, Turkey
Ciric	Darko	SMS	University of Belgrade, Serbia
Burini	Debora	SISM	University of Urbino, Italy
Kervancioglu Demirci	Elif	TSM	Istanbul University, Istanbul Faculty of Medicine, Turkey
Kilicaslan	Erdem	TSM	Sakarya University, Turkey
Durinova	Eva	CSMS	University of South Bohemia, Czech Republic
Novta	Evgenije	SMS	University of Novi Sad, Serbia
Carton	Flavia	SISM	University of Verona, Italy
Freeman	Helen	RMS, EMAG (IOP)	University of Leeds, UK
Vrca	Ivana	CMS	Faculty of Chemistry and Technology, University of Split, Croatia
Pagliari	Laura	RMS, SISM	University of Udine, Italy
Savaci	Umut	TSM	Eskisehir Technical University, Turkey
Hennessy	Michaël	MSI	University of Limerick, Ireland
Koroglu	Pinar	TSM	Halic University, Turkey
Skoupy	Radim	CSMS	Brno University of Technology, Czech Republic
Despotovic	Sanja	SMS	Faculty of Medicine, University of Belgrade, Serbia
Salucci	Sara	SISM	University of Urbino Carlo Bo, Italy
Klaser	Teodoro	CMS	University of Zagreb, Croatia

SHORT REPORTS

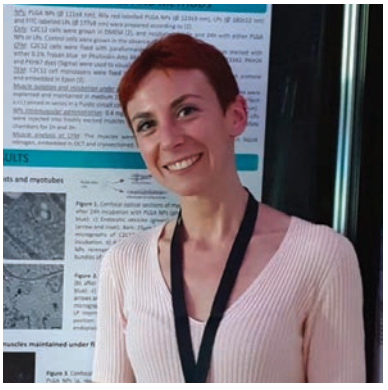
TAMARA MARTINOVIC (SERBIA)

As a life scientist working in the field of histology and embryology, I use different types of microscopes in my daily work as a teacher and as a researcher. I had a poster presentation during this congress, regarding ultrastructural features of mitochondria in lymphocytes of type 2 diabetes mellitus patients. With the use of transmission electron microscopy and fractional volume analysis I have showed that there is higher number, but same volume of mitochondria in the lymphocytes of patients with type 2 diabetes mellitus than in healthy individuals.

14th Multinational Congress on Microscopy (MCM2019) held in Belgrade, Serbia, gave me a great opportunity to get an update on latest life sciences microscopy techniques and usages, to see latest research in this field and to make new professional contacts. Workshops held on congress by leading microscope manufacturers like Thermo Fisher Scientific (FEI) and JEOL were exceptional place to see the latest achievements in electron microscopy, both in life and material sciences. I would like to express my gratitude to the European Microscopy Society for the scholarship which supported my presence at MCM2019.

I enjoyed interesting lectures and posters covering a vast range of microscopy topics. The high variety of techniques shown, gave me a lot of ideas for my future work. I would like to recommend to all researchers who are interested in microscopy to visit 17th European Microscopy Congress that will be held next year in Copenhagen.

MANUELA COSTANZO (ITALY)



I am grateful to the European Microscopy Society (EMS) and the Italian Society for Microscopical Sciences (SISM) for the scholarships that allowed me to attend at 14th Multinational Congress on Microscopy (MCM2019), in Belgrade.

At this conference, I gave a talk with the title "Effects of mild ozonisation on the dynamics of lipid droplets in adipose-derived stem cells and mature adipocytes", presenting my recent results on the potential of mild ozonisation in tissue regeneration and differentiation. I also had a poster presentation on another research subject: "Testing nanocarriers *in vitro*: are always cultured cells a reliable reference system?".

In this work, we investigated the interactions of two nanocarriers with skeletal muscle cells using two different experimental murine models *in vitro*: C2C12 cells and explanted soleus muscles maintained in a bioreactor, under fluid dynamic conditions. We demonstrated that the sole use of cultured cells is sometimes insufficient to fully understand the interactions of nanoconstructs with the live systems, and that it is mandatory to test them at least on whole organs.

I really enjoyed attending the life science sessions, where interesting lectures and oral presentations were given. During the MCM2019, I had the possibility to discuss my results with scientists from different Countries, and to receive stimulating suggestions to continue my researches.

It was also a great experience to discover the beautiful city of Belgrade, in the occasion of the city tour especially organized for the MCM2019.

ANJA SADZAK (CROATIA)

A while ago, I have received EMS scholarship (300 €) for the attendance of the ECIS (European Colloid and Interface Society) conference held in Leuven, Belgium from September 8-13, 2019. As my contribution, I have presented the poster presentation titled "Flavonoid embedded superparamagnetic iron oxide nanoparticles: Protection from lipid peroxidation".

Besides the poster contribution, this conference allowed me to meet some of the leading researchers in the field of colloid chemistry and possibly gave me the opportunity for new collaborations in the future.

I would like to thank EMS for recognizing the importance of scientific dissemination, especially among young people, and enabling them to get in touch with the scientist from all over the world. Without this scholarship, it would be significantly harder to attend the conference.

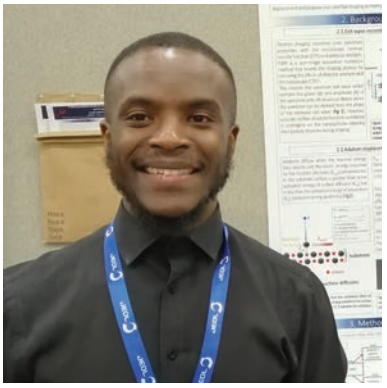
ANNA KNAISLOVÁ (CZECH REPUBLIC)

The 14th Multinational Congress on Microscopy started on Sunday 15. 9. 2019 in the evening by a Welcome Reception in Metropol Palace hotel. I had there a time to speak with other participants about their research and about this conference (e.g. with Dr Dragan Rajnovic). On Monday 16. 9. 2019 the oral and poster presentations started. Through the week of the conference, I heard many presentations about microscopy instrumentation in material research (metals and intermetallics) for example, presentations about inclusions in steels, nanoparticles in ODS steels, precipitation behaviour in TiAl intermetallic alloys or about evaluation of fracture toughness etc. I visited also poster presentations and spent a lot of time especially in the section of material science. On Tuesday, I participated JEOL delegate party evening. Throughout the week, I talked with other scientists. It was great to meet some scientists with research similar to mine and to talk about our researches and the possibilities for our further cooperation.

On Tuesday 17. 9. 2019 I had the oral presentation where I presented my research on the Effects of alloying elements on the microstructure of Ti-Al-Si alloys. Ti-Al-Si alloys are a prospective material for high-temperature applications and they are supposed to substitute critical raw materials (CRM). Due to their low density, good mechanical properties, and corrosion and oxidation resistance are these intermetallic alloys considered for the aerospace and automobile industry applications. Addition of alloying elements into the TiAl15Si15 alloy (chosen due to it's appropriate homogeneous and fine-grained structure) could improve the properties of these alloys. Selected alloying elements (cobalt, chromium, iron, molybdenum, niobium and nickel) improve some mechanical properties (hardness, fracture toughness, ultimate tensile strength) and also high-temperature properties. My presentation described the influence of these elements to microstructure, mechanical and tribological properties.

I got some advice on my future research there so I will continue with the preparation of the Ti-Al-Si alloys with various alloying elements and try further microscopy techniques to understand the connections between their structure and mechanical properties.

ARTHUR MOYA (UNITED KINGDOM)



Microscopy & Microanalysis 2019, Portland, USA, 4-8 August 2019

The Microscopy and Microanalysis 2019 (M&M 2019) conference was held on the 4th to the 8th of August in 'The City of Roses', Portland, Oregon in the USA. The conference took place at the Oregon Convention Centre, in the heart of the picturesque greenery and mountain ranges, surrounded by a plethora of fine-dining restaurants and vivid nature parks. It is here where world-leading microscopists and scholars met for the annual meeting. There were over 1,200 platform and poster sessions, workshops, tutorials and networking events, including 2 significant plenary talks.

The plenary talks were given by Dr. Joachim Frank and Dr. Richard Henderson, 2017 Nobel Laureates in Chemistry for their contribution to the development of cryo-electron microscopy for high-resolution structure determination of biomolecules in solution. Parallel sessions where invited speakers, student oral and poster presentations in the analytical, biological and physical sciences were held throughout the 4 days of the program. One of the highlights of the conference was a talk by Dr. Pieter Kruit titled, 'Phase contrast in quantum electron microscopy' which was very fascinating in its content and the heated question and answer session that followed.

On Wednesday, the 7th of August, I presented a poster titled, 'A semi-quantitative predictive model for SnO_2 adatom diffusion & its application to exit wave reconstruction'. My poster drew considerable attention from scholars and microscopy experts because I was awarded the prestigious M&M scholar award. The best contact I had was with Dr. Egerton whose research was valuable for the poster. His offer to assist and his interest in the conclusion of the research were most welcome. Furthermore, I received the best poster award in the analytical sciences category for that day.

I would like to thank The Keith Prout Crystallography Fund for their financial support that made it possible for me to attend this conference.

AYŞE SEDA AKDEMİR (TURKEY)

14th Multinational Congress on Microscopy took place in Belgrade from 16 to 20 September. I would like to thank the organizing committee for this great congress. Since this was the first conference in which I made an oral presentation, I was very excited and glad when the results of the scholarship applications were announced. I had the opportunity to present our research entitled "Resveratrol recovers the beta cell mass, islet morphology, and apoptosis in Fructose-fed Streptozotocin induced Rodent Diabetes". It was a very important and unforgettable experience. I also received very helpful advice about our work at the end of my talk. My presentation was in LS7 (Multidisciplinary approaches for medical and biological sciences) session. There were 8 different sessions in life science.

There were very interesting plenary talks. During the congress, I had the opportunity to listen and meet the researchers not only in my own field but also from other fields. These talks helped me to learn about new studies and also helped me with the techniques I could use in my Ph.D. thesis. I was very interested in talks especially in LS2 (Structure and imaging of biomolecules), LS5 (High-resolution microscopy in life sciences), LS6 (Nanomaterials in biology and medicine) and LS7 session. Plenary lectures in life science session "Microscoping the amoeboid cell motility" by Prof. Dr. Igor Weber and "Anatomy and Physiology of The Nutritional System" by Prof. Dr. Saverio Cinti were excellent. I think it is really inspiring to listen to different researchers and looking at the issues from their side gives us new perspectives. So, I would like to thank the European Microscopy Society for financial support and for giving me the opportunity to attend the 14th Multinational Congress on Microscopy. I wish I can attend the next congress that will take place in Vienna.

DARKO CIRIC (SERBIA)

When it comes to the methodology in the use in biological sciences, microscopy is distinguished by the virtue of directly showing what we can very often infer only indirectly with other methods. It thus possesses a unique quality of being able to persuade those critics saying "I will believe it when I see it." Transmission electron and confocal microscopy are indispensable in our studies of autophagy, a part of which was my poster presentation of autophagy analysis in lymphocytes of patients with type 2 diabetes mellitus and hyperlipidemia. Transmission electron microscopy is the only way to directly visualize autophagic structures in an incredible level of detail, while the technics of immunoelectron and confocal microscopy enable us to study autophagy in an even more elaborated fashion.

No less is true for many other avenues of biological research, which makes the conferences like this a great place to get an update of the latest research news, to make new professional contacts and even new friends and to take a peek at the ideas that other people had when confronting to problems similar to your own. This is why I wish to thank the European Microscopy Society for the financial support which enabled me and many other young scientists to participate at the MCM2019.

I personally enjoyed listening to lecturers and taking to the poster presenters. Based on my personal experience this year, I would recommend to all those researchers who are interested in microscopy to visit next EMS annual meeting in Copenhagen in 2020. At the end, I hope that participants from other countries have really had a great time in my hometown, which had the privilege to host MCM this year.

DEBORA BURINI (ITALY)

My name is Debora Burini, I'm a third year PhD student in Life Sciences, Health and Biotechnology, at Urbino University (Italy). It was a really pleasure to participate at my second MCM. It was very interesting and rich of excellent speakers and works.

I presented a poster titled "Morphological evaluation of natural antioxidants protective effect in drug-induced C2C12 myotubes atrophy". Briefly, in our study C2C12 myotubes were treated with a virgin oil flavonoid before a common glucocorticoid drug administration, which was used to mimic muscle atrophy in vitro.

This treatment induces a diffuse damage, such as chromatin condensation, altered or empty mitochondria and smaller fibers. Myotubes treated with antioxidant before drug administration, instead, show preserved mitochondria and fibers becoming comparable to the control ones. Taken together, our preliminary data evidence a probable role of this natural antioxidant in counteracting muscle atrophy, thus preventing or limiting muscle mass reduction and damage.

Finally, I would like to thank the European Microscopy Society (EMS) and the Italian Society for Microscopical Sciences (SISM) for the scholarships, and the organizing committee for the opportunity to present my data at the 14th MCM2019 in the beautiful city Belgrade.

ELİF KERVANCIOĞLU DEMİRCİ (TURKEY)

I am honored that EMS has supported my participation at MCM2019, the 14th Multinational Congress on Microscopy in Belgrade, Serbia. I would like to thank the European Microscopy Society (EMS) and the Turkish Society for Electron Microscopy (TEMD) for the scholarship. The conference has truly been a great experience, because it gave me the opportunity to be surrounded by experts in the field of electron microscopy. MCM2019 allowed me to widen my knowledge about different topics in microscopy by attending a great variety of talks and by visiting a lot of posters. Workshops of interesting subjects were given by the sponsors and the sponsors also presented new tools on the market. Furthermore, I had the pleasure to present our results in the form of a mini oral presentation and a poster on "The Effect of Seeding in Programmed Slow Freezing of Immature Testicular Tissue". Some researchers were interested in our study and came at the poster session and after my oral presentation, gave positive feedbacks and asked me questions. It was a pleasure to get to know other scientists in the field of microscopy and discuss with them. This conference was a good oppotunity for me to build new collaborations and gave even more motivation. I am looking forward for the next conference in Vienna, Austria.

ERDEM KILICASLAN (TURKEY)

I added two pictures of me during my presentation. I thank to European Microscopy Society for their kind interest and polite contribution.

Thanks to their financial support to me for expenses, I had chance to participate this conference as Electron microscope specialist user from Turkey. I am again and again feeling in honor to be part of this EMS society.

EVA ĎURINOVÁ (CZECH REPUBLIC)

Laboratory of Electron Microscopy, Institute of Parasitology, Biology Centre CAS in České Budějovice, Czech Republic.

Institute of Physics, Faculty of Science, University of South Bohemia in České Budějovice, Czech Republic.

With the scholarship granted by the European Microscopy Society I was able to attend the 14th Multinational Congress on Microscopy (MCM) held from 15th to 20th September 2019 in Belgrade, Serbia.

I was happy to share the results of my research on specimen preparation for SBF-SEM in the form of an oral presentation. I shared the section (Advances in sample preparation techniques) with researchers from all over the world who presented very interesting topics mainly from the field of material science.

I attended many excellent presentations and had a great opportunity to meet other researchers. Although I did not meet many scientists using similar technology in their research, I was glad to widen my knowledge on other fields such as nanostructures and material science or combination of electron and fluorescence microscopy. From the many presentations I would like to point out a plenary lecture titled "Atomistic Phenomena in Nanostructures for Energy Related Applications" presented by a great scientist Prof. Dr. Velimir R. Radmilović of Serbian Academy of Sciences and Arts or "Using off-axis electron holography to measure magnetic properties of materials" by Dr. Andreás Kovács from Ernst Ruska-Centre for Microscopy and Spectrometry with Electrons in Julich, Germany.

Apart from scientific presentations I also attended several workshops lead by microscopic companies and learned about the advances in their technology development, especially in cryo-EM which is also the interest of my studies.

Toward the end of the meeting, I took the opportunity to visit the city centre of Belgrade with a guided tour organized by the congress and extended my knowledge also on the field of history and geography.

Both attending a multinational conference and having an oral presentation at such event was a first and thus extremely beneficial experience for me and I would like to thank the European Microscopy Society for enabling me to attend.

EVGENIJE NOVTA (SERBIA)

Belgrade, Serbia was honored for the first time to be the host of the 14th Multinational Congress on Microscopy September (MCM2019) held from 15-20th September 2019. The scientific program was arranged in three sessions (instrumentation and techniques, life sciences and materials sciences), with six invited plenary lecturers and more than 300 participants, therefore evolving into a comprehensive forum for discussion on different applications of various microscopy techniques for both experts and young researchers.

For a PhD student like myself, at the outset of his research career, the awarded scholarship by the European Microscopy Society (EMS) provided much more than just an opportunity to attend this event.

It was a great honour to present my work (on the influence of polymerization shrinkage on tooth tissue) during a 15 minutes oral presentation in front of the audience at an established conference as MCM2019 (EMS extension), especially because my primary profession is Dental Medicine.

This recognition and support by EMS is a major advance in my early stage career and a great encouragement to persevere. I have learned a lot about the emerging and new research modalities related to contemporary microscopy techniques and expanded my knowledge in the field. Moreover, I have met many interesting people and established new connections that could be of immense value for my further career development.

The respect by EMS for my working efforts gave me the sense of full affiliation to this society and optimism that this could be just the tip of the iceberg.

FLAVIA CARTON (ITALY)

I'm Flavia Carton, a post-doc fellow at the University of Verona (Italy) working in the field of Nanomaterials in biology and medicine.

First, I would like to thank the member of the European Microscopy Society that awarded me the scholarship to attend the 14th Multinational Congress on Microscopy in Belgrade on September 15-20, 2019.

During this congress, I had the opportunity to present as a mini-oral poster presentation my work titled "Alcian Blue staining to study nanoparticle cell interactions at transmission electron microscopy". The main aim of this research was to set up an alternative application of the classic Alcian Blue methods for studying the cell uptake and intracellular trafficking of hyaluronic acid-based nanoparticles at the ultrastructural level.

During the Congress, I was able to illustrate my results to several scientists with different backgrounds who gave me stimulating suggestions to improve my research while giving me the chance to lay the basis for future collaborations. Attending the oral presentations and the poster session, I was made aware of a wide variety of inspiring research projects and innovative technical applications that increased my scientific knowledge and research enthusiasm.

For all these reasons, I am grateful to the Congress Organizers who allowed me to exchange experiences and consolidate my belief that cooperation and teamwork will be crucial to foster my professional and personal growth.

HELEN FREEMAN (UNITED KINGDOM)

This September, the German Society for Electron Microscopy hosted the Microscopy Conference (MC2019) in the Technische Universität Berlin.

21 sessions provided a broad and exciting selection of talks in instrumentation and methods, materials science and life science. The afternoon poster sessions supplemented the oral presentations and provided time for scientific discussion. In addition to the scientific program, the industrial exhibition showcased the latest developments in instrumentation and data analysis with a range of lunch-time workshops on hardware/software use, and product development.

My attendance to this conference was partly funded by the European Microscopy Society. My attendance at MC2019 was particularly good timing as I moved from Berlin to Leeds (UK) last year; it was great to re-connect with colleagues and keep up to date with microscopy research in Germany and throughout Europe.

TEM instrumentation and methods talks were of particular interest, such as those discussing the applications of automated software tools, pushing the limits of low-Z EDX detection and 3D electron diffraction. I was also interested to see so many talks integrating electron and x-ray crystallography as this is a field I am beginning to explore.

As always with microscopy conferences, it was great to rendezvous with researchers from previous collaborations and meet new people to build multidisciplinary links. The conference's social events hosted were both entertaining and great for networking.

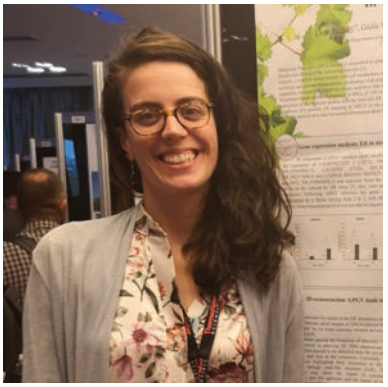
IVANA VRCA (CROATIA)

Attending Multinational Congress in Microscopy in Belgrade (Serbia) from 15 – 20 September was very useful and interesting experience, both professionally and socially. The host gave a great effort to organize the interesting plenary lecturers like Prof. Dr. Velimir R. Radmilovic, Prof. Dr. Igor Webber, Dr. Vincenzo Grillo, Prof. Dr. Saverio Cinti, Dr. András Kovács and Prof. Dr. Goran Dražić.

In the Life sessions, that I was attending with my oral presentation untitled Screening of surface mustard seeds morphology by SEM (scanning electron microscopy) and optical microscopy before and after conventional and modern extraction techniques, there were many interesting and useful lecturers and exhibited posters. It was the possibility to learn a lot of new facts about the application of microscopy in different scientific fields and found new ideas that will contribute to my research in the future. I also met new colleagues with I am planning to work with in near future.

I want to congratulate the Organizing Committee of MCM2019 for organizing great congress and special thanks to EMS and CMS for recognizing me as a candidate for the scholarship. Providing scholarships to young researchers is a great opportunity and support which allows you to meet great scientists from all over the world, to learn about microscopy equipment and new techniques and also encourages you to develop yourself as a scientist.

LAURA PAGLIARI (ITALY)

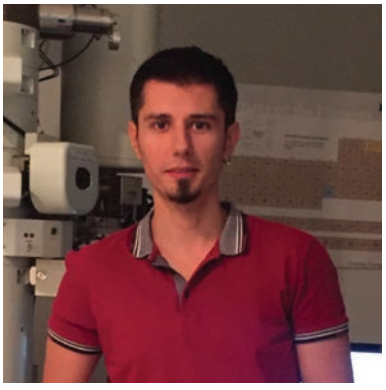


I would like to thank the European Microscopy Society and the Italian Society for Microscopical Science (SISM) for the scholarships, which allowed me to attend the 14th Multinational Congress on Microscopy in Belgrade (Serbia).

As a post-doc of the Department of Agricultural, Food, Environmental and Animal Sciences (University of Udine, Italy), I presented my research on the identity of the membranous structures reported in grapevine tissues infected by grapevine Pinot gris virus (GPGV). Combining conventional transmission electron microscopy, with immunolabeling and ion beam scanning electron microscopy, a better understanding of the microenvironment organization of viral replication complexes in their natural host has been provided. During the poster session, I had the opportunity to share my work, receiving helpful and positive feedbacks and getting in contact with researchers with similar interests. More generally, the poster session represented an opportunity to meet and to discuss with scientists involved in all sorts of research subjects and experts in the use of different microscopy techniques. This great variety allowed me to widen my knowledge and inspire my scientific creativity. Moreover, I really enjoyed the Life Science session, which, even if and because of it was mainly related to human and animal biology, gave me the chance to collect new and unexpected hints for my future works. For this reason, I really appreciated the lectures on neuroscience and the histopathology session.

Finally, I would like to thank both microscopy societies to have given to me the opportunity to meet, also in this circumstance, foreign friends and colleagues and the other Italian SISM members, thus reinforcing relationships and partnerships both under the professional and the personal profile.

UMUT SAVACI (TURKEY)



I would like to sincerely thank to the European Microscopy Society (EMS) for supporting me with the EMS scholarship grant for congress participation, which allowed me to attend the 14th Multinational Congress on Microscopy (MCM2019) in Belgrade, Serbia in September 2019. I participated in the congress by presenting two oral presentations titled **"Microstructural Characterization of Zinc Tin Oxide (Zn_2SnO_4) Particles Synthesized Via Hydrothermal Synthesis to be Used in Sputter Target"** and **"Precession Electron Diffraction: Application to Various Ceramic Composites".** These talks covered my works on characterization of the effects of different processing conditions on hydrothermally synthesized particles and characterization of orientation relations between phases in different ceramic composites by using orientation maps obtained by conducting precession electron diffraction, respectively. At this congress, I was able to present my results and share ideas for my research. Attending this congress also allowed me to explore fields in electron microscopy beyond my own research.

During MCM2019, I met several scientists from around Europe and discussed various research topics with them. Also, attending this congress has given me valuable ideas on possible Post-Doc positions that I have been looking for.

To summarize, this congress was extremely useful for me and it gave me the opportunity to meet many scientists working on different topics related to electron microscopy as well as people from the microscopy companies. I am very grateful to EMS for making it possible for me to participate this multinational congress. I hope to be able to attend forthcoming emc2020 meeting in Copenhagen.

MICHAEL HENNESSY (IRELAND)

Electron Beam Spectroscopy for Nanophotonics (EBSN) 2019
16-18th September 2019
Laboratoire de Physique des Solides, Orsay, France

The Electron Beam Spectroscopy for Nanophotonics (EBSN) workshop 2019 took place in the picturesque surroundings of Orsay, France. Researchers from all over the world attended the Laboratoire de Physique des Solides to review state-of-the-art, cutting edge new work in electron beam spectroscopy. The workshop hosted a packed schedule of oral presentations (a nice mix of 30 min and 15 min talks), as well as ample time to explore the eighteen poster presentations. Guided tours of three different microscope setups also provided an opportunity to see the instruments used at the institute, including the ChromaTEM which can achieve an astonishing 5 meV energy resolution in STEM EELS.

The conference opened with a last-minute replacement – Fabrizio Carbone was, unfortunately, unable to attend and so the first talk was conducted by Ivan Madan, who delivered a compelling talk on patterning the electron wavefunction. The high standard of presentation was maintained throughout the conference. Highlights of the first day for me included Pieter Kruit's use of the quantum Zeno effect to create contrast in EM, Quentin Ramasse's atomic resolution phonon spectroscopy and momentum-resolved EELS, and Andrew Yankovich's plasmon-exciton hybridization at the nanoscale. Talks were followed at the end of the day by a two-hour poster session, providing an opportunity for attendees to meet and network. Discussions were continued over dinner and the day came to a close.

The second day began where the first left off. Ofer Kfir stood in for the absent Claus Ropers and spoke about coupling free electrons and whispering gallery modes. After a coffee break and an engaging talk from Holger Muller, attendees reconvened for an open roundtable discussion on new quantum phenomena in e-beam/light interactions. The roundtable was kick-started by several of the invited speakers presenting a single slide for one minute each to share their predictions for directions that the field will take in the coming years. Afterwards, the floor was opened for comments, and discussions ranged from techniques such as momentum resolved electron holography to the possibilities of on-chip electron physics to the very definition of what we consider to be quantum interactions. The roundtable was well mediated by organiser Mathieu Kociak and made for one of the most fascinating and varied fixtures of the weekend. The day wrapped up with one more session of talks, most notably invited speaker Jennifer Dionne delivering her talk remotely from Stanford. The day concluded with a buffet conference dinner.

The final day of the conference opened with another roundtable discussion about the future of the EBSN workshop. Ideas for the next instalment were submitted by attendees and discussed. It was clear that all involved were happy with the layout of this year's workshop – the limited attendance and lack of scheduling conflicts allowed for a level of engagement often made difficult in larger meetings. The roundtable was directly followed by a talk from organiser Luiz Tizei, on phonon-plasmon coupling. A targeted session centred on beam shaping and structured electron beams took place after a coffee break, fuelling considerable discussion at lunch. The workshop wrapped up with one final session before a few words of thanks from the organisers. I left Orsay feeling inspired, motivated and with a lot of new ideas for my own research. I plan on returning for the next instalment in two years' time.

PINAR KÖROGLU (TURKEY)

I would like to thank the European Microscopy Society for supporting my participation at 14th Multinational Congress on Microscopy September 15–20, 2019, Belgrade, Serbia. I was very pleased to learn that I had selected as the recipient of your scholarship. Bursary position offered me the opportunity to present an oral presentation on "Alteration in buccal mucosal cells due to the effect of smoking cigarette and periodontitis by assessing genetic and histopathologic damage". The conference was an interesting experience. I was excited to meet different colleagues involved in the same research field attended lectures on new and interesting topics. The meetings gave an excellent insight into various microscopy techniques for my research. They gave me valuable advices about how to use the different techniques especially nanomaterials in biology and medicine section. During the conference I had the opportunity to share part of my work through an oral presentation and got in contact with people interested in it. I also had chance to discussed other people's research. I have also visited the well-organized exhibition hall where new developments from the companies were nicely exhibited. Moreover, a lot of posters and talks allowed me to meet many scientists and to expand my knowledge about different microscopy technique, as well as to take different ideas for future collaborations. I was very glad with the organization and execution of the congress. Researches have been performed by using microscopical and imaging techniques, as well as technological innovations. In conclusion, this participation became a great asset for me and it was very motivating to get better research done. I also enjoyed the perfect organization of the conference, and the beautiful city of Belgrade. I am also surprised to learn that there are about 6,000 Turkish words in Serbian. For example; Taş meydan, Kale meydan, divan... In addition to the participation in the conference it was a great experience to take a look around in Belgrade, test the local food and drinks.

I'm looking forwards to the next one already!

RADIM SKOUPY (CZECH REPUBLIC)

Firstly, I would like to thank the European Microscopy Society (EMS) for supporting me on the 14th Multinational Congress on Microscopy which was held in Belgrade from 15th to 20th of September 2019.

During the congress, I presented my talk on topic **"Assessing the thickness error rate of quantitative STEM measurements"** which was found very interesting by broad audience. At the end of the congress my presentation was awarded as Best Oral Presentation in instrumentation section which indicates that this type of research is very perspective for the future.

My participation at the congress brought me the opportunity to meet the people working on the cutting-edge research in field of electron microscopy especially in quantitative STEM imaging. Coming to MCM19 was of great importance to my continued work in the field of electron microscopy and experiencing the Belgrade people and Serbia is something I will never forget.

SANIA DESPOTOVIC (SERBIA)

Teaching and research assistant on the Institute of Histology and Embryology, Faculty of Medicine, Belgrade, Serbia

The 14th Multinational Congress on Microscopy was beautifully organized and very useful and interesting too me, as my research is tightly related to microscopy and its application in cancer research. I am particularly interested in the FSC (Fluorescence Correlation Spectroscopy) and possibility to quantitatively asses dynamic processes in the cells, so I enjoyed this presentation a lot.

Another topic I was very interested in is correlation between light and transmission electron microscopy.

What I found extremely useful is variety of topics covered, which gave me a chance to learn about new techniques but also new approaches of techniques I am already familiar with. I met a lot of great and interesting young and experienced scientists with whom I had a chance to discuss different topics- and I have received very useful discuss advices for my future research! I am already trying to implement that.

I would like to thank the European Microscopy Society (EMS) for a grant which gave me an opportunity to attend the conference, meet people and present a part of my research titled "Quantifying organization of collagen fibers in the uninvolved human colon mucosa 10 cm and 20 cm away from the malignant tumor."

SARA SALUCCI (ITALY)

I would like to thank the European Microscopy Society for the scholarship, which allowed me to participate to the 14th Multinational Congress on Microscopy (MCM2019), in Belgrade. I presented an oral contribute on a new holotomographic microscope utilized for monitoring apoptotic cell behavior. This instrument combines two technologies, holography with tomography and allows the quantitatively and noninvasively investigation of biological cells and thin tissues, by obtaining 3D images. Thus, holotomographic microscope can represent a powerful new tool for the evaluation of in vivo cell response to various stimuli without any labeling staining and in real time. I received some interesting questions from colleagues which, after the session, continued with an insightful discussion.

Therefore, the attendance at this conference represented an excellent opportunity to meet international colleagues, and experts in the different microscopies. The high quality of plenary lectures and oral presentations gave me the possibility to improve my knowledge and to develop new ideas for my research activity. Furthermore, the exhibitions and lunch workshops offered me the possibility to have a look at modern scientific methods and equipments. In my opinion, MCM conferences permit a constructive interaction among young and expert microscopists, representing a primising step for future scientific collaborations too. For that, I look forward to attending the next MCM, in 2021.

TEODORO KLASER (CROATIA)

Report of attendance for publication in the 2019 EMS Yearbook by Teodoro Klaser, department of physics, University of Zagreb.

First, I would like to thank the European Microscopy Society (EMS) for the scholarship and the Croatian Society for Microscopy (HMD) for their support, which allowed me to participate at the 14th Multinational Congress on Microscopy (MCM2019) September 15-20, 2019 in Belgrade, Serbia.

At this point, at the very early stages of my career, participation at the Congress MCM2019 give me an opportunity to enrich my knowledge, in the short time, by sharing the knowledge with the most prominent experts in the field of microscopy. The direct contact gave me the opportunity to present my research topic and its key points that are of interest for my work. In addition, I had the opportunity to meet young colleagues, set up a foundation for future international collaboration, and expand my professional network.

At congress, I had the chance to give a talk entitled "Thermosalient behavior in organic alloy of 1,2,4,5-tetrabromobenzene and 1,2,4,5-tetrachlorobenzene". Alloys with the amount of TeCB up to 8 wt% exhibit similar structural characteristics at room temperature; they all crystallize in β form, and upon heating convert to γ. The phase transition temperature changes with alloy composition and coincides with the temperature of jumping. Molecular crystals that exhibit thermally activated motion are currently hot topic in the materials science and the tuning of their proprieties, like temperature of jumping is a great challenge in this kind of materials.

I look forward to continuing to engage with the European Microscopy community in the future, and hope to be able to attend future meetings in the field of microscopy.

FINANCIAL REPORT OF EMS BUDGET

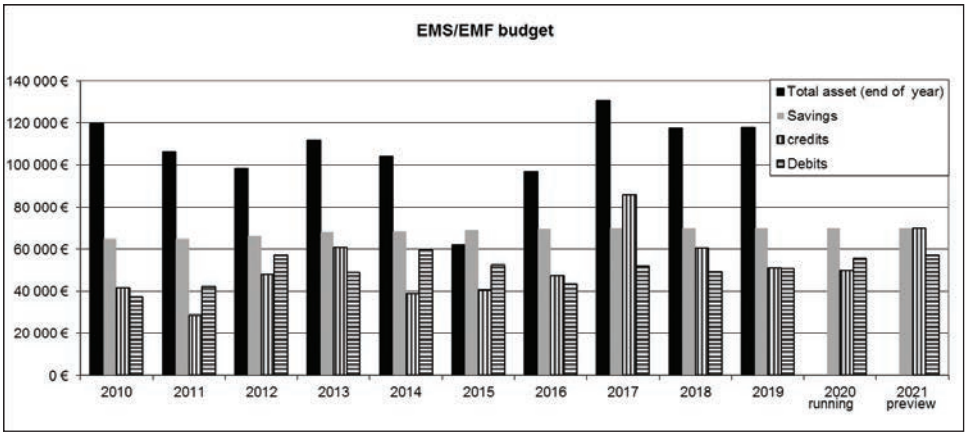
EUROPEAN MICROSCOPY SOCIETIES

REPORTS FROM NATIONAL AND REGIONAL SOCIETIES

EUROPEAN CORPORATE MEMBER ASSEMBLY (ECMA)

APPLICATION FOR MEMBERSHIP

FINANCIAL REPORT OF EMS BUDGET



Financial report of EMS budget

Budget 2019 final, proposals budget 2020 and 2021 outlook

Budget 2019, final

Incomings

The majority of incomings came from contributions of the national societies and the ECMA members with further incomings from individual members, interest rates and from job postings for non-EMS members. Furthermore. In summary, an amount of **€ 51,217.86** was accrued.

Expenses

EMS issued 24 scholarships (á € 300) to young scientists for their attendance at MCM2019 and other meetings and EMS agreed to sponsored 6 supported meetings; in total € 11,700. Two board meetings, one embedded in the MCM2019 and one extra meeting in April in Madrid, professional secretarial support and three Outstanding Paper Awards added up to € 35,516.58. Together with further costs (banking, web hosting, flyers, etc.) EMS had total expenses of **€ 50,906.28.** Thus, the balance for 2019 ended with a plus of **€ 311.58.** At the end of the year, EMS had **€ 70,236.70** at the savings deposit. As of December 31st, 2019, EMS had total assets of **€ 118,042.09.**

Budget 2020, running; (as of March 11, 2020)

Incomings

The major revenues will again be accrued by the annual contributions of EMS members of the national societies and of ECMA members. Invoices to national societies, ECMA members and individual members will be sent out in March, reminders in June. Further incomings will be accrued by individual member fees and job postings for non-EMS members.

Together, incomings are expected to amount to **€ 50,000.**

Expenses

There will be no EMS extension meeting due to EMC Copenhagen. EMS will support 8 sponsored meetings this year (together € 6,000). EMS will issue up to 50 scholarships, á € 300, as travel support for attendance at EMC2020. Further expenses will include the Outstanding Paper Awards (€ 3,000), two board meetings (this one and one embedded in the EMC), professional secretarial support and bank costs.

Expenses are estimated to amount to **€ 55,750.** It is thus calculated to end the budget year 2020 with a **minus of € 5,750.**

Budget 2021, proposal

Incomings

Major incomings will be accrued by the annual fees of EMS members of the national societies and of ECMA members. In addition, EMS can expect to incur revenues from EMC2020 (estimated € 20,000). Together with interest rates of the savings account and advertising for non-EMS members, we can expect incomings of **€ 70,000.**

Expenses

EMS can support 1 extension meeting, 15 sponsored meetings (in total € 12,750) and can issue 30 scholarships as travel support to attend microscopy-related meetings (€ 9,000). Further expenses will include the Outstanding Paper Awards, costs for professional secretary, two board meetings (one extra, one included in EMC) and bank costs, amounting to a total of estimated **€ 57,350.**

It is thus calculated to end the year 2021 with a **surplus of € 12,650.** ■

Christian Schöfer, M.P.,
Treasurer EMS/EMF
Vienna, March 11 2020

EUROPEAN MICROSCOPY SOCIETIES

Number of EMS Members by Societies (2019)

National and regional societies			Number of members
Armenian Electron Microscopy Society	(AEMS)	Armenia	8
Austrian Society for Electron Microscopy	(ASEM)	Austria	185
Belgian Society for Microscopy	(BSM)	Belgium	321
Croatian Microscopy Society	(CMS)	Croatia	115
Czechoslovak Microscopy Society	(CSMS)	Czech Republic	236
Dutch Society for Microscopy	(NVvM)	The Netherlands	224
Electron Microscopy and Analysis Group (Institute of Physics)	(EMAG)	United Kingdom	314
French Microscopy Society	(SFμ)	France	503
German Society for Electron Microscopy	(DGE)	Germany	436
Hellenic Microscopy Society	(HMS)	Greece	60
Hungarian Society for Microscopy	(HSM)	Hungary	109
Israel Society for Microscopy	(ISM)	Israel	270
Italian Society of Microscopical Sciences	(SISM)	Italy	356
Microscopical Society of Ireland	(MSI)	Ireland	101
Nordic Microscopy Society	(SCANDEM)	Scandinavia	281
Polish Society for Microscopy	(PTMi)	Poland	152
Portuguese Society for Microscopy	(SPMicros)	Portugal	50
Romanian Electron Microscopy Society	(REMS)	Romania	78
Royal Microscopical Society	(RMS)	United Kingdom	1533
Serbian Society for Microscopy	(SSM)	Serbia	92
Slovene Society for Microscopy	(SDM)	Slovenia	114
Spanish Society for Microscopy	(SME)	Spain	296
Swiss Society for Optics and Microscopy	(SSOM)	Switzerland	293
Turkish Society for Electron Microscopy	(TEMD)	Turkey	74
Corporate members EMS (43 companies)	(ECMA)		44
Individual members	IND		36

REPORTS FROM NATIONAL AND REGIONAL SOCIETIES

ARMENIAN ELECTRON MICROSCOPY: PAST, PRESENT AND PROSPECTS FOR THE FUTURE

Electron microscopy in Armenia started in the 60s of the last century thanks to specialists in different scientific institutes and universities devoted to their work - physicists, chemists, materialists, doctors and biologists.

Armenian Electron Microscopy Society(AEMS) was established in 1991 at the initiative of the University of Atlanta's (USA) Specialists in Electron Microscopy Dr. Robert Apkarian and the Academy of Sciences of Armenia. Today AEMS is integrated in the international scientific community and fairly is full member of the International Federation of Societies for Microscopy and European Microscopy Society.

In our presence enthusiastic experts of AEMS put all their efforts at hard times of our country, applied their energy and intellect to maintain and develop science in Armenia. They exemplified and inspired many scientists serving in different branches of science with optimism for of the country science. Recently it is observed a great interest of the scientific institutions in Armenia towards electron and other contemporary methods of microscopic studies.

More young scientists can see in 21st century the great discoveries of microscopy, which now we even can't immaginate and the methods of microscopy will have a great contribution in this process. The merits are great in that issue, as the members extend the success of modern microscopy and its actuality, as well as share their rich experience with young specialists. ■

Karlen Hovnanyan M.D., Ph.D.,D.Sc.
President of AEMS

AUSTRIAN SOCIETY FOR ELECTRON MICROSCOPY (ASEM)

EM in Austria dates back into 1942 with the acquisition of two Siemens & Halske Übermikroskop 100 at the University of Vienna and the Technische Hochschule Wien (now: Technical University of Vienna). Nine years later the FELMI in Graz was established. Since then Austria's EM community is growing. Numerous Austrian scientists became member of the German Society for Electron Microscopy until 1965, when a separate Austrian Society was established. At present, the ASEM unites more than 180 scientists dispersed on over 20 research institutes.

The ASEM covers all areas of research in electron microscopy. Cryo-electron microscopy and tomography can be found at the Vienna BioCenter and the Institute for Science and Technology in Klosterneuburg, Lower Austria. Tomographic nano-analysis is one of the main research actions at FELMI, Graz, whereas life sciences are strong at the University of Vienna, Graz, Salzburg, and Innsbruck as well as the Medical Universities of Graz and Vienna. A strong materials characterization branch can be found also at the University of Vienna and Linz and the Leoben University of Natural Resources. Fundamental electron-matter interactions are studied at the Vienna University of Technology. During the annual ASEM workshop, more than 100 ASEM members are discussing latest research results from all the above-mentioned research areas. It is the strong and friendly interaction of such a large variety of research areas combined with excellent researchers within a small research community making the annual ASEM meeting to be a unique conference.

But not only the annual ASEM workshop is an important event in the calendar of ASEM members. Within the last more than fifty years ASEM organized numerous international conferences. Already during the time when the iron curtain separated Europe into a western and eastern half, ASEM developed a strong relationship to the microscopy societies of the successor states of the Austrian-Hungarian monarchy. It was not easy at this time to establish contacts, but the Austrian-Hungarian border was relatively easy to cross (with respect to other borders like the inner German border or the Austrian-Czechoslovak border). First joint meetings were organized together with the Hungarian Society for Electron Microscopy (HSM) in 1985 and 1987. Plans for joint meetings with more societies from Eastern and Western Europe were discussed directly leading into the establishment of the MCM conference series in 1990. The first of them took place 1993 in Parma, Italy. In 2019 already the 14th Multinational Congress on Microscopy (MCM) was held in Belgrade and the next one will be organized in Vienna in 2021 as joint conference with the quadrennial Dreiländertagung of the Austrian, German and Swiss microscopy societies.

Beside the organization of conferences, ASEM supports its student members for the participation on international and national workshops. Every year about twenty scholarships are granted. ■

Dr. Michael Stöger-Pollach
(President of ASEM)

FRENCH MICROSCOPY SOCIETY (SFμ)

Awarding of the Favard Prizes for young researchers. Enrico Di Russo (left) is congratulated by Anna Bui (Cameca company), Pedro Baraçal de Mecê (right) by Sacha De Carlo (Dectris company).

2019 was a rich and exciting year for the French Society for Microscopy (Société Française de Microscopie, Sfμ).

In July 2019 we hold the Sixteenth Congress of the Society hosted by the city of Poitiers. Perfectly organized by Frederic Pailloux (Institut Pprime, Poitiers) and colleagues, the meeting has gathered more than 320 attendees (academic and exhibitors), far beyond the utmost optimistic expectations. The congress was rich in vibrant exchanges around 12 symposia (4 Materials Sciences, 4 Life Sciences and 4 Common Symposia) and a total of 130 contributions. Professor Abderrazak El Albani gave the inaugural conference on the fascinating theme of the Origin of Life as recently questioned by microscopic evidences of organism mobility in an oxygenated shallow-marine environment 2.1 billion years ago. Beyond the congress, the Poitiers meeting was the very best opportunity to warmly celebrate the 60th anniversary of the Society, founded in 1959 by Raimond Castaing.

Many previous presidents of the Society attended the informal party organized in Poitiers to chat with colleagues in a friendly atmosphere.

The Raimond Castaing award (dedicated to advanced researchers) for the category life science was made to Dr. Emmanuel Beaurepaire from the Laboratory of Optics and at the Ecole Polytechnique Palaiseau for outstanding achievement in the development of multiphotonic microscopy applied to neurobiology.

Ovidiu Ersen and Emmanuel Beaurepaire were awarded by the Castaing Prize during the national congress in Poitiers

The Physical/Material Sciences went to Pr. Ovidiu Ersen from the Institut de Physique et Chimie des Matériaux de Strasbourg for outstanding achievements in the field of in-situ analytic TEM in liquid or gaseous environment applied to complex materials. The Pierre Favard award (dedicated to the best PhD work) was made to Pedro Baraçal de Mecê (ONERA-Châtillon) for the category Life Science and Enrico Di Russo (GPM-Rouen) for the category Physical/Material Sciences.

The Sfμ is also very proud of the honor made to Dr. Florent Houdellier who received the prestigious Ernst Ruska prize (2019) from the German Microscopy Society, in recognition for his outstanding work on ultrafast electron microscopy. Florent is the second French researcher (with Denis Chretien in 1996) to have been honored by this award.

Finally, we would like to remind you that, among its various activities focused on training young researchers and supporting scientific events involving microscopy, the Sfμ funds many types of travel grants to attend national and international conferences. In addition, for the past two years, Sfμ has been very pleased to offer bursary to laboratory research internships to Master students in the field of microscopy. ■

Damien Jacob
(Past President of the Sfμ)

GERMAN SOCIETY FOR ELECTRON MICROSCOPY (DGE)

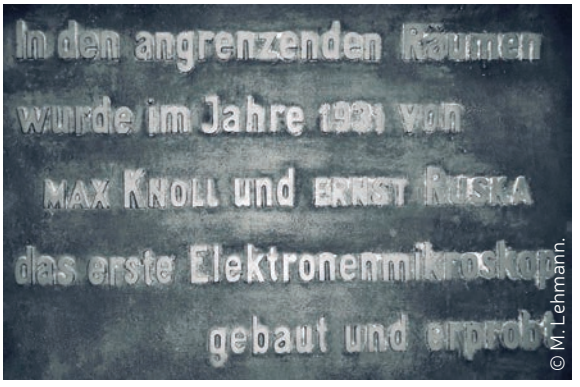
Award ceremony for the *Ernst Ruska Prize and the Harald Rose Distinguished Lecture* at the MC 2019 in Berlin (from left to right: T. Müller-Reichert, M. Lehmann, D. Smith, C. Koch, F. Houdellier, C. Ropers and D. Gerthsen).

The German Society for Electron Microscopy (Deutsche Gesellschaft für Elektronenmikroskopie e.V., DGE) is a platform for all electron microscopists from diverse academic fields including physics, materials science and life sciences. Main activities of our society include organization of national meetings, participation in international conferences and organization of additional workshops and special interest group meetings to advance knowledge in and application of electron microscopy at all levels of research. The DGE also provides different measures to support young scientists.

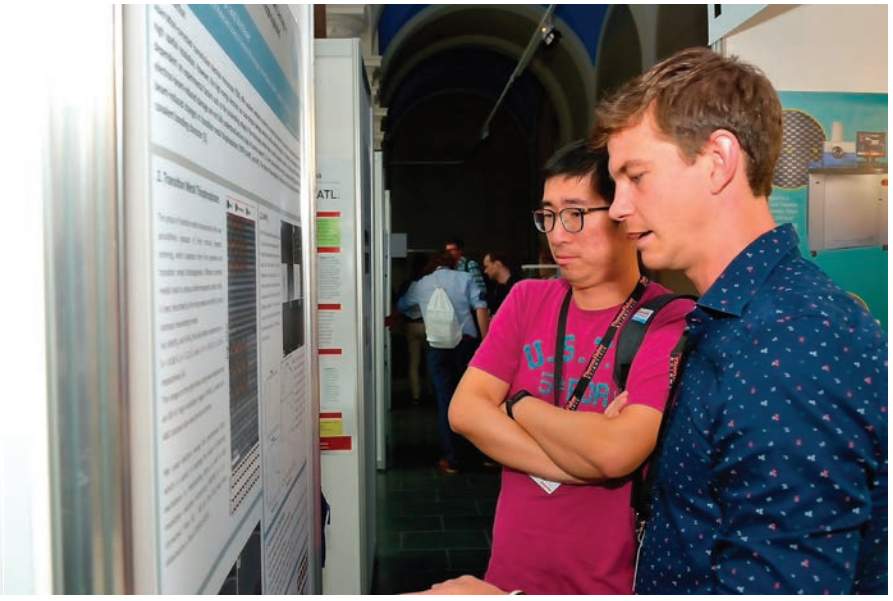
Highlights of 2019

Main event in 2019 was the Microscopy Conference (MC) 2019 in Berlin hosted by the Technical University in Berlin (TU Berlin) and locally chaired by Michael Lehmann and Christoph Koch. Over 1,000 participants listened to a wide range of plenary talks and presentations representing all aspects of modern electron microscopy. A highlight of the meeting was the Ernst Ruska Prize ceremony, which was jointly awarded to two outstanding scientists: Dr. Eng. Florent Houdellier (CEMES-CNRS, Toulouse, France) and Prof. Claus Ropers (University of Göttingen, Germany). Both scientists have made significant contributions to the development of ultrafast electron microscopy to gain new information on processes that take place on ultrashort time scales. The Ernst Ruska Prize will be awarded again at the Microscopy Conference MC 2021 ("Dreiländertagung") in Vienna (8/22/2021 - 8/26/2021) jointly organized by the Austrian Society for Electron Microscopy (ASEM), the Swiss Society for Optics and Microscopy (SSOM) and the DGE. Another highlight of MC2019 was the presentation of the "Harald Rose Distinguished Lecture" award 2019 to Prof. David Smith (Arizona State University, Tempe). He received this prize for his experimental and theoretical work on high-resolution electron microscopy.

A memorable event during the general DGE assembly was the award of an honorary DGE membership to Prof. Maximilian Haider to honor his scientific achievements in aberration correction and his long-standing support to generally advance electron microscopy. Last not least, Dr. Anna Steyer (Göttingen, Germany) and Dr. Jens Majert (Münster, Germany) received prizes for their excellent dissertations to promote their career in electron microscopy.



In memory of Max Knoll and Ernst Ruska who built and operated the first electron microscope in 1931. Metal plate in the lecture hall of the TU Berlin.



Discussing science at the MC 2019 during one of the poster sessions.

DGE honorary member Max Haider chairing one of the scientific sessions at the MC 2019 in Berlin.

Academic life in the DGE

A 'picture' of the DGE would not be complete without mentioning the DGE working groups. Working groups play an important role in our society as those groups organize additional meetings and practical hands-on trainings dedicated to specific practical aspects of electron microscopy. Currently, six active working groups support users all over the country and cover a wide range of topics: Energy Filtering and Electron Energy Loss Spectroscopy (EF & EELS), Preparation and Imaging of Native Organic Systems (PANOS), Electron Microscopic Diagnostics of Pathogens (EMED), High-resolution Transmission Electron Microscopy (HREM), and Focused Ion Beam (FIB). The interest Group of Electron Microscopy Facilities (IGEME) focuses on all aspects of operating an electron microscopy facility. More details about these working groups can be obtained from the DGE homepage (https://www.dge-homepage.de).

Major events cast their shadow ahead

At the general assembly of the DGE in Berlin, a future event was already discussed that will take place in 2031, i.e. the celebration of the 100th anniversary of the invention of the electron microscope. Interestingly, the MC2019 took place in close vicinity of the building in which Max Knoll and Ernst Ruska built the first electron microscope in 1931. A discussion has been stimulated by IFSEM to bring this important anniversary to the attention not only to the scientific community but also to the general public. DGE will be intensely involved in developing concepts how this important discovery can be celebrated in more than 10 years from now.

We are all looking forward to meeting our international colleagues before this 100-year anniversary at upcoming conferences, and we certainly invite all EMC members to participate in future DGE meetings. ■

Thomas Müller-Reichert
(President of the DGE, 2018-2019)

HUNGARIAN SOCIETY FOR MICROSCOPY (HSM)

Reasons for celebration in Hungary in 2019

Every year is different and although none of Hungarian microscopy laboratories could purchased some very special microscope, we cannot complain about 2019, either. But let's start with December 2018.

Certainly every microscopist know something about the work of the Nobel laureate "Dennis" Gabor, the Father of Holography. The **Gábor Dénes Prize** is a Hungarian award granted by the **NOVOFER** Foundation for Technical and Intellectual Creativity. Two HSM members were awarded with this prestigious prize.

László Barna, an engineer-physicist and head of the Light Microscopy Imaging Center of the Hungarian Academy of Sciences, **was recognized for the use of super-resolution microscopy for medical research purposes.**

Zoltán Kónya, vice-rector of the **University of Szeged** received recognition for his work in the field of **nanostructured materials,** especially nanotubes and nanocomposites, and their industrial application.

Besides, on our greatest state holiday, the 20th of August, **Zoltán Kónya** was decorated for his achievements with the Hungarian Order of Merit Officer's Cross Civil Section, too.

Hard work always pays off – and a publication in **Science** definitely means another type of distinction!

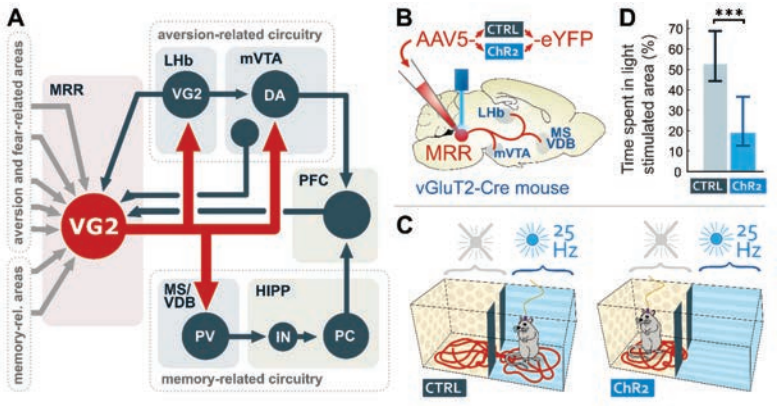
Gábor Nyiri and his team's paper was published in Science on May 24, 2019, one day following his highly appreciated plenary speech given on **3D electron microscopy in brain research** at the annual conference of HSM in Siófok, Hungary.

Since their discovery - *Brainstem nucleus incertus controls contextual memory formation* – would never had proven without the application of different state-of-the-art microscopic techniques, this great success of his research group can be mentioned in this report, too.

Moreover, the first author of this paper, András Szőnyi, also the member of HSM, became the finalist of the highly prestigious **Eppendorf Award!** The award ceremony was taken place in Chicago on Oct 20, 2019.

Amazingly, it was not the last great success of the Nyiri' team this year! November brought **another Science paper** including optogenetics, cell type-specific neuronal tract-tracing, monosynaptic rabies-tracing, block-face scanning immuno-electron microscopy and electrontomography in the apllied techniques, and by means of them, a new center of fear was identified in the medial raphe region of the brain.

The article's first authors are **András Szőnyi** and **Krisztián Zicho** – an undergraduate! – and **Gábor Nyiri** led this work, too.



The summary of the discovery

In June 2019, another HSM member, **Ildikó Bódi** who investigates the role of caveolin-1 protein and applies several microscopic techniques in her research, was rewarded with the **Lenhossék Prize.** Unlike the name of **Dennis Gabor,** exception with anatomists, not too many may know this name abroad.

Mihály Ignác Lenhossék (1773–1840) was an outstanding Hungarian anatomist and anthropologist, member of the Hungarian Academy of Sciences and, interestingly, the maternal uncle of **Albert Szent-Györgyi** (1893-1986) another Hungarian Nobel laureate. Good to know, isn't it?

Other members of our society tried to popularise microscopy for the wider public. With the leadership of **Zoltán Kristóf** and strong support of the **Auro-Science Consulting Ltd** and his managing director **Dr Miklós Soós,** a beautiful exhibition was organized in the **Natural Science Museum, Budapest.**

A brief and clear description was provided to each beautiful SEM picture to help the visitors to understand that they could see. The exhibition could provide a good family program for the hot summer afternoon, it showed some miracles of the Nature for the young generation, and who knows, due to the great expoerience, perhaps some of them could be interested in microscopy!

In September, at the *Multinational Congress on Microscopy* (MCM) held in Belgrade, we had another reason to be glad. Balázs Pósfai PhD student, who won the prize of the Hungarian Electron Microscope Foundation this year, and who sussessfully substituted his supervisor giving an invited talk instead of the originally invited speaker Dr Ádám Dénes, won the "Best Poster" award in the life science category!

And last but not least, we have to report about a very special event.

On 21th November we celebrated the **90th birthday of Pál Röhlich** Professor Emeritus, one of the founding members of the HSM and vice president of the so far only one European microscopic congress, **EUREM 1984.**

Birthday is a family holiday, and indeed, those who celebrated this notable 90th anniversary, all could feel that they were part of a larger family. Although education had to be continued, everyone who could, visited the second floor lecture hall of the Institute of Anatomy of Semmelweis University at least for a couple of minutes, just to congratulate him.

More good health, good work, dear Professor and a happy new year for all of us! ■

Ágnes Kittel PhD, DSc
(President of the Hungarian Society for Microscopy)

Professor Röhlich thank-you-speech

2019 SISM ACTIVITIES : REPORT FOR EUROPEAN MICROSCOPY SOCIETY

During 2019 the Italian Society of Microscopical Sciences (SISM) organized numerous events, some of which on new topics and some as further editions of past successful ones.

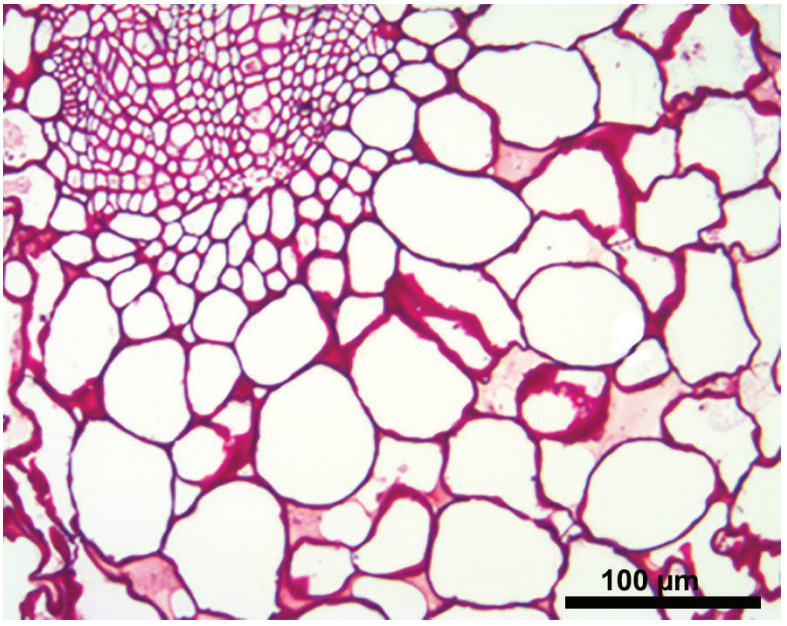
On April 9-12 Dr. Regina Ciancio, a SISM board member, directed in Trieste, at IOM-CNR Area Science Park, the "SEM School in Materials Science" which was entitled, such as future editions will be, to Dr. Aldo Armigliato, a recently departed researcher, well known in electron microscopy applied to material science.

A great success was the Workshop "How to prepare biological specimens for transmission electron microscopy: guidelines", organized by Prof. Manuela Malatesta and Prof. Marco Biggiogera on July 11-12, in the laboratories of Pavia University. The theoretical part, based on the principles of cytochemistry and immunocytochemistry, was enriched by practical sessions addressed to the most significant phases of sample preparation.

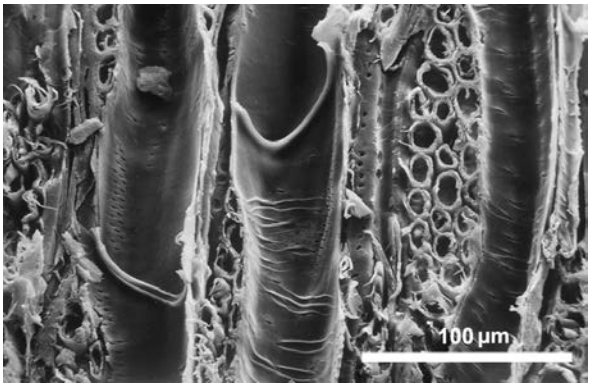
A new version of the Course "Confocal Microscopy and Transmission Electron Microscopy" was organized by Dr. Massimo Tonelli, vice-director of the Interdepartment Center for Complex Instruments (CIGS), in the laboratories of Modena University, on September 11-13. The quality of microscopes and the high number of participants, exceeding the programmed one, assured a great success to this event.

Dr. Cristiano Albonetti, member of SISM board and widely known for probe microscopy expertise, organized, in Bologna ISMN-CNR labs, in November 21-23, a school on "Science through Scanning Probe Microscopy 2019-Extended version", with seminars on material sciences and life sciences.

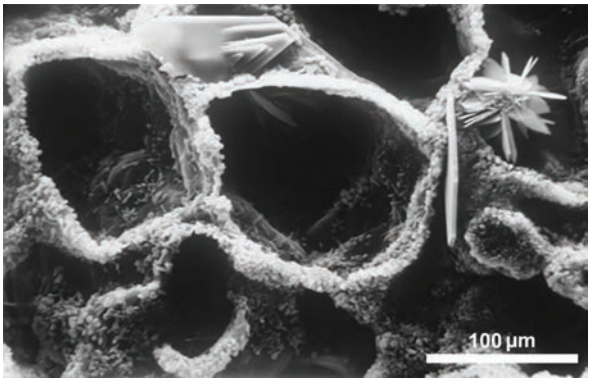
Again at CIGS of Modena University, between 2 and 4 December 2019, the second edition of the workshop "Confocal and electron microscopy in botany" took place, with great interest and large participation. The attached figures represent some moments of the course.



Semithin section of Albedo parenchymal cells



Tracheae and medullary rays of Pear tree wood



SEM of Limoncella fruit pulp

In the first part of 2019, the SISM board has been deeply involved in the organization of the Multinational Congress on Microscopy, taking place in Belgrade on September 15-20. Our scientific proposals, widely discussed in board meetings, were completely considered by the organizers and prof. Saverio Cinti (University of Ancona) and Vincenzo Grillo (University of Modena and Reggio Emilia), both world wide known researchers, were invited and had outstanding plenary lectures.

Moreover, with regard to Belgrade Congress, our Society called for 10 awards, aimed at the participation of young researchers at the congress, 5 in life sciences and 5 in materials sciences. The application number exceeded the fellowship one and the presence of italian young microscopists was significant, most of whom contributing with an oral presentation.

This is an overview on the 2019 activities of the Italian Society of Microscopical Sciences. ■

Elisabetta Falcieri,
Professor of Anatomy
President of the Italian Society of Microscopical Sciences
Urbino, December 12, 2015

ACTIVITY NEWS FROM SCANDEM, THE NORDIC MICROSCOPY SOCIETY

Emc2020, Copenhagen, Denmark

The preparation of emc2020. It is a great honour for SCANDEM to have the opportunity to host the 17th European Microscopy Congress, emc2020 (https://www.emc2020.eu/), from 23 to 28 August 2020, at the Bella Center, Copenhagen, in close collaboration with our umbrella organization, the European Microscopy Society (EMS) and our Professional Conference Organizer, the Royal Microscopical Society (RMS). The abstract submission is now open, until 1 March 2020. The registration to the congress will be open early 2020.

We are very excited and look forward to welcoming microscopists and students from across Europe and beyond, to emc2020. We are very pleased to finally be able to bring EMC back to the Nordic region, to Scandinavia – the last time it was the 1st European Regional Conference on Electron Microscopy in August 1956, in Stockholm, Sweden, 64 years ago. For the past two years, we have worked diligently with the preparation of the congress, under the leadership of the congress chair, Klaus Qvortrup of the University of Copenhagen. There will be numerous scientific themes of great importance and supreme novelty – to name just two of them here: "Live and Fast Super-resolution - Frontiers in Imaging of Ultrafast Processes" and "Artificial Intelligence in Big Data Analysis, and Computational Microscopy".

SCANDEM 2019, Gothenburg, Sweden

SCANDEM 2019 – From Atoms to Complex Systems. The 70th Annual Meeting of the Nordic Microscopic Society was held in Gothenburg, Sweden, at the Conference Centre Wallenberg, 11-14 June 2019. Chair of SCANDEM 2019, Julia Fernandez-Rodriguez of the University of Gothenburg, organized the conference in partnership with Charmers University of Technology, with the support of the Swedish Foundation of Strategic Research, University of Gothenburg and the National Microscopy Infrastructure of Sweden. The conference was a great success. The program offered an attractive combination of lectures and poster sessions from electron and light microscopy, X-ray to image analysis, with poster presenters selected for short talks. Twenty-three invited speakers gave superb keynote lectures. Plenary lectures included MINFLUX Nanoscopy: Super-resolution post Nobel by Stefan Hell (photo hereby enclosed), Complex, three-dimensional nano architectures in biology by Silke H Christiansen, 3D EM for Connectomics by Moritz Helmstaedter and more.

80 years Electron Microscopy, November 27, 2018, Uppsala, Sweden

One of the corner stones to this development was laid 80 years ago by Manne Siegbahn who constructed the first transmission electron microscope in Sweden. We celebrated this event with a symposium reviewing the early history but also the current and future developments of the electron microscope and its use. This one-day symposium was organized by Klaus Leifer of Uppsala University and his team. The symposium took place at the Ångström Laboratory in Uppsala and it was supported by the Swedish microscopy networks/centers ARTEMI, CEM4MAT, UNEM. Twelve speakers gave excellent talks at the symposium – they were, to name a few: Hans Siegbahn, Reine Wallenberg, Gunnar Svensson, Jonas Weissenrieder, Linda Sandblad and Eva Olsson.

SCANDEM 2018, Lyngby, Denmark

The 69th Annual Conference of the Nordic Microscopy Society (SCANDEM 2018) was hosted by the Technical University of Denmark (DTU), 25-28 June 2018, at Lyngby, north of Copenhagen, Denmark. SCANDEM 2018 was organized by Jacob B. Wagner of the Technical University of Denmark and his team, to provide an interdisciplinary forum for the presentation of papers, discussion and general exchange of knowledge on electron microscopy.

The conference was a great success. Plenary speakers included Ib Chorkendorff from DTU Physics, on Catalysis, past present and future, and Lone Gram from DTU Bioengineering, on Visualizing bacteria and the behaviour. Highlights of the scientific program: the main topics included In Situ Electron Microscopy, Electron Spectroscopy, X-ray microscopy, Scanning Probe Microscopy, Correlative Light and Electron Microscopy and Image and Data analysis. In addition, there were sessions organized by Danish Bioimaging Network. DTU's Center for Electron Nanoscopy was celebrating its 10-years anniversary in conjunction with the conference SCANDEM 2018.

About SCANDEM

Founded in 1948, Nordic Microscopy Society (SCANDEM, https://www.scandem.org/) has served as an active organization focusing on all aspects related to microscopy. These include the development of microscopic technology, specimen preparation techniques, applications in materials and life sciences and new types of microscopy. Most of the members, over 200 in total, come from universities, research institutes and industries in the Nordic countries. Country members are Sweden, Denmark, Norway, Finland and Iceland. ■

Kesara Anamthawat-Jónsson,
SCANDEM President

ROMANIAN ELECTRON MICROSCOPY SOCIETY (REMS)

Dr. Raul Arenal from the University of Zaragoza during his invited talk about carbon nanostructures at CREMS2019.

The Romanian Electron Microscopy Society (REMS) is a quite young non-governmental organization, a professional association meant to bring together researchers, academics, students and technical personnel working in the field of electron microscopy in Romania. Established in 2014, REMS gathers members from 11 academic and research centers in Bucharest and across the country where recent investments have been directed in acquiring new electron microscopy equipment. One of the main goals of REMS is to initiate and develop the dialogue between the different research groups using electron microscopes, thus contributing to the knowledge transfer among the EM groups and the overall increase of the research quality in Romania. Since its creation, REMS organized several events within this spirit, such as open seminaries with invited guests from well-known EM centers in Europe, workshops and work visits among the laboratories as well as the biannual conference of the society, with international participation.

In 2019, between October 23-25, REMS organized its 3rd Conference, CREMS 2019, in the picturesque mountain resort of Poiana Brasov, Romania (https://www.romicroscopy.ro/en/c-r-e-m-s).

80 scientists, academics, students and professionals using EM techniques for Life and Materials Sciences attended the conference. During the plenary talks, researchers from the University of Strasbourg (France), University of Warwick (United Kingdom), University of Zaragoza (Spain) and Sabanci University in Istanbul (Turkey) presented top scientific results, while representatives from the manufacturing companies had the opportunity to introduce some of their latest developments in electron microscopy available on the market.

Continuing its mission and having in mind the success of the previous edition of the Electron Microscopy School, REMS started the preparation for organizing the next similar event in the summer of 2020. The school will present introductory notions of analytical electron microscopy in Materials Science for students and young researchers, including practical sessions from sample preparation to TEM/STEM imaging up to atomic resolution and analytical characterization. This will be an opportunity for REMS to attract new students and young researchers to the electron microscopy field who will cover the continuously growing demand of qualified microscopists for the newly acquired instruments across the country. ■

Corneliu Ghica
(President of Romanian Electron Microscopy Society)

SLOVENE SOCIETY FOR MICROSCOPY (SDM)

Symposium participants during an oral presentation in "the blue hall".

3rd Slovene Microscopy Symposium

The now traditional biannual event, organized by the Slovene Society for Microscopy, took place on May 16 and 17, 2019. This year the symposium has moved from its traditional venue in Piran to the equally picturesque Convent hotel in Ankaran, providing ample space for poster presentations, exhibitors and an excellent on-site conference dinner.

The main idea of the symposium from its beginning has been the encouragement of collaboration on the field of microscopy between life sciences, materials science and industry. The event aims to bring together and connect researchers working with various microscopic and preparation techniques, and image analysis. In addition, researchers working on industrial applications of microscopic techniques are encouraged to attend, integrating the academic sphere with industry.

The symposium hopes to provide an overview of activities of research groups using various microscopic techniques. The exchange of ideas and views between young and established researchers from different fields and presentation of the available microscopy equipment and related methodologies is a prerequisite to the integration of methodologies and synergistic cooperation between institutions and sciences. While most of the participants and presenters work in Slovenia, international participants are welcome. To everyone's great satisfaction, several eminent researchers from abroad attended the symposium and we can only hope for more at the following symposia.

Symposium participants paying close attention to a presenter.

The two-day symposium officially began with an address from the president of the Slovene Society for Microscopy, Prof. Dr. Rok Kostanjšek. The morning sessions on each day included a plenary lecture.

Symposium participants in front of the venue.

Aleksander Rečnik from the Institute "Jožef Stefan" in Ljubljana provided an overview of the fascinating variety of twinning in minerals and its features at the atomic scale. At the interface of materials and life sciences, Vesna Srot from the Max Planck Institute for Solid State Research in Stuttgart presented the challenges and rewards of performing state of the art analytical electron microscopy on sensitive materials and biological samples. In addition to the great talks given by the plenary speakers, the programmes' highlights were four invited lectures, presented by Dr. Kristina Žagar Soderžnik (Institute "Jožef Stefan", Ljubljana), Dr. Ruggiero Vigliaturo (University of Pennsylvania, Philadelphia), Dr. Elena Tchernychova (National Institute of Chemistry, Ljubljana) and Dr. Andreja Erman (Faculty of Medicine, University of Ljubljana).

In light of its mission as a platform that connects researchers from different fields, the oral presentations were not divided into sections covering single subjects. Instead, talks from the fields of materials science interchanged with talks covering topics from life sciences. During the two days of the symposium, 20 short oral presentations by presenters from 10 institutions were held covering topics from non-metallic inclusions in steel to vision in horseflies. Two poster sessions allowed for discussions revolving around the 35 poster presentations on just as diverse subjects. As the symposium is a great opportunity to bring together society members, the programme also included a meeting of the Slovene Society for Microscopy.

The participants are already hoping that the next meeting in 2021 will be equally exciting, especially when it comes to the social programme.

Miloš Vittori (Head of the organizing committee) and Rok Kostanjšek (President of the Slovene Society for Microscopy) ■

Miloš Vittori (Head of the organizing committee) and Rok Kostanjšek (President of the Slovene Society for Microscopy)

ANNUAL REPORT ON THE SPANISH MICROSCOPY SOCIETY (SME)

The Spanish and the Portuguese Microscopy Societies joined again in order to celebrate a new edition of the Microscopy at the Frontiers of Science (MFS2019) series (www.mfs2019.com). The event took place in Granada, Spain, on September 11-13, 2019. The Scientific Committee of the Congress defined an appealing scientific program, full of opportunities for scientists and professionals of Microscopy from both the Life and Materials Sciences. The 154 delegates and 9 exhibitors attended sessions on Microscopy for Life Sciences, Microscopy for Materials Science and Technical Developments. Several distinguished plenary (Prof. David Bhella, Prof. José L. Carrascosa, Prof. Joke Hademann, and Prof. Paul Midgley) and invited speakers (Dr. Álvaro Mayoral, Dr. Ernesto Arias-Palomo, Dr. Ana Sánchez, Dr. J.M Losada, Dr. Gabriel Sánchez Santolino, Dr. Erin M. Tranfield and Dr. Rosario M. Fernández) presented the state-of-the-art in their fields, alongside contributed oral presentations as well as poster sessions. During the meeting gala dinner the SME awarded with the Best 2017-2018 PhD prize on Materials Science, Dr. PengYi Tang (ICN2 (CSIC & BIST) / IREC), on Life Sciences, Dr. María Josefa Jiménez Quesada (EEZ-CSIC) and on Technical Developments, Dr. Gemma Martín Malpartida (LENS-UB). There were also two poster prizes, for Life and Materials Sciences, awarded to S. Hafidh (EEZ-CSIC) and J. García-Fernández (UCM), respectively.

During 2019 the SME granted sponsorship awards to 3 microscopy related events: the *"European Summer Workshop: Transmission Electron Microscopy of Nanomaterials (TEM-UCA 2018)"* (UCA, Cadiz), the

"BIST Symposium on Microscopy, Nanoscopy and Imaging Sciences 2018" (ICFO, Barcelona), and the *"25 years of Cryoelectron Microscopy in Spain: a tribute to José L. Carrascosa"* symposium (CNB-CSIC, Madrid). The latest event was celebrated in tribute to Prof. José L. Carrascosa for his contribution on developing the cryo electron microscopy in Spain. Prof. Carrascosa received also a warm recognition at the MFS2019 for his contribution and leadership at the SME as President, Vice-President and Board Member for more than 20 years. In addition, SME was glad to sponsor the member students with 11 scholarships for the attendance to the MFS2019 in Granada and 1 for the IMC19 in Sydney. ■

Prof. Dr. Jordi Arbiol
(President of the Spanish Microscopy Society)

TURKISH SOCIETY FOR ELECTRON MICROSCOPY

24th National Congress of Electron Microscopy-EMK 2019 (with international participation) Edirne Turkey

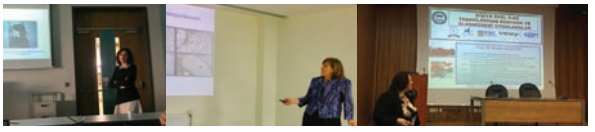
- During 2018-2019, Turkish Society contributed to the organization of 6 scheduled scientific events in different microscopy centers in Turkey. (www.temd.org/etkinlikler/12/bilimsel-etkinlik-programi. Four scientific seminars and 2 microscopy workshops has been scheduled for 2019-2020.

14th Multinational Congress on Microscopy-MCM2019, Belgrade, Serbia.

- **24th National Congress of Electron Microscopy-EMK 2019 (with international participation)** has been organized on April 24-26, 2019, under the auspices of Turkish Society for Electron Microscopy by Trakya Univ. School of Medicine, Dept. of Histology and Embryology, Edirne, Turkey. Prof. Gulnur Kızılay Ozfidan was the president of the congress. The congress aimed to establish an intensive scientific platform in the fields of both Biological and Materials Sciences by the participation of national and international experienced microscopists, as well as the young researchers. "Prof. Dr. Türkan Erbengi Research Award", "Prof. Dr. Muberra Uygun Best Poster Award" and "Best Micrograph Awards" were presented during the Congress. The congress had an attendance of 300 participants and consisted of 38 invited talks with 7 invited international speakers, 33 oral and 43 poster presentations in the field of Instrumentation and Techniques, Materials, Biological and Medical Sciences.

Prof. S. Arbak and her colleagues at EM- Laboratory in Acıbadem Mehmet Ali Aydınlar Univ., Faculty of Medicine. Istanbul, Turkey

- Turkish Society for Electron Microscopy was contributed to the organization of **14th Multinational Congress on Microscopy-MCM2019 which** has been held in September, 15-19 , 2019 in Belgrade, Serbia (w.sdm.edu.rs/mcm2019). 30 Turkish microscopists from biological and materials sciences were attended to the congress. Six young Turkish microscopists received European Microscopy Society Scholarships to attend MCM2019.



Pictures from monthy seminars in 2019

- Two new electron microscopes THERMO FISHER SCIENTIFIC QUATTRO S ESEM and THERMO FISHER SCIENTIFIC TALOS L120C were installed in April 2019 at Acıbadem Mehmet Ali Aydınlar University, Faculty of Medicine, Istanbul. The laboratory is headed by Prof. Dr. Serap Arbak. ■

Prof. Dr. Serap Arbak
(President of the Turkish Society for Electron Microscopy)

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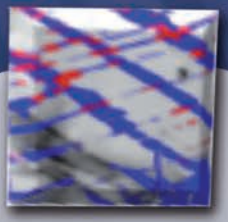

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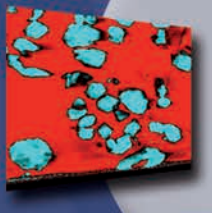

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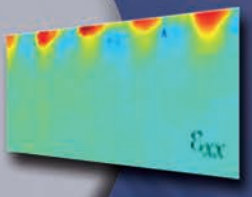

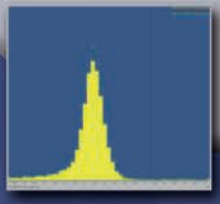

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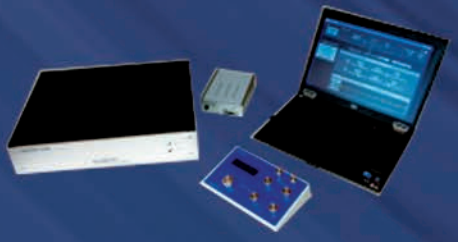

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