

## Newsletter - June 2016

### INTRODUCTION



It gives me great pleasure to write this Welcome section of the FEMS newsletter which marks the first during my term as President. My Presidency will focus on our member societies, who are the lifeblood of FEMS, developing and reinforcing the relationships whilst at the same time expanding the influence FEMS has across not only Europe but the rest of the World.

I have always been extremely passionate about professional institutions and have been involved at a local, national and international level for over 20 years. It is important to take the time to understand how an organisation functions and how it can be improved. I have gained significant experience in this field which I hope will enable me to appreciate the member society position from a FEMS perspective.

I have been preparing for this term as President for a while now. It was important for me to fully understand how FEMS was perceived internally via the Executive and Management Committees but also and more importantly from a member society viewpoint. So I instigated a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis during my term as Vice President involving all of these groups to truly ascertain their honest views and opinions, as I felt only then could we as FEMS truly make a difference by delivering what the member societies were expecting and needed from an organisation such as FEMS. This led onto the development of the FEMS 5 year strategic plan.

This 5 year strategic plan puts member societies at the heart of everything we do. This plan will help us strategise more effectively and also develop key initiatives for the future to help grow membership of FEMS; help assist with the growth in the number of members for our member societies; develop events of interest to members; continue to be actively involved in European programmes and give member societies the opportunity to network at a more global level, as well as many other exciting initiatives which will follow in due course.

2017 is also going to be an important year for us as this represents the 30th Anniversary of FEMS. This year will also see the EUROMAT 2017 event in Thessaloniki and you can read more on this later in the newsletter. We are also planning a number of other activities to take place that year.

In order to develop and expand our network we are involved in ongoing discussions with the U.S. In February, we signed a MoU with the American society TMS which will bring benefits for both organisations. In support of this initiative I also recently met with the new TMS President, Stanley M. Howard, during his visit on the 4th April to London to build upon this developing relationship.

I see the next few years of FEMS as being active and dynamic, being steered strategically by the 5 year plan. However, the success of FEMS is truly dependent on the full support and cooperation of its member societies. I look forward to continuing this journey with you over the next few years and meeting as many of you as possible during this time.

Kindest Regards & Best Wishes,

*Brett  
Dr Brett C Suddell FIMMM  
President, FEMS*



*TMS-FEMS signing ceremony of the memorandum of understanding between TMS and FEMS, at the TMS annual meeting, Nashville, February 2016. Present were TMS Past President, Patrice Turchi; TMS Executive Director, Jim Robinson (not on photo); former FEMS President Wilfrid Kurz and former FEMS treasurer, Bart Blanpain.*

# JUNIOR EUROMAT 2016

This year's FEMS Junior EUROMAT 2016 will take place at the École Polytechnique Fédérale de Lausanne (EPFL) Lausanne, Switzerland from July 10 to 14, 2016. EPFL is the main organiser for this event and Professor Heinrich Hofmann, Director of the "Doctoral programme materials science and engineering" at EPFL and Director of the Powder Laboratory at the Materials Department at EPFL is the chairperson of this event. The Scientific Committee is chaired by Professor Nikolaos Michailidis Nikolaos from Aristotle University of Thessaloniki, Dept. of Mechanical Engineering, Physical Metallurgy Laboratory, Greece.

This, the 13th edition of FEMS Junior EUROMAT, with an exciting new format, will give participants the opportunity to attend invited presentations from industry and academia. The young investigators will be able to present their research and development by either long or short oral presentations in parallel sessions and posters as well, and there will also be 10 different tutorials, starting on Sunday with a workshop

# J JUNIOREUROMAT 2016

organised by Granta and having a further nine different tutorials covering topics including how to write a publication, what is necessary to create a start-up and many other technical topics too. Nominees for the two FEMS lecturer awards will also present their research during a dedicated session at the conference. A barbecue with live music from a well-known group in Switzerland (already playing at the international Paleo Event near Geneva) will enable all participants to meet, to exchange and to network.

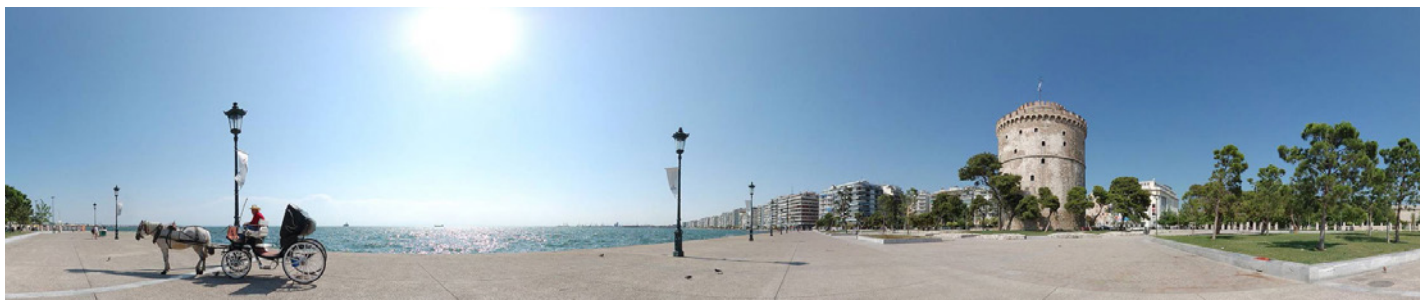
Margarethe Hofmann, FEMS Past President, and her group of Junior EUROMAT collaborators from EPFL, MatSearch and students from EPFL and Uni Lausanne have created an event that will attract many young and experienced people. 296 abstracts have been received so far by the Scientific Committee which, for the first time, evaluated all the abstracts. These abstracts will be published as an E-Book with an ISBN after the conference is finished. We hope that many other people will attend this event from all over the world. Please visit [www.junior-euromat.org](http://www.junior-euromat.org) and take part in the global young materials scientists and engineers' network. The event is sponsored by various Swiss organisations like the SATW, EMPA, CCMX and by companies and organisations that offer stipends for students, and other European companies supporting the various sessions of the event (please contact the webpage for more information). We like to thank all these organisations for their kind support.



*EPFL Campus and Lake Geneva*

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## EUROMAT 2017



*Thessaloniki's paved seafront in front of the white tower*

The 15th EUROMAT Congress will be held in Thessaloniki Greece, on 17-22 September 2017, co-organized by the Hellenic Metallurgical Society and the Hellenic Society of the Science and Technology of the Condensed Matter. This conference follows on from the successful previous EUROMAT conferences including Rimini, (2001), Lausanne, (2003), Prague (2005), Nuremberg (2007), Glasgow (2009), Montpellier (2011), Seville (2013) and Warsaw (2015).

The FEMS EUROMAT conference spans the whole spectrum of materials, processes and applications. More than 2000 participants are expected to attend, not only from the many European countries of FEMS member societies

but also from the Americas, Asia and Australia. They will exchange in the numerous sessions and also in tutorials and workshops about research and development crucial for the innovation and the workforce of European industry.

Thessaloniki is the second largest city of Greece, situated strategically in the northern part of the country, and is easily accessible from all over the world. A fertile field for the meeting of different cultures, it is also the main port of the Balkan area and a crossroad between the Mediterranean Sea and Southeastern Europe. The city has the privilege of a great historical past, spanning 23 centuries, which is reflected onto the bustling, energetic and creative everyday

life of a large young population generated through universities and other educational institutions. The city's multicultural history has been associated with the great Roman, Byzantine and Ottoman empires. The numerous monuments, from many historical periods, coexist in a singular and charming way and manifest Thessaloniki's historical multicultural and cosmopolitan nature. Thessaloniki's location offers the unique opportunity for a visit to internationally renowned archaeological sites (Ancient Pella, Vergina, Dion, Petralona Cave), to areas of exquisite nature (river deltas, lakes, Mt Olympus), to the monastic state of Agion Oros (the Holy Mountain) as well as to Halkidiki, a famous tourist destination.

The year 2017 is a milestone in FEMS's history, where it will be 30 years since the Federation was established, and this special occasion will be highlighted via special events to be held in Thessaloniki. In addition the FEMS-TMS

collaboration will be further forged, where several specific symposia will be organized. More information on the conference, including details of the Symposia will be announced late May 2016. Please consult [www.euromat2017.fems.eu](http://www.euromat2017.fems.eu). The ambition of the Organizing Societies, is to organize a memorable and successful Congress in the tradition of the warmth, friendliness, generosity and courtesy of Greek Hospitality to offer delegates many opportunities to engage in discussions and build and strengthen new and existing partnerships and collaborations within and outside Europe.



## Materials Education Symposium, Cambridge University, April 2016

On April 7-8, 2016, materials scientists and engineers active in education met for the 8th time at the International Materials Education Symposium at Clare College, Cambridge, to discuss teaching of materials science, engineering, and design. The Cambridge event is one of a worldwide series of three Symposia taking place in Europe, USA and Asia.

A very important topic of this event was to engage students interest by new methods of teaching such as using on-line tools and courses as presented by Prof. Harry Bhadeshia, Materials Science & Metallurgy, University of Cambridge, UK, and Prof. Mark Miodownik, University College London, UK, who developed a so-called "Massively Open On-Line Course, MOOC" to teach the Materials Science of Steel which he prepared as a video course. Also Dr. Alexandre Mege-Revil, Ecole Centrale de Lille, France, tried to "break the habits" and worked with videos to "reverse classroom in a French engineering school". Such new didactic tools are being introduced more and more to improve the attention of students and make the courses more lively and interesting for the young generation who often have a higher affinity for web-based and multi-medial information than to classical lectures. With its concept of graphical illustration of materials functions and properties, Granta Design had already started a long time ago to translate theory into application, and Prof. Mike Ashby, Engineering Department, University of Cambridge, showed this again in his presentation. But what kind of information and theory is requested still today? Prof. Sybrand van der Zwaag, TU Delft, The Netherlands, started a quiz among the participants. He showed the table of content of one of the important books used for materials education and asked the participants to delete topics and exchange them by others which they find more important today. It turned out that many theoretical topics were removed by more "applied fields" – it seems that educators nowadays see the importance more



*Peterhouse, Cambridge University*

in fields which explain to students how and for what kind of applications materials should be used. Prof. Andy Horsewell, DTU, Denmark, presented a course on Materials Engineering which leads to more creativity once the basis of materials science and engineering is prepared. Students in Denmark can dismantle a product and analyse and evaluate materials and processes which were needed to produce such a product and then suggest new materials and/or processes and by this create the product in a new way. As these courses are often related to industry such case studies enable a better understanding of a future career in industry. M. Hofmann, Past President of FEMS, was invited to present a presentation on "Materials in a value chain approach" where she reminded the audience to consider during the education phase topics such as materials criticality, life cycle assessment of products, and ecological design in view of improved recycling potential of components and materials.

The symposium also had a poster session with many opportunities to exchange, and also the Symposium dinner in the wonderful old hall of Peterhouse (founded in 1284) made such networking between the many participants very easy. M. Hofmann would like to thank Marc Fry and his team from the Education Division of Granta Design, UK, and Mike Ashby for the kind invitation. <http://www.materialseducation.com/2016/cambridge/program.htm>.

# METALLURGY EUROPE

## 2<sup>nd</sup> Annual Summit, April 2016, Stockholm

FEMS was represented by the President, Brett Suddell, at the recent Metallurgy Europe second annual summit as part of the Eureka week in Stockholm, Sweden. The meeting was very well attended by 120 industrial and academic partners from 20 countries, including several funding agency representatives. The Swedish astronaut, Christer Fuglesang gave a keynote talk to open the meeting. The aim of Metallurgy Europe is to integrate academic research, industrial manufacturing and end-user engineering across Europe to make a range of high value products for a wide range of sectors and create 100,000 jobs over 10 years. Highlights from the meeting included:

- The Association for Metallurgy Europe has been incorporated in April 2016, which now provides the legal foundation for the entire programme;
- Metallurgy Europe is an international, not-for-profit association (AISBL), registered at the EUREKA headquarters in Belgium;
- At present, 17 countries are willing and able to fund projects in Metallurgy Europe, including: AT, BE, CA, CH, CZ, ES, FI, HU, IE, IS, NO, PL, PT, SE, SI, TK, ZA, using either dedicated or non-dedicated national funding.

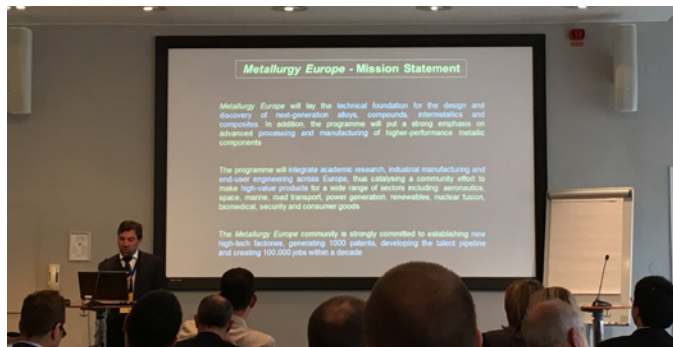
metallurgy  
europe



- The consensus so far is that the twelve selected, stage-1 proposals (with a value of 100M€) shall be given the opportunity to submit a stage-2 proposal with an updated consortium. The deadlines and templates will be provided in May;
- In order to prepare the future, the Metallurgy Europe consortium also developed a list of 20 new call topics for Call-02 and Call-03 in 2016/17

FEMS will be actively involved in leading on dissemination, PR and education activities with Metallurgy Europe.

<http://metallurgy-europe.eu>



*David Jarvis, Chairman of the Metallurgy Europe Eureka Cluster, introducing the summit with the cluster's mission statement*

## The MATCH Project Community meets at Brussels

After one year of collaboration, the partners of the "The Alliance for Materials way to the creation of the MATERIALS Common House" MATCH and the European Commission Funded Project met at Brussels on January 21, 2016 in the Covent Garden Building, Brussels. The beneficiaries members of MATCH were all present - CSM, CEFIC, KMM, IOM3, EURATEX, NANOFUTURES, TECNALIA, EMRS, LSC, IK4-TEKNIKER, CEA, EMIRI, LIST, CNR, Fraunhofer, FEMS (with M. Hofmann, FEMS Past President and Bernd Vollmer SIP, involved in the project as FEMS partner), and Spinverse. During the meeting progress of the seven Work packages were discussed.

In **work package 2** the deliverable for the basis for the creation of the Technical Groups, was completed end of 2015 by FEMS as responsible partner. Five different industrial sectors (energy, construction, transport, health and creative industries) are covered and a methodology has been established and a list of proposed chairperson for each TG and members has been presented. These TGs are considered to be credible representatives for Materials R&I for that given specific sector, and each of the chosen persons should have an expertise in R&D

activities in their sector, have an overview on innovation and global strategic planning, standards and regulation, the strategy of EU in the NMP field and European projects and programs. This will alleviate the dialogue with other sectors for information exchange and alignment of strategies in view of synergic actions in R&I Materials policies. The involved partners in this task are aligning also with Task 2.4 ("Creation of a European Materials R&I Forum linking European, national and regional representing organisations"). This will enable a powerful Forum for future exchange between industry, academia and the European Commission.

**Work package 3** has successfully started with various tools for communication and advertisement of MATCH activities. Especially the MATCH Newsletter is a great success in view of the collaboration of many partners and their collaborators. The 4th Newsletter was launched begin of 2016 with the topic on Energy Storage (see <http://us10.campaign-archive2.com/?u=b3ae56fcfaa4d151eb07776476&id=b4d-59d28526e>).

Each of the newsletters have a specific topic and for each of these newsletters FEMS experts can also provide short

MATCH  
Building the European  
Materials Common House

stories and articles. The next newsletter will be published in June, 2016 with the focus on Modelling. The webpage of MATCH <http://www.match-a4m.eu/> offers new insights on the project and upcoming activities.

The idea of **Work package 4** is to design, create and support an online Data Base (DB) of the main materials initiatives/systems which will be open to free public access and will map the main materials initiatives/organisations, their cross links, contents and references. A special platform developed by TECNALIA called the MATCH Observatory, was presented. The Observatory will act as a hub and connection point for the European materials community integrating state-of-the art intelligence resources on innovation in the materials field (resources, players and trends) from the rest of the partners. MATCH Observatory will support strategic debates and vision building with forward-looking activities and facilitate networking among the relevant actors and showing organization, people, projects, initiatives/programmes, and materials.

**Work package 5** concerns the various benchmarking activities on a) the international level by collecting materials research activities in USA, Japan, Latin America, and Asiatic countries; b) European level about research in materials financing in Belgium, Denmark, Finland, France, Germany, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovenia, Spain, United Kingdom, and Norway. These data will be evaluated and international information compared with national/European ones. The collection of data of national contact points will be exchanged with WP2 and WP3 in order to supply the appropriate information to a larger community.

In **Work package 6** an overview of the European landscape for material and multimaterial applications and material as key technologies was presented aiming to identify hubs of competence and expertise through all Europe. FEMS has also been active in this workpackage and it will be now a live exercise through the whole duration of the MATCH to make this project mapping activity sustainable beyond the project and to keep the database alive for further use. This database is considered central to sustain the Regional/National/EU projects portfolio beyond the MATCH project. WP6 also organised a workshop which was attended by more than 30 people from the partner's organisations and discussed the outcome of the database in more detail. More information regarding the workshop is given in the section below "Workshop with Experts from the Industrial Group".

**Work package 7** is focussed on the identification and analysis of 5 European and 5 national or regional success cases for material research/innovation networking. From more than 50 proposals, 7 were chosen and it was agreed not to include any success story from ETP, EMRS or FEMS, to avoid "self promotion".

## Workshop with Experts from the Industrial Group

The workshop took place at the Covent Garden Building, Brussels on January 22nd, 2016. More than 30 participants from 20 different organizations out of 7 countries attended the workshop. The objective of the workshop was to utilize the material specific competency as well as the respective experience of the participating experts to generate a situational priority reflection of given "Cross Cutting Challenges" in nine application fields: Energy; ICT; Transport; Manufacturing and Processing; Building and Infrastructure; Health Care; Space, Security and Defence; Food and Water; Consumer Goods.

The group's result is intended to be compared with the results obtained by the activity of WP5 and WP6 of the MATCH projects, in which current national and European material project portfolios have been evaluated using the same assessment scheme.

This workshop session was structured in different phases:

- **1st Phase**: thematic posters were discussed by small groups in order to identify potential missing Cross-Cutting Challenges (3C) for the next phase of the expert group work.
- **2nd Phase**: Prioritisation of topics for the next phase of the expert group work. The main aim of this phase was to prioritise the Cross Cutting Challenges
- **3rd Phase**: Group work - discussion and elaboration of proposals for further action based on the selected Cross Cutting Challenges from the previous phase. This third phase has been done through different groups of experts. After the discussion and comments between experts, main conclusions have been proposed by each poster leader.

**Conclusion**: the potential cross-application of the Cross Cutting Challenges can be represented as follows, in order of priority:

- I. Lightweight materials
- II. Materials for extreme conditions
- III. Advanced materials for large and small energy storage
- IV. Materials for embedded sensors
- V. Improved materials for heat management
- VI. Advanced polymer coatings; Material design for reuse/recycle; LCA
- VII. Multi-materials (hybrid) systems
- VIII. Environmentally friendly coatings

## Next Steps for the project

MATCH will continue for 18 months until July 2017 to gather further information and especially to compile data to allow the establishment of comprehensive networks to enable connections between the scientific creativity represented by academia (research institutes, universities and scientific infrastructures) and the enterprises (industry and SME's)

and to answer the market needs (products and technology innovations or implementations). This multi-storied Materials Common House, founded upon the value-chain concept, can effectively communicating materials R&D&I to industries and societies in Members States and Europe.

Upcoming meetings of MATCH are planned for June and September 2016.

*Contribution prepared by Margarethe Hofmann (FEMS Immediate Past President) & Bernd Vollmer (SIP)*

## NEW BOOK

“The Researcher Entrepreneur” by Georgios Vekinis, Head of the Advanced Ceramics and Composites Laboratory, Institute of Nanoscience and Nanotechnology, NCSR “Demokritos, Athens, Greece.

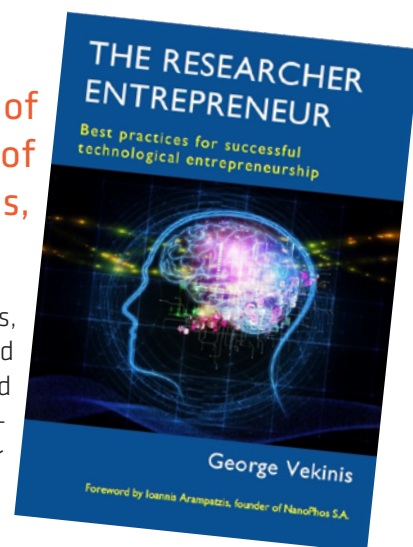


“Why do so many technological start-ups fail to establish themselves in industry or the market, against the best intentions and attempts of their founders?”

The book considers afresh this conundrum and puts forth the thesis that a researcher already

possesses many of the critical traits of a successful entrepreneur – perseverance, patience, rational logic, systematic

and methodical analysis, to name but a few – and only needs to learn and practice the entrepreneurial approach in order to succeed.”



<https://www.facebook.com/George-Vekinis-1526439104309719/>

**About the author:** Dr George Vekinis has worked in Research and Development since 1980 in industry (Boart International Ltd, S. Africa, SEDES Ceramics Industry, Greece), Universities (Witwatersrand, S. Africa, Cambridge, UK) and Research Centres (Council for Scientific and Industrial Research (CSIR), S. Africa). His research interests include nanostructured industrial catalysts, advanced protection and propulsion systems for spacecraft, industrial microwave processing and high energy armour composites. He was President of

the Hellenic Society of Science and Technology of Condensed Matter (HSSTCM, member of FEMS) during 2014-2015. Dr Vekinis is also the founder and President of a manufacturing company spun off from his research results and a Senior Consultant in Exploitation Strategy and Technology Transfer for the European Commission. Among many assignments for the EC, he was author of the “Vekinis Report”, a meta-study on the reasons for weak or no exploitation of results from over 650 projects in FP5.

### FEMS newsletter

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Please send comments and contributions to [secretary@fems.org](mailto:secretary@fems.org)

### FEMS Member Societies :

**Austria :** Austrian Society for Metallurgy and Materials (ASMET)

**Belgium :** Benelux Métallurgie (BM)

**Czech Republic :** Czech Society for New Materials and Technologies (CSNMT)

**Czech Republic :** Metal Science Society of the Czech Republic (MSS)

**Estonia :** Estonian Material Science Society (EMSS)

**France :** Société Française de Métallurgie et de Matériaux (SF2M)

**Germany :** Deutsche Gesellschaft für Materialkunde (DGM)

**Germany :** Deutscher Verband für Materialforschung und -prüfung (DVM)

**Greece :** The Hellenic Metallurgical Society (HMS)

**Greece :** Hellenic Society for the Science and Technology of Condensed Matter (HSSTCM)

**Hungary :** Hungarian Society of Materials Science (MAE, Magyar Anyagtudományi Egységlet)

**Italy :** Associazione Italiana di Metallurgia (AIM)

**Italy :** Associazione Italiana d'Ingegneria dei Materiali (AIMAT)

**Italy :** Associazione Italiana Compositi & A ni (Assocompositi)

**Latvia :** Latvian Materials Research Society (LMRS)

**Lithuania :** Lithuanian Materials Research Society (LtMRS)

**Netherlands :** Bond voor Materialenkennis (BvM)

**Norway :** Norsk Metallurgisk Selskap (NMS)

**Poland :** Polskie Towarzystwo Materialoznawcze (PTM)

**Portugal :** Sociedade Portuguesa de Materiais (SPM)

**Serbia :** Materials research Society of Serbia (Serbia-MRS)

**Slovak Republic :** Society for New Materials and Technologies in Slovakia (SNMST)

**Slovenia :** Slovensko Društvo za Materiale (SDM)

**Spain :** Sociedad Española de Materiales (SOCIEMAT)

**Sweden :** Svenska Föreningen för Materialteknik (SFMT)

**Switzerland :** Schweizerischer Verband für Materialwissenschaft und Technologie (SVMT)

**Ukraine :** The Ukrainian Materials Research Society (U-MRS)

**United Kingdom :** Institute of Materials, Minerals and Mining (IOM3)

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