

Newsletter - July 2018

Welcome from the FEMS President Prof. Paloma Fernández Sánchez



With the beginning of this year, I confronted one of the most important challenges in my professional life: the Presidency of FEMS. It is not only a pleasure but an enormous honour, and an enormous responsibility. During my

period as President I will do all my best to follow the track initiated by the good work done by my predecessors. Over the last few years, a major effort has been made by FEMS to be closer to the Member Societies: our essence, our *raison d'être*; and this will also be the focus during my Presidency. The enormous human potential of our Member Societies, must be the driving force to improve our commitment with the Materials Community. Special attention will be paid to our young researchers; they are the future. During my Presidency I will try to develop the role of young people in the FEMS initiatives. A forum such as Junior EUROMAT shows unequivocally that betting for our young people is a safe bet. I will also focus on bringing forward the role of women in Materials Science and Technology. We have a great potential, and we cannot lose almost half of the brilliant persons we have. And, of course, FEMS is a European commonplace, but Europe is not alone on the planet. A lot of experience and good ideas are waiting for us; first, across the Atlantic Ocean, where we already have a fruitful relation with the American TMS, and where we will try to improve the relations with our Iberoamerican partners. Then climbing the Urals to approach Asia, but also helping

countries across the Mediterranean to grow scientifically and technologically in the Materials area. This is our duty. Since the beginning of my career I have been convinced that together we are more, and I have been closely involved in the development of the National Scientific Societies of Spain. During the last ten years, I have been the President of the Spanish Materials Society, and this has given me even more arguments in favour of working together. I have been involved in FEMS since 2014, and this feeling has become a necessity. In the current times of globalization we cannot walk alone.

It would not be fair not to recognize the work already done, nor to mention the rest of the people in the Managing and the Executive Committees, my most grateful words are for them.

For me it is a pleasure and an honour to write these welcome words that I sincerely expect are the beginning of an intense and fruitful collaboration with all our Member Societies.

Let me finish rewording a sentence sometimes attributed to Teresa of Calcutta, sometimes to a soldier, sometimes to..." *We the willing, led by the unknowing, we have done so much with so little, that we are now qualified to do anything with nothing...*" but this will only be true if we work all together, without you, the National FEMS Members Societies, we are nothing and can do nothing. Thank you for your support.

My best Regards and Wishes

Paloma Fernández Sánchez

WELCOME TO FEMS JUNIOR EUROMAT 2018!



We are happy to invite the young material scientists to FEMS Junior EUROMAT 2018 to be held for the first time in Budapest Hungary! Organised every two years since 1992, the FEMS Junior EUROMAT Conference is the place to be for young students willing to have a direct access to one of the largest community of international experts of materials science and technology. This year's edition will take place in Budapest, 8-12 July, 2018 under the auspices of the Hungarian Society of Materials Science (MAE). For more information: <http://junior-euromat2018.fems.eu>

Materials science and technology has been practiced in Hungary for many years. Education started in separate institutions in the fields of metallurgy, ceramics, polymers, mechanical technology, physics and chemistry in many cities of the country (Budapest, Debrecen, Szeged, Veszprém, Miskolc, Pécs, Kecskemét, Győr, Dunaújváros, Sopron). The Hungarian Society for Materials Science (in Hungarian: Magyar Anyagtudományi Egyesület, MAE) was born in 1993 in Dunaújváros, the capital of Hungarian metallurgy. During the last 2 decades this society gradually transformed into the truly fresh and interdisciplinary society, uniting metallurgical and chemical engineers, chemists and physicists interested in the thousands of facets of millions of materials.

The conference is organized around 7 research topics: Functional Materials, Structural Materials, Design & Processing, Manufacturing & Recycling, Energy, Transportation and Environment, Life Science and Health, Modelling and Characterisation. Over 240 abstracts have been received from 40 countries worldwide, and more than 300 participants will exchange in the various sessions, in tutorials, and in a workshop related to Future European R&D Materials programmes. In addition 6 Round Tables will focus on Start-Ups and Challenges, Entrepreneurship, Woman in Science, Scholarship and Grants for PhD and Postdoc Students, Raw materials, and Clean and Efficient Energy and Publishing.

The programme is highlighted by nine plenary lectures given by renowned scientists from the MSE community, including FEMS Executive Officers:

Dr. Fabrice Stassin, Managing Director, EMIRI Association, Belgium

Prof. Eric Le Bourhis, Poitiers University, France

Prof. Maria Letizia Ruello, (COST EXTREME) Università Politecnica delle Marche, Italy

Dr. Márton Herczeg, European Innovation Communities Management (EIT)

Prof. Amy J. Clarke and George S. Ansell Department of Metallurgical and Materials Engineering, Colorado School of Mines, Golden, USA

Prof. Jenő Gubicza, Eötvös Loránd University, Hungary

Prof. Aldo R. Boccaccini, University of Erlangen-Nuremberg, Germany

Prof. Ján Dusza, Institute of Materials Research, Slovak Academy of Sciences, Slovakia

Steve Hant, Thermo Fisher Scientific, UK

The finals of the first European FEMS Master Thesis Award will also be held during the conference (see next article). In addition the FEMS Communication Award for Excellence in MSE is also a key part of the programme. These awards go to young European materials scientists who have distinguished themselves by the significance of their work and their ability to communicate effectively whether in Industry or Academia.

For the first time in the history of Junior EUROMAT conferences, the publication of oral and poster contributions will be offered to high quality referred journals handled by Taylor & Francis and AKCongress. Several societal events including ruin pub tours, and a cruise on the Danube will be organized during the event. We are looking forward to seeing you in Budapest, Hungary and wish you an interesting and unforgettable event!

FEMS European Masters Thesis Award

Inaugural Final 2018, 10th July, Budapest, Hungary







FEMS has created a new European wide Masters competition to showcase the best masters students from across Europe. The FEMS Masters Thesis award is intended to recognize the best Masters Thesis on Materials Science and Engineering, presented in any Academic Institution from the country of any FEMS member Society. The FEMS National Societies may nominate one candidate per year. To be eligible the Masters Thesis should have been obtained up to a maximum of two academic years before the FEMS final takes place. Further details on the award can be found on the FEMS website www.fems.org. The European final of the FEMS Masters Thesis Award will take place during Junior EUROMAT on the 10th July.

Each FEMS member society taking part in the competition organises their own local heat and the winner from each local/national event goes forward to the European Final. The National Society covers the travel and subsistence costs for their candidate.

Finalists will give a 10 minute presentation on their Master Thesis at Junior EUROMAT. This will be followed by a short Q&A session with members of the judging panel. Each finalist

receives a fee waiver to attend the Junior EUROMAT event. The winner will also receive a certificate and be featured in the next FEMS Newsletter and on the FEMS website.

For the Inaugural competition in 2018 we are pleased to announce that finalists from five Member Societies will be competing in the European Final. Those taking part are:

-  **Flore Villaret**, "2D grain growth modelling in ODS steel with different full field approaches" SF2M
-  **Konstantinos Fountas**, "Experimental Determination of the Adhesion of Hard CAPVD coatings" HMS
-  **Athanasios Skandalis**, "PLMA-b-POEGMA amphiphilic block copolymers: Synthesis, characterization and properties in aqueous solutions" HSSTCM
-  **Alessia Peluso**, "Measurement and modelling of transverse permeability of preforms" ASSOCOMPOSITI
-  **Beatriz Coehlo**, "A digital Microfluidics Platform for Loop-Mediated Isothermal Amplification of DNA" SPM
-  **Manuel Alonso Orts**, "Synthesis and characterization of complex semiconducting oxide nanostructures" SOCIEMAT

FEMS Executive Committee News



As of 3 May 2018, the new Executive Secretary of FEMS is Ms Efi Fragkou (photo). Efi is based in IOM3, London. FEMS welcomes Efi and wishes her a joyful and fruitful collaboration with FEMS.

Former Executive Secretary Dr Hugh Dunlop, will

continue his collaboration with FEMS as Communication Manager. Hugh Dunlop joined FEMS in July 2010 as Secretary, succeeding the always unforgettable Paul McIntyre. FEMS would like to express its gratitude to Hugh for all the well-done work during his 8 years as Executive Secretary and wish him the best for this new stage as FEMS Communications Manager.

As was reported in the previous newsletter, we have a new Honorary Treasurer, Frans Vos (Materials Consult & KU Leuven), replacing Ludo Froyen (KU Leuven) who had devoted 7 years' of service to FEMS. FEMS also welcomes 3 new Officers elected to serve on the Executive Committee for the period 2018-2019: Gian Luca Garagnani (Univ. Ferrara), Sten Johansson (Univ. Linköping) and Paula Vilarinho (Univ. Aveiro).



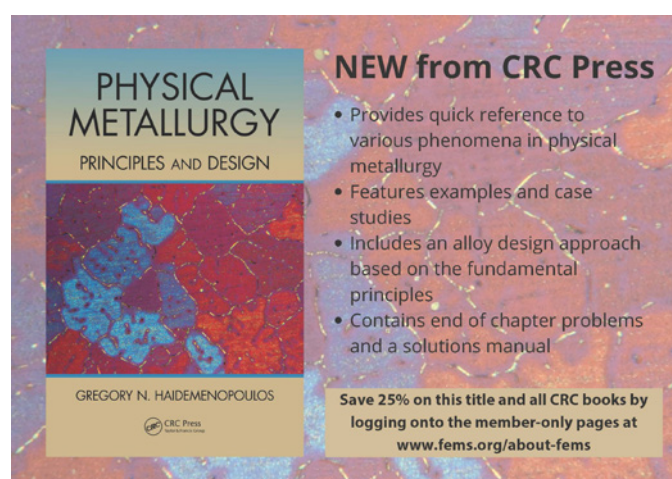
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FEMS EUROMAT 2017

Thessaloniki, Greece : A successful and memorable story

From 17 – 22 September 2017, scientists from around the world gathered in Thessaloniki, for the European Congress and Exhibition on advanced materials and processes (EUROMAT 2017), the premier international congress in the field of materials in Europe.

Approximately 2200 participants from 65 countries attended the congress. 57 symposia were grouped into 8 areas hosting a total of 1891 oral and 835 poster presentations organized in 22 parallel and 2 poster sessions. Two Symposia were organized by TMS while two more were jointly organized by FEMS and TMS. In addition 4 Tutorials were given by leading experts on Sunday and for a first time a B2B event was successfully organized and attended by a lot of delegates.

Trending topics included high strength steels, high temperature alloys, bulk metallic glasses, fatigue, wear and corrosion of metallic materials, materials by design, functional membranes, molecular modelling, semiconducting nanomaterials (wires), LASER patterning, solid-state cooling by magnets, additive manufacturing, coatings, light alloys, raw materials, welding & joining, solidification, multiscale modeling, advanced microscopy methods, materials for energy harvesting and biomaterials. The Area G on Education & Technology Transfer, included symposia about key material fields for modern curricula, critical materials in design manufacturing and recycling, transferable skills for Masters and PhD's in material science, and competences and basic knowledge in the ICTER.

Nine plenary lectures were delivered by renowned scientists highlighting the state of the art in composite plasmonic materials, aerospace industry, magnetic materials, semiconductor nanowires, shape memory alloys, polymers, nickel super alloys, laser surface modification, additive manufacturing, dislocations and phase transformations, nanostructures, computational modelling and materials design.

40 industry partners from Europe and the US supported EUROMAT 2017 offering educational, networking and promotional opportunities for the congress delegates.

The overall impression is that EM2017 will leave its unique mark in the EUROMAT series history.

The Congress was organized by the Greek Members' Societies of FEMS : The Hellenic Metallurgical Society (HMS) and the Hellenic Society for the Science and Technology of Condensed Matter (HSSTCM).



The team of the Congress volunteers and in the front row (left to right) : Dr. Apostolos Chamos (MC), Prof. Panos Tsakiroopoulos (chair SC), Dr. Anna Zervaki (chair, MC), and Prof. Nikolaos Michailidis (SC, MC).



A small fraction of the EM 2017 delegates



View of Plenary amphitheatre



The FEMS Executive Committee in Thessaloniki

FEMS EUROMAT 2019

1-5 September Stockholm, Sweden



We have the honour to invite you to join your peers and subject matter experts at FEMS EUROMAT 2019, to be held 1 – 5 September 2019, at the Stockholm City Conference Centre, www.stoccc.se. It is conveniently situated in the city centre of the beautiful Swedish capital, only a few minutes' walk from the Grand central station of Stockholm and the high speed train connection to Arlanda international airport. The Swedish Materials Society (SFMT) guarantees a very well planned and organized conference during a week in the late summer/beginning of fall. Sweden has a long tradition in manufacturing and application of advanced

materials. Materials Science is therefore an important field of research and technological development in Sweden with involvement of both academia and industry. On behalf of the Scientific and Management Committees, Sten Johansson, President, Swedish Society for Materials Technology, (SFMT). More information will be posted in due course on the FEMS EUROMAT 2019 website <http://euromat2019.fems.eu>. Proposal for symposia are most welcome and those should be sent to Nikos Michailidis (nmichail@eng.auth.gr) and Lars Nyborg (lars.nyborg@chalmers.se).

News of FEMS – TMS collaborations

1. FEMS Signs new MoU with TMS

During the 147th TMS annual conference which took place in Phoenix, Arizona from 11th to 15th March 2018, FEMS was pleased to be able to sign another memorandum of understanding (MoU) which further cements and develops the long standing and growing relationship that FEMS has developed with TMS over the years. This MoU continues to develop the interactions that both organisations have at corresponding flagship events, namely, EUROMAT and the TMS annual conferences.

Prior to the signing of the FEMS-TMS MoU a high level meeting was held between senior representatives of TMS and FEMS. The FEMS delegation were presented with TMS Medals to commemorate the 30th Anniversary of the TMS technical divisions. As a result of this meeting a joint high level committee will be established to create a formal framework to take forward and develop joint initiatives.



Kevin J. Hemker, TMS President 2018 (left) and Brett C. Suddell FEMS Immediate Past President 2018-2019 complete the official signing of the joint FEMS-TMS MoU at the signing ceremony in Phoenix, Arizona.



From left to right: Stanley M Howard, TMS Immediate Past President, Brett C Suddell, FEMS Immediate Past President, Patrice Turchi, Chair TMS International affairs Board, David DeYoung TMS President 2017, Kevin J. Hemker, TMS President 2018, Pedro Dolabella Portella (Past FEMS President) and Jim Robinson, TMS Executive Director.

2. FEMS Keynote session at TMS Phoenix 2018

Energy and Transportation from a European Materials Perspective

This special keynote session of invited talks was organised by FEMS as part of its ongoing collaboration with TMS to support international collaboration on important science and engineering topics. This special session took place on Wednesday 14th March from 08:30 to 17:00.

The keynote session Chaired and organised by FEMS Immediate Past President, Dr Brett Suddell gave a well received and important overview of recent developments in the areas of Energy and Transportation from a European materials perspective to a wider global audience.



Top row from left to right: Brett Suddell FEMS Immediate Past President and session Chair; Donato Firrao, DISAT, Politecnico di Torino, Italy; David Worsley, Swansea University, United Kingdom; Timothy Warner, Constellium C-TEC, France; Pedro Dolabella Portella, BAM; David H. DeYoung, 2017 TMS President; Winfried Keiper, Bosch Corporate Research, Germany; David Jarvis, HIPtec, Norway; Marc Fry, Granta Design, United Kingdom. Circular image left: Yves Bréchet, Grenoble INP and High Commissioner to Atomic Energy, France

The following lectures were given by the invited speakers:

“**Materials and Energy: The Need for a Systemic Approach**”
Yves Bréchet, Grenoble INP and High Commissioner to Atomic Energy, France

“**A European Corporate R&D View: New Materials and Processes in Transportation and Energy**” **Winfried Keiper**, Bosch Corporate Research, Germany

“**Third Generation Solar Cells from Laboratory to Factory: Developing a Scale-up Route for Perovskite Solar Cells to Turn ‘Buildings into Power Stations’**” **David Worsley**, Swansea University, United Kingdom

“**European Efforts in the Development of High-Quality Metallic Components for Energy and Transport Applications**”
David Jarvis, HIPtec, Norway

“**Fatigue Micromechanisms and Failure Analysis of Rail Steels**” **Donato Firrao**, DISAT, Politecnico di Torino, Italy

“**Magnesium Alloys in Transportation: Hidden Champions?!**”
Karl Kainer, Helmholtz-Zentrum Geesthacht, Germany

“**Recent Advances in Aluminum Product Development for Transportation**” **Timothy Warner**, Constellium C-TEC, France

“**Challenges for the Design of Ni-based SX Superalloys Components**” **Jonathan Cormier**, Institut Pprime, ISAE-ENSMA, France

“**Integrated Computational Materials Engineering (ICME) and Business Decision Support Systems (BDSS) in the Context of Open Innovation and Interdisciplinary Collaboration**” **Marc Fry**, Granta Design, United Kingdom

Panel discussions moderated by Pedro Dolabella Portella were held at the end of the morning and afternoon sessions and covered many important areas which were of interest to both American and European representatives.

3. TMS – FEMS Young Leader International Scholar Programme

Jonathan Cormier named TMS-FEMS 2018 International Scholar

The Minerals, Metals & Materials Society (TMS) and the Federation of European Materials Societies (FEMS) established a joint Young Leader International Scholar Program to promote young member activities and strengthen collaborations between these international societies. During the 2018 TMS annual event Jonathan Cormier was presented with the 2018 TMS-FEMS Young leader International Scholar award as can be seen in the photo below.



From left to right: Pedro Dolabella Portella (Past FEMS President), David DeYoung TMS President 2017, Kevin J. Hemker, TMS President 2018, Jonathan Cormier TMS-FEMS Young leader international Scholar 2018, Brett C Suddell, FEMS Immediate Past President and Jim Robinson, TMS Executive Director.

Jonathan Cormier's comments:

After receiving the FEMS Lecturer Award for Excellence in Materials Science and Engineering in 2016-2017 at Junior Euromat in Lausanne, Switzerland in July 2016, I had the chance to be named FEMS/TMS 2018 International Scholar. It was a unique opportunity for me to present my view on “The challenges and future of Ni-based single crystal superalloys component design” during the last TMS Annual meeting, held in Phoenix, Arizona, from March 11 to March 15, within the special FEMS Keynote symposium on “Energy and Transportation from a European Materials perspective”. Going to TMS 2018 not only allowed me to make a presentation in a very unique symposium, but I also had the chance to meet colleagues and friends from the superalloys community and to develop new collaborations, especially in the field of additive manufacturing of high temperature materials. I would like to thank FEMS and TMS for giving me this unique opportunity of presenting my work in this special symposium of TMS 2018, and, more personally, I want to thank Dr. Pedro Portella (Past FEMS president) for all his advice and continuous kindness.

Further details on this award can be found here: <http://fems.org/tms-fems-young-leader-international-scholar-program>

International Materials Education Symposium

The IMES-18 was held in Clare College, University of Cambridge, April 12-13 2018. After ten editions it is now a consolidated event, well established in the Materials Educators calendar as a leading venue for the University-level Materials Education community to come together to discuss ideas, tools, and best practice relating to the teaching of materials across engineering, design, and science.



In the 2018 edition almost 150 delegates attended the symposium. The speakers included Roger Hadgraft (University of Technology Sydney), Kwuangsun Kim (Korea Tech), Paloma Fernández Sánchez (University Complutense and FEMS Pdt), Peter Goodhew (University of Liverpool), Ric Parker (Rolls-Royce. UK), Yves Bréchet (French Alternative energies and Atomic Energy Commission), Lorna Gibson (MIT), Mike Ashby (university of Cambridge) amongst others.

The first session was dedicated to Active and Student-Centred learning. It was chaired by Lorna Gibson (MIT) and Steffen Ritter (Reutlingen University). The session included a very active poster session preceded by a teaser poster session where the contributors had the opportunity to briefly (1 minute) present their work and invite the delegates to visit their posters. The title for the second session was Active and Based- Game learning, chaired by Paloma Fernández Sánchez (University Complutense and FEMS Pdt) and Noel Rutter (Cambridge University). The second day of the symposium was also divided into two sessions: Innovation and Manufacturing, chaired by Arlindo Silva (Singapore Technical University) and Laura Thurn (FH-Aachen); and Design and Architecture chaired by MariaPia Pedferri (Politecnico di Milano) and Marc Fry (Education Division, Granta Design).



The Presenters Dinner on Wednesday 11th at Clare College was a nice opportunity to talk and exchange opinions and experiences, but also to relax and share a good time with all the presenters. The traditional table blessing was pronounced by Nuria Salán. The Conference Dinner was celebrated at Gonville & Caius College. All the delegates were present at the event, and the blessing was pronounced by Bill Clyne.

On the occasion of the 10th anniversary two special prizes were awarded to Javier Orozco Messana and Yves Bréchet. The award ceremony was chaired by Mike Ashby and Paloma Fernández Sánchez, thus reinforcing the collaboration between GRANTA and FEMS.

On behalf of FEMS I express my gratitude to Mike Ashby and Mark Fry and to all their GRANTA team for the enjoyable experience during the days of the symposium and for giving me the opportunity to be part of the Academic Advisory Board.

Paloma Fernández Sánchez



Yves Bréchet (left photo) and Javier Orozco Messana (right photo) receiving their awards from Mike Ashby and Paloma Fernández Sánchez.

Participation of the FEMS President at the Norwegian National Conference for Materials Technology



Gruppe av Polyteknisk Forening



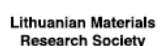
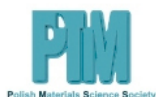
The Norwegian Society (Norsk Materialteknisk Selskap, NMS), held their National Conference for Materials Technology in Oslo, 30-31 May 2018. The focus for the Plenary Sessions during the first day was: *Digitalization and sustainability, an industrial revolution? How can Norwegian industry be leading?* The plenary session included contributions by Daniel Bjarmann-Simonsen, State Secretary of the Ministry of Industry, Lise

Randeberg, President of Tekna and Ole Erik Almlid, Deputy Managing Director of Politics and Communication at NHO (the Confederation of Norwegian Enterprise). It was my pleasure to participate at this session, as FEMS President. In my talk, I gave an overview of FEMS and our role in Europe and encouraged delegates to take an active role in FEMS by participating in the FEMS Conferences.

The focused sessions on 31 May consisted of 30 lectures covering Emerging Technologies, Additive Manufacturing, Advanced Materials, Processes and Applications, Light Metals, Renewable and Metallography. During the meeting, the Society Prizes were awarded

Many thanks to NMS for their hospitality and the incredible weather they gave us - a sunny 32°C!

Paloma Fernández Sánchez (FEMS President, 2018-2019)



FEMS newsletter

Editorial Committee: Hugh Dunlop (Chairman), Paloma Fernandez, Jana Hornikova, Brett Suddell

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Please send comments and contributions to communications@fems.org

FEMS Member Societies:

Austria: Austrian Society for Metallurgy and Materials (ASMET)

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

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 Egyesület)

Italy: Associazione Italiana di Metallurgia (AIM)

Italy: Associazione Italiana Compositi & A ni (Assocompositi)

Latvia: Latvian Materials Research Society (LMRS)

Lithuania: Lithuanian Materials Research Society (LTMR)

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)

Switzerland: The Foundation for Rare Metals (ESM, Entwicklungsfonds Seltene Metalle) Associate Member

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

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