

TABLE OF CONTENTS

Part I Conference Schedule.....	1
Part II Keynote Speeches	3
Keynote Speech 1: The Microstructure and Mechanical Behavior of the Alumina-Forming Austenitic Stainless Steel Fe-20Cr-30Ni-2Nb-5Al	3
Keynote Speech 2: Plasmonic Properties of Metallic Nanoparticles in Colloidal Solutions and 2-D Ordered Systems	5
Keynote Speech 3: Infrared Optical Materials for Thermal Imaging	7
Keynote Speech 4: Recent Progresses in the Syntheses and New Functions of Advanced Nanocomposite Gel	8
Part III Oral Presentations	9
Oral Presentation Guidelines.....	9
Oral Session 1: Advanced Material Technologies and Composites	10
Oral Session 2A: Characterization and Testing	11
Oral Session 2B: Characterization and Testing.....	12
Oral Session 3: Nanomaterials	13
Oral Session 4: Energy Materials and Semiconductors	14
Oral Session 5: Surface and Coatings Technologies.....	15
Oral Session 6: Structural Materials.....	16
Part IV Poster Presentations.....	17
Poster Presentation Guidelines.....	17
List of Posters.....	18
Part V Conference Venue.....	21
Part VI Acknowledgements	22

Part I Conference Schedule

Tuesday, November 12, 2019

Lobby of Doubletree Resort by Hilton Sanya Haitang Bay

09:00-18:00

Conference Registration

Wednesday Morning, November 13, 2019

3rd Floor, Hai Tian Room

	WELCOME SPEECH
09:00-09:05	<i>Technical Committee Chairman: Dr. William M. Cox, Corrosion Management Limited, UK</i>
09:05-09:45	Keynote Speech 1: The Microstructure and Mechanical Behavior of the Alumina-Forming Austenitic Stainless Steel Fe-20Cr-30Ni-2Nb-5Al <i>Prof. Ian Baker, Thayer School of Engineering, Dartmouth College, USA</i>
09:45-10:25	Keynote Speech 2: Plasmonic Properties of Metallic Nanoparticles in Colloidal Solutions and 2-D Ordered Systems <i>Prof. Sigitas Tamulevičius, Kaunas University of Technology (KTU), Republic of Lithuania</i>
10:25-10:35	POSE FOR A GROUP PHOTO
10:35-10:55	COFFEE BREAK
10:55-11:35	Keynote Speech 3: Infrared Optical Materials for Thermal Imaging <i>Prof. Xianghua Zhang, University of Rennes I/CNRS, France</i>
11:35-12:15	Keynote Speech 4: Recent Progresses in the Syntheses and New Functions of Advanced Nanocomposite Gel <i>Prof. Kazutoshi Haraguchi, Nihon University, Japan</i>

Wednesday Afternoon, November 13, 2019

12:30-13:45 **BUFFET LUNCH**
1st Floor, Taste Five

14:10-18:00 **Oral Session 1: Advanced Material Technologies and Composites**
3rd Floor, Long Mu Bay Room

14:30-17:25 **Oral Session 2A: Characterization and Testing**
3rd Floor, Hai Tang Bay Room

14:30-17:40 **Oral Session 2B: Characterization and Testing**
3rd Floor, San Ya Bay Room

18:00-20:00 **BUFFET DINNER**
3rd Floor, Hai He Room

Thursday, November 14, 2019

08:55-11:50 **Oral Session 3: Nanomaterials**
3rd Floor, Hai Tang Bay Room

09:00-11:50 **Oral Session 4: Energy Materials and Semiconductors**
3rd Floor, San Ya Bay Room

12:20-13:45 **BUFFET LUNCH**
1st Floor, Taste Five

14:20-17:30 **Oral Session 5: Surface and Coatings Technologies**
3rd Floor, Hai Tang Bay Room

14:30-17:00 **Oral Session 6: Structural Materials**
3rd Floor, San Ya Bay Room

18:00-20:00 **CLOSING SPEECH, SPONSOR SPEECH**
BEST ORAL AWARDING, WELCOME BANQUET
3rd Floor, Ballroom

Friday Morning, November 15, 2019

3rd Floor, Long Mu Bay Room

09:00-12:00 **POSTER PRESENTATIONS**
BEST POSTER(S) SELECTION

Part II Keynote Speeches

Keynote Speech 1: The Microstructure and Mechanical Behavior of the Alumina-Forming Austenitic Stainless Steel Fe-20Cr-30Ni-2Nb-5Al

Prof. Ian Baker, Sherman Fairchild Professor of Engineering and Senior Associate Dean for Academic Affairs, Thayer School of Engineering, Dartmouth College, USA.



Dr. Ian Baker obtained his B.A. and D. Phil. in Metallurgy and Science of Materials from the University of Oxford. He joined the Faculty of the Thayer School of Engineering at Dartmouth College, in 1982. He was the Director of the NIST-funded Center for Nanomaterials Research at Dartmouth from 2002-2005 and the Director of the NIH-funded Dartmouth Center for Cancer Nanotechnology Excellence from 2010-2016. He is a Chartered Engineer (U.K.) and a Fellow of ASM International, the Minerals, Metals and Materials Society, the Institute of

Materials, Minerals and Mining (U.K.), the Materials Research Society, and the American Association for the Advancement of Science. He is Editor-in-Chief of Materials Characterization, has published around 400 papers and has given over 300 presentations at conferences, universities and to industry. Research interests include: mechanical behavior, including wear and fracture of metals, intermetallic compounds and ice; processing and recrystallization phenomena, particularly the effect of particles on recrystallization and processing by directional recrystallization; applications of electron microscopy, X-ray diffraction and X-ray topography, particularly in-situ deformation experiments; production and properties of nanocrystalline, particularly magnetic, materials; nanoparticles for biomedical applications.

ABSTRACT. There is an increasing need for affordable high temperature ($\sim 750^{\circ}\text{C}$) structural alloys for both fossil fuel and concentrated solar power applications. Alumina-forming austenitic (AFA) stainless steels are a way to fulfil this need. In this presentation, we discuss the microstructure and mechanical properties of a model AFA stainless steel Fe-20Cr-30Ni-2Nb-5Al (in at. %). This alloy contains three different precipitates, i.e. Laves phase Cr_2Nb , B2-structured NiAl precipitates, and L_{12} -structured $\text{Ni}_3(\text{Al},\text{Ti})$ to provide strengthening, while the formation of aluminum oxide provides oxidation resistance at elevated temperature. The alloy can be completely solutionized by annealing at 1250°C . We will outline the effects of different heat treatments (0, 2.4, 24, 240 h and 1325 h at 800°C) after solutionizing on the precipitate size, including particle size-frequency distribution, and spacing, and how these affect the mechanical properties. An increase in the volume fraction of precipitates was accompanied by an increase in the room temperature yield strength from 205 MPa after the solutionizing treatment to 383 MPa after aging at 800°C for 1325h. The Laves phase and B2 precipitates form both along the grain boundaries and in the matrix, while the smaller L_{12} precipitates form only in the lattice. A precipitate free zone is also present along either side of the grain boundaries.

Surprisingly, even when the grain boundaries are almost completely covered (93%) in Laves phase and B2 precipitates substantial room temperature ductility is still possible (~19% elongation). Creep studies have been performed at 750°C on specimens annealed at either 750°C or 800°C. The L1₂ precipitates did not form at 800°C but formed during subsequent creep testing. The specimens given the shortest heat treatment of 2.4 h at 800°C, which had the smallest initial particle sizes, showed both the highest yield strength and the smallest creep strain after 500 h. The extent of grain boundary coverage by precipitates did not appear to affect the creep rates. No grain boundary cracking or precipitate cracking was found after creep testing.

Keynote Speech 2: Plasmonic Properties of Metallic Nanoparticles in Colloidal Solutions and 2-D Ordered Systems

Prof. Sigitas Tamulevičius, Member of the European Materials Research Society, Professor of the Physics Department, Kaunas University of Technology (KTU), Republic of Lithuania



Prof. Dr. Habil. Sigitas Tamulevičius, obtained his Physics Engineer degree from the Moscow Engineering Institute in Physics (Moscow, former USSR) in 1979, a Ph.D. degree from the University of Vilnius (Lithuania) in 1984, Doctor Habilitus degree from Kaunas University of Technology (1994). From 1990 to 1991, he was a postdoc at Royal Institute of Technology (Stockholm, Sweden). In 1994 he was Research Scholar, Fulbright Scholarship, Department of Physics, Massachusetts Institute of Technology (USA). Since 1996 he is full professor at the Physics Department and Research director of the Institute of Materials Science of Kaunas University of Technology (Lithuania). He has co-founded spin-off company producing optical security means, co-authored approx. 220 peer reviewed publications indexed in Web of Science (WS) in the field of vacuum and plasma technologies and optical microstructures with more than 1200 citations (h-index: 18), and is (co-) author of approx. 15 textbooks on different aspects of Materials Science. From 2002 he was Member expert and from 2010 he is full Member of Lithuanian Academy of Sciences. Prof. Tamulevičius has received series of awards including Soros Foundation Research Grant, (1993) (Awarded by American Physical Society), Fulbright certificate (1997), National Award for Science (2000), Recognition letter by the President of EMRS (2010), Kaunas city Best scientist award (2017). He was awarded Adjunct professor in Materials Science at Southern Denmark University (2016). He is Editor in Chief of Scientific Journal "Materials Science (Medžiagotyra)" (WS, Clarivate Analytics), Member of Editorial Board of "Materials Research express" (IOPScience). He was a national representative in FP7 NMP programme. He headed multiple research projects funded by European Framework Program, COST, Eureka, NordForsk, Lithuanian State Foundation for Research and Studies, the Research Council, as well as Science and Innovation Agency of Lithuania.

ABSTRACT. The optical properties metals such as gold (Au), silver (Ag) and copper (Cu) are interesting because they support collective excitations of free electrons called surface plasmons (SPs). SPs generate strong electromagnetic (EM) fields that enable various electro-optical applications in molecular sensing, medical therapy, solar cells, photodetectors, surface-enhanced Raman spectroscopy substrates, ultrafast optical switches, opto-mechanical devices, photocatalysis, nano-antennas and metamaterials. In our research we present optical and opto- mechanical properties of Ag nanocubes (NCs) and Au bipyramids (BPs) synthesized using colloidal chemistry methods. We expand range of the available plasmonic properties to the UV region using Al NPs and compare them with corresponding properties of the noble metallic nanoparticles. We have observed transient absorption spectroscopy (TAS) signal relaxation in Ag NCs and Au BPs that we can attribute to electron-phonon coupling and phonon-phonon scattering. Highly homogeneous Ag NCs and Au BPs have showed clear optomechanical oscillations while Al NPs have not showed any clear oscillations. Plasmonic metal nanoparticles arranged in a periodic array can generate a surface lattice plasmon resonance with an extremely high Q-factor. We used the capillary force assisted particle assembly technique to assemble nearly defect-free $>1\text{ cm}^2$ hexagonal lattices of wet-synthesized Ag

cuboctahedra with edge lengths of 123 ± 2 nm and a center-to-center spacing of 600 nm. These arrays are large enough to be measured with conventional UV-Vis spectroscopy, which revealed a surface lattice resonance extinction peak with a quality factor 28.6 at orthogonal illumination and up to 62.1 at higher illumination angles. Analysis of the plasmonic modes showed the possibility of the nanoparticles in our arrays to be excited into both in-plane and out-of-plane surface lattice resonance states. The combination of the combination of high aspect ratios of the particles and precise patterning allows us to achieve the highest Q-factors even at normal incidence and an asymmetric environment. The ease of generating ultra-narrow resonances that are still accessible to the surrounding environment should make applications such as nanolasing and biosensing a lot easier.

Keywords: Nanoparticles; Plasmonics; Optical properties.

Keynote Speech 3: Infrared Optical Materials for Thermal Imaging

Prof. Xianghua Zhang, Research Director, Laboratory of Glasses and Ceramics, Institute of Chemistry, University of Rennes I/CNRS, France



Dr. Xiang-Hua Zhang is Research director of the CNRS (French National center for scientific research). He got his bachelor in Zhejiang University, China in 1983 and PhD degree in University of Rennes I, France in 1988. He worked in the laboratory of glasses and ceramics, a joint laboratory CNRS-University of Rennes I until 1996 when he left to found the Umicore IR glass company, the world leader for molded chalcogenide glass optics. He came back to the laboratory in 2002 and became the director of this laboratory in 2012. He is mainly specialized in chalcogenide glasses and ceramics for thermal imaging. He is co-inventor of 17 patents and author or co-author of more than 310 peer-reviewed publications.

ABSTRACT. Thermal imaging is more and more widely used for commercial and defence applications because it provides additional information to visible images. Thermal imaging is generally realised in the infrared region between 8-12 μm , corresponding to an atmospheric window and also to the maximum thermal emission of objects at room temperature. There are however very few materials transparent in this spectral region. Germanium, a rare and expensive element, has very interesting optical properties with very high refractive index and very low chromatic dispersion. Another frequently used material is the polycrystalline ZnSe produced with the Chemical Vapour Deposition technique. These expensive materials associated with complex fabrication method for optics are often inappropriate for commercial applications such as applications for mobile phone and for car driving assistance. For extending the application domain of thermal imaging, the main challenge is to lower the cost of the infrared detectors and of infrared optics.

Chalcogenide glasses are glasses based on sulphur, selenium and tellurium. They have been intensively studied mainly due to its large optical transmission window from the visible to far infrared region including the 8-12 μm region. They can be easily moulded into complex optical elements.

In this talk, different infrared transmitting materials and optics will be presented and compared.

Keywords: Thermal imaging; Chalcogenide glasses; Infrared optics.

Keynote Speech 4: Recent Progresses in the Syntheses and New Functions of Advanced Nanocomposite Gel

Prof. Kazutoshi Haraguchi, Department of Applied Molecular Chemistry, College of Industrial Technology, Nihon University, Japan



Prof. Kazutoshi Haraguchi was born in 1950 in Japan. He graduated from Kyushu University in 1973 and received his PhD from Kyushu University in 1978. He joined Kawamura Institute of Chemical Research (KICR) in 1978. He worked in Liverpool University, UK as a post-doctoral fellow in 1979-1981. He became a director of KICR in 2001, and a general manager (senior director) in 2006-2014. From April 2014, he is a professor of Nihon University. He was also a visiting professor of the University of Tokyo. He was a vice president of the Society of Polymer Science, Japan during 2016-2018. His major research fields are polymer nanocomposites, smart hydrogels, hybrid nanostructures, and biomaterials. He received the Award of the Society of Fiber Science and Technology, Japan in 2003, the Award of the Society of Polymer Science, Japan in 2010, and SPSJ Award for Outstanding Achievement in Polymer Science and Technology in 2018.

ABSTRACT. Stimuli-responsive hydrogels, such as poly(*N*-isopropylacrylamide) (PNIPA) hydrogel, have been extensively studied from both scientific and industrial application points of view. However, conventional PNIPA hydrogels consisting of chemically crosslinked network had some serious disadvantages, particularly weak and brittle mechanical properties and low stimuli-responsiveness, because of the network structure. We developed a nanocomposite type hydrogel (NC gel) which solves all these problems simultaneously. The NC gels, were prepared by *in situ* free radical polymerization using exfoliated clay, instead of an organic crosslinker, and consisted of a unique organic (polymer)/inorganic (clay) network structure.

NC gels exhibited high transparency, large and rapid swelling/de-swelling, and superb mechanical properties. Also, NC gels exhibit a number of interesting new characteristics related to the properties of their gel-air and gel-water interfaces, coil-to-globule transition, optical anisotropy, self-healing, harvesting cells, and controls of network structure and morphology. Herein, I present recent developments on the functions of NC gels; e.g., the NC gel synthesis by photopolymerization in the presence of clay nanosheets without using initiator, the synthesis of new type of NC gel with ternary PNIPA-clay-silica structure which exhibits anomalous increases in mechanical properties, the generation of large retractive tensile forces in brine comparable to human muscle due to the salt-induced coil-to-globule transition of PNIPA, and instant strong adhesive behavior of NC gel toward hydrophilic porous materials.

Keywords: Nanocomposite gel; Organic-inorganic network; Stimuli-responsive; Force generation.

Part III Oral Presentations

Oral Presentation Guidelines

Devices Provided by the Conference Organizer:

- Laptops (with MS-Office & Adobe Reader)
- Projectors & Screen: Ratio 4:3
- Laser Sticks
- Microphones

Materials Provided by the Oral Presenters:

- PowerPoint or PDF file

For presenters who don't send the PowerPoint to the Conference Secretary, please have your presentation ready in a memory stick, and save it in the laptop of your corresponding session about **15 minutes** before session starts. You also need to tell the Session Chair (before the start of your session) that you are going to present your talk.

Best Oral Presentations Selection Guidelines

Selection Criteria:

ONE best presentation will be selected from EACH session based on the following criteria:

- ✚ Research Quality
- ✚ Presentation Performance
- ✚ Presentation Language
- ✚ Interaction with Listeners
- ✚ PowerPoint Design

Selection Procedure:

- ✚ An assessment sheet will be delivered to listeners before the session;
- ✚ write the numbers of two best presentations and submit the filled assessment sheet (with the listener name and signature) to the Session Chair before the session termination.
- ✚ The Session Chair will count the votes for each presentation and name the winner based on the maximal number of votes. The Session Chair has three votes but can use only one in favor of his/her own presentation (if any). To avoid any conflict of interests, only registered listeners are entitled to voting.

Nature of the Award

- ✚ This award consists of free registration to the next conference and a certificate;
- ✚ The awards will be given during the Awarding Banquet on November 14.

CMSE2019 Oral Presentation Assessment

Dear participants,

After carefully listening to the presentations of this session, please kindly recommend two excellent Oral Presentations with reference to the following evaluation criteria.

The Session Chair will count the votes from each presentation and select ONE Best Oral Presentation in this session. If there is a tie, the Session Chair will make the final decision.

The results will be released in the Awarding Banquet on Nov. 14, 2019.

You can refer to the following Criteria:

Items	Assessment
Content	Right, Logical, Original, Well-Structured
Language	Standard, Clear, Fluent, Natural
Performance	Spirited Appearance, Demeanor Appropriately, Behaves Naturally
PPT	Layout, Structure, Typeset, Animation, Multimedia
Reactions	Build a Good Atmosphere, Speech Time Control Properly

Please write down paper ID and give reasons for your recommendation:

Paper ID	Reasons
1	
2	

Evaluated by: _____ (Paper ID: _____)

Note: When the session finished, please fill it out and give it to the Session Chair so that the Best Oral Presentation in this session can be selected.

Assessment Sheet

Oral Session 1: Advanced Material Technologies and Composites

Session Chair: Prof. Paul Henryk, Institute of Metallurgy and Materials Science, PAS, Poland

Time: 14:10-18:00, Wednesday Afternoon, November 13

Location: 3rd Floor, Long Mu Bay Room

14:10-14:35	CMSE3964 (Invited Talk)	Interfacial Reactions and Structural Properties of Explosively Welded Titanium/Copper Plates <i>Prof. Paul Henryk, Institute of Metallurgy and Materials Science, PAS, Poland</i>
14:35-15:00	CMSE3889 (Invited Talk)	Strength, Hot Workability, and Forming of Mg-4Al-2Ba-1Ca Alloy <i>Prof. K.P. Rao, City University of Hong Kong, China</i>
15:00-15:25	CMSE3990 (Invited Talk)	Advances in Ceramic Additive Manufacturing <i>Prof. Rui Dou, Technology and Engineering Center of Space Utilization, CAS, China</i>
15:25-15:50	CMSE4163 (Invited Talk)	Ceramic 3D printing applied to investment casting molds <i>Dr. Chang-Jun Bae, Korea Institute of Materials Science (KIMS), South Korea</i>
15:50-16:05	CMSE4097	3D-Printable Biomimetic Tissue Constructs with Nanocellulose-agar Hydrogel as Bioink <i>Dr. Chandravati Yadav, Shaanxi University of Science and Technology, China</i>
16:05-16:20	CMSE4039	Influence of Annealing and Additional Deformation on Electrical and Mechanical Properties of Ultrafine-Grained Aluminum <i>Dr. Aydar Mavlyutov, St. Petersburg State University, Russia</i>
16:20-16:40	COFFEE BREAK	
16:40-16:55	CMSE3869	Influence of Geometrical Nonlinearity on the Effective Acoustic Properties of Metamaterials <i>Ms. Jingwen Zhao, RMIT University, Australia</i>
16:55-17:10	CMSE4189	Phase Constitution, Solid Solution Formation and Properties of Carbon-deficient Ta _{1-x} Hf _x C _y Ceramics <i>Mr. Buhao Zhang, Shanghai Institute of Ceramics, CAS, China</i>
17:10-17:35	CMSE4190 (Invited Talk)	Phonon Focusing and Phonon Distribution in Crystals <i>Prof. Hongzhi Fu, Luoyang Normal University, China</i>
17:35-18:00	CMSE3790 (Invited Talk)	Design and Fabrication of Composite Structures to Match the Redox Potentials of Liquid Solutions for Green Energy and Sustainable Applications <i>Prof. Ping Wu, Singapore University of Technology and Design, Singapore</i>

Oral Session 2A: Characterization and Testing

Session Chair: Assoc. Prof. Bing Yang, Southwest Jiaotong University, China

Time: 14:30-17:25, Wednesday Afternoon, November 13

Location: 3rd Floor, Hai Tang Bay Room

14:30-14:55	CMSE3923 (Invited Talk)	Submerged Friction Stir Welding of AISI 316L Stainless Steel: Microstructural, Mechanical & Corrosion Characterization <i>Prof. K. K. Ramachnadran, Government Engineering College Thrissur, India</i>
14:55-15:20	CMSE3890 (Invited Talk)	Study on Short Fatigue Crack Behavior of LZ50 Steel Under Non-Proportional Loading <i>Assoc. Prof. Bing Yang, Southwest Jiaotong University, China</i>
15:20-15:35	CMSE3938	Microstructural Change and Corrosion Variation of SAPH440 Steel Induced by Pre-Deformation <i>Dr. Shuo Weng, University of Shanghai for Science and Technology, China</i>
15:35-15:50	CMSE3871	A Study on the Fracture Behavior of Ballistic Gelatin by Wire Cutting Experiments <i>Dr. Li Liu, Zhejiang University City College, China</i>
15:50-16:05	CMSE3881	Pyran Derivatives as Acidizing Corrosion Inhibitors for Q235 Steel in Hydrochloric Acid: Theoretical and Experimental Approaches <i>Dr. Ambrish Singh, Southwest Petroleum University, China</i>
16:05-16:20	CMSE4095	Study on the Influence of Ultra-Low Temperature Environment on Electron Beam Welding Process <i>Mr. Qingsheng Xiao, Beijing Institute of Spacecraft Environment Engineering, China</i>
16:20-16:40	COFFEE BREAK	
16:40-16:55	CMSE4161	Synchrotron Radiation Imaging and Characterization of Creep Crack in 2219 Aluminum Alloy <i>Ms. Qi Guo, Dalian University of Technology, China</i>
16:55-17:10	CMSE4153	Hot Deformation Behavior and Processing Map of Mg-12Gd-1MM-0.6Zr(wt%) Magnesium Alloy <i>Ms. Bibo Li, GRIMAT Engineering Institute Co., Ltd., China</i>
17:10-17:25	CMSE3895	Investigating the Influence of Flowing Fluid on the Resistance of Materials to Sulfide Stress Cracking <i>Dr. R. Rihan, Kuwait Institute for Scientific Research, Kuwait</i>

Oral Session 2B: Characterization and Testing

Session Chair: Assoc. Prof. Donghun Lee, Korea University, South Korea

Time: 14:30-17:40, Wednesday Afternoon, November 13

Location: 3rd Floor, Sanya Bay Room

14:30-14:55	CMSE3978 (Invited Talk)	Geometry of Principal Stress Trajectories for Rigid and Elastic Plastic Models Under Axial Symmetry <i>Prof. Sergei Alexandrov, Beihang University, China</i>
14:55-15:20	CMSE3835 (Invited Talk)	Novel Magnetic Sensing and Imaging with Diamond Defect-Based Qubits <i>Assoc. Prof. Donghun Lee, Korea University, South Korea</i>
15:20-15:35	CMSE3807	Analyzing the Contact Resistance for the Penetration Brazing of Cu/Ni Metal Wires <i>Dr. Yangzhen Gao, Guizhou University, China</i>
15:35-15:50	CMSE4134	Geometric Accuracy of Rapid Prototyping Technologies Using Laser Scanner and Coordinate Measurement Machine <i>Dr. Katarzyna Fiedorczuk, Bialystok University of Technology, Poland</i>
15:50-16:05	CMSE3947	Low-Cycle Fatigue Behavior of Gradient Structured Austenitic Stainless Steel <i>Assoc. Prof. Hsin Shen Ho, Zhengzhou University, China</i>
16:05-16:20	CMSE4148	Study on Microstructure and Homogenization Regulation of Mg-6Zn-3Sn-xCu (x= 0,0.5,1.0,1.5wt%) Alloy <i>Ms. Yanhui Liu, GRIMAT Engineering Institute Co., Ltd., China</i>
16:20-16:40	COFFEE BREAK	
16:40-16:55	CMSE3852	Evaluation of M-Integral for Multiple Defects in Viscoelastic Materials <i>Dr. Junling Hou, Xi'an Jiaotong University, China</i>
16:55-17:10	CMSE4141	Microstructure of TiNiCu Rapidly Quenched Ribbons Crystallized by Isothermal and Electropulse Treatment <i>Dr. N. N. Sitnikov, National Research Nuclear University MEPhI, Russia</i>
17:10-17:25	CMSE4167	Effect of Al Contents on the Microstructures and Mechanical Properties of Mg-5wt%Sn-xAl As-Cast Alloys <i>Mr. Zhaoqian Sun, GRIMAT Engineering Institute Co., Ltd., China</i>
17:25-17:40	CMSE4171	Effect of Heat Treatments on the Electrical Conductivity of ZM51 Magnesium Alloy <i>Mr. Tong Mu, GRIMAT Engineering Institute Co., Ltd., China</i>

Oral Session 3: Nanomaterials

Session Chair: Assoc. Prof. Kaili Zhang, City University of Hong Kong, China

Time: 08:55-11:50, Thursday Morning, November 14

Location: 3rd Floor, Hai Tang Bay Room

08:55-09:20	CMSE4040 (Invited Talk)	Achieving High Strength, High Strain Rate Superplasticity, Good Weldability and Admirable Corrosion Resistance of Aerospace Aluminum Alloys by Introducing $\text{Al}_3(\text{Sc}_{1-x}\text{Zr}_x)$ Nano-Particles Assoc. Prof. Ying Deng, Central South University, China
09:20-09:45	CMSE4158 (Invited Talk)	Cu-CuO Based Nanostructures for Stable Li Metal Anodes Assoc. Prof. Kaili Zhang, City University of Hong Kong, China
09:45-10:00	CMSE3940	Structure, Morphology and Magnetic Properties of Nanostructured Composite Ceramics “Ferromagnetic-Multiferroic” Dr. Nikita Liedienov, International Center of Future Science of Jilin University, China
10:00-10:15	CMSE4016	Strategy of Nanostructure Protection on Flexible Multi-Level Micro-Topography Dr. Lei Wang, Technical Institute of Physics and Chemistry, China
10:15-10:30	CMSE4041	Nanocellulose Based Bio-Scaffold as Potential Wound Dressing Material Mr. Arun Saini, Shaanxi University of Science and Technology, China
10:30-10:50	COFFEE BREAK	
10:50-11:05	CMSE4034	Micro and Nanostructuring of Thermally Poled Glasses by Chemical and Reactive Ion Etching Dr. Valentina Zhurikhina, Peter the Great St. Petersburg Polytechnic University, Russia
11:05-11:20	CMSE4062	Synthesis of Sandwich-liked Nanostructure Fillers and Their Use in Different Types of Thermal Composites Ms. Ting Pan, China University of Petroleum, China
11:20-11:35	CMSE3988	Effect of Nanorelief Structure Formed in Situ on Tribological Properties of B_4C Based Composite Ceramics Dr. Wei Zhang, Nagoya University, Japan
11:35-11:50	CMSE4164	Co-Fe-P Nanocubes Derived from a Prussian Blue Analogue as an Ectrocatalyst for Efficient Hydrogen Evolution Reaction in Alkaline Media Mr. Kien Nguyen Ba, National Polytechnic Institute, Mexico

Oral Session 4: Energy Materials and Semiconductors

Session Chairs: (09:00-10:30) Prof. Hyeong-Jin Kim, Gwangju Institute of Science and Technology, Korea
(10:50-11:50) Prof. Xiangyang Li, Shanghai Institute of Technical Physics, CAS, China

Time: 09:00-11:50, Thursday Morning, November 14

Location: 3rd Floor, San Ya Bay Room

09:00-9:25	CMSE3934 (Invited Talk)	Spin Transition as Direction in a Modern Spintronics and Its Electrical Voltage Control at Room Temperature Prof. Georgiy Levchenko, International Centre of Future Science of Jilin University, China
09:25-09:50	CMSE4066 (Invited Talk)	Electrochemical Analysis of Laser Structured Ultra-Thick Electrode for High Energy Lithium-Ion Battery Prof. Hyeong-Jin Kim, Gwangju Institute of Science and Technology, Korea
09:50-10:15	CMSE3879 (Invited Talk)	High Resolution Analysis on Ni/Au/Ni/Au Ohmic Contact to p-AlGaIn/GaN Semiconductor Prof. Zhengfei Hu, Tongji University, China
10:15-10:30	CMSE3931	The Study on GeTe Phase Change Films Applied in Two-Port Directly Heated Switch Mr. Sheng Qu, University of Electronic Science and Technology of China, China
10:30-10:50	COFFEE BREAK	
10:50-11:05	CMSE3922	Enhanced Dielectric Properties of Bismuth Magnesium Niobate Pyrochlores by Co-Doping Mr. Zhipu Guan, University of Electronic Science and Technology of China, China
11:05-11:20	CMSE4005	Low Frequency Band Gaps of a Y-Type Phononic Crystal Mr. Xingfu Ma, Wenzhou University, China
11:20-11:35	CMSE4173	Preparation and Modification of Bismuth Silicate Photocatalyst: Hydrothermal Method, Heterogeneous Structuring, In Situ Composite Construction to Improve its Performance Ms. Lin Han, Shaanxi University of Science and Technology, China
11:35-11:50	CMSE4174	Study on SiO ₂ -TiO ₂ -ZrO ₂ System of High Efficiency Catalyst for Adsorption and Photocatalysis Ms. Xiaojing Chang, Shaanxi University of Science and Technology, China

Oral Session 5: Surface and Coatings Technologies

Session Chair: Prof. Kazuaki Wagatsuma, Tohoku University, Japan

Time: 14:20-17:30, Thursday Afternoon, November 14

Location: 3rd Floor, Hai Tang Bay Room

14:20-14:45	CMSE4037 (Invited Talk)	Optimization of the Operating Conditions of a Nitrogen Microwave-Induced Plasma for Surface Treatment of Steel Substrate <i>Prof. Kazuaki Wagatsuma, Tohoku University, Japan</i>
14:45-15:10	CMSE4130 (Invited Talk)	Underwater High-Speed Motion Stabilization by Supercavitation, Aqueous Polymeric, and Super-Hydrophobic Surfaces: Experimental and Theoretical Design Solutions <i>Dr. Alexander Khotsianovsky, National Academy of Sciences, Ukraine</i>
15:10-15:25	CMSE4042	Hydrophilic Poly(2-oxazoline) Coatings on PTFE Surface Promoting Cell Adhesion Prepared by “Cold” Atmospheric Pressure Plasma <i>Dr. Petra Šrámková, Masaryk University, Czech Republic</i>
15:25-15:40	CMSE4076	Rapid Transportation of a Monolayer Film by Surface Tension Gradients <i>Dr. Dong Liu, Tsinghua University, China</i>
15:40-15:55	CMSE4049	Influence of Dielectric Barrier Composition on Electrical Properties of Coplanar Dielectric Barrier Discharge <i>Mr. Jakub Kelar, Masaryk University, Czech Republic</i>
15:55-16:10	CMSE4050	Low-Temperature Plasma Technology for Nano-Structuring and Etching of Large-Area Polymeric Substrates <i>Dr. Zlata Kelar Tucekova, Masaryk University, Czech Republic</i>
16:10-16:30	COFFEE BREAK	
16:30-16:45	CMSE4111	High Temperature Tribological Behavior of Borocarbided Layer on Low Carbon Steel <i>Dr. Zhenggang Yang, Nanjing University of Aeronautics and Astronautics, China</i>
16:45-17:00	CMSE4123	Corrosion Evolution of Electric Power Equipment Metal Materials Under Industrial Pollution Environment with High Heat and High Humidity <i>Mr. Yao Zhong, Chongqing University, China</i>
17:00-17:15	CMSE4056	Wear Resistance Analysis of Lightweight Aluminum Alloy Sheet FSJ Jointing Area <i>Prof. Hongfeng Wang, Huangshan University, China</i>

17:15-17:30	CMSE4133	Tribological Behavior of TiAlN Coating on TA19 Alloy at Elevated Temperature <i>Mr. Ding Zheng, Nanjing University of Aeronautics and Astronautics, China</i>
-------------	----------	--

Oral Session 6: Structural Materials

Session Chair: Prof. Ian Baker, Thayer School of Engineering, Dartmouth College, USA

Time: 14:30-17:00, Thursday Afternoon, November 14

Location: 3rd Floor, San Ya Bay Room

14:30-14:55	CMSE3910 (Invited Talk)	Uncertainty Quantification and Structural Analysis Based on a Non-Probabilistic Bounded-Field Model <i>Prof. Yangjun Luo, Dalian University of Technology, China</i>
14:55-15:10	CMSE3828	Multi-Phase Modelling of Multi-Component Ionic Transport in Unsaturated Concrete under Drying-Wetting Cycles <i>Mr. Weikang Chen, Shanghai Jiao Tong University, China</i>
15:10-15:25	CMSE3997	Study on Pervious Recycled Aggregate Fibre Reinforced Concrete for Airfield Pavement <i>Dr. Josef Novák, Czech Technical University in Prague, Czech Republic</i>
15:25-15:40	CMSE4045	Cu Segregation at the Interface and Its Effect on Impact Energy for a Cu Bearing HSLA Steel <i>Dr. Yubin Du, Institute of Metal Research, CAS, China</i>
15:40-15:55	CMSE4052	Numerical Investigation on Material Deterioration in Cement-Based Composite Materials Under Sulfate and Chloride Corrosion <i>Mr. Chenglin Zhang, Shanghai Jiao Tong University, China</i>
15:55-16:10	CMSE4053	Spectroscopic Studies of Binding Interaction between Biologically Active Organic Compound and Metal Ions <i>Dr. D. Nagaraja, Bangalore Institute of Technology, India</i>
16:10-16:30	COFFEE BREAK	
16:30-16:45	CMSE3924	Factors Affecting pH of Cement Mortars <i>Dr. Jin Chai Lee, UCSI University, Malaysia</i>
16:45-17:00	CMSE4147	Experimental Investigation of Utilizing Mount Pinatubo's Lahar Sand as Fine Aggregates in Controlled Low-Strength Materials (CLSM) <i>Mr. M.S. Delos Santos, National University-Manila, Philippines</i>

Part IV Poster Presentations

Poster Presentation Guidelines

Materials Provided by the Conference Organizer:

- X Racks & Base Fabric Canvases
- Adhesive Tapes or Clamps

Materials Provided by the Presenters:

- Home-Made Posters
- Posters Printed by Conference

Requirement for the Posters:

- Material: not limited
- Size: 160cm (height) ×60cm (width)



X-Rack

Best Poster Selection Guidelines

Selection Criteria:

- ✚ Research Quality
- ✚ Presentation Skill
- ✚ Design



Stickers

Selection Procedure:

- ✚ The Committee Chair will invite 10 volunteers from invited speakers, professors and experienced researchers to serve as the judges to review the posters (Note: For ethical considerations, poster presenters or co-authors are not selected as judges);
- ✚ 2 red stickers and 2 green stickers will be provided to the judges. The red sticker stands for “Research Quality” with a value of 2 points; the green sticker stands for “Presentation Skill and Design” with a value of 1 point;
- ✚ Each judge will go around the poster session and give the stickers to the poster which he/she thinks is high quality or well design and good presentation, please be noticed that the judge cannot give 2 red or 2 green stickers to the same poster (one red and one green stickers are acceptable);
- ✚ After the poster session, the Chair will count the points from each poster and select TWO best poster presentations with more points. If there is a tie, the one with more red stickers (Research Quality) wins; if there is still a tie, the Chair will make the final decision.

Nature of the Award

- ✚ This award consists of free registration to the next conference and a certificate;
- ✚ The Committee Chair will award the Best Poster(s) on site.

List of Posters

Time: 09:00-12:00, Friday Morning, November 15

Location: 3rd Floor, Long Mu Bay Room

CMSE3811	Experimental Study of Flexural Behaviour and Serviceability Performance of G/BFRP-Steel Reinforced Concrete Beams <i>Prof. Chunhua Lu, Jiangsu University, China</i>
CMSE3813	Crack Growth Life Estimation of the No.17 Coupler Knuckle in China Datong-Qinhuangdao Railway Freight Trains <i>Dr. Cen Li, Beijing Jiaotong University, China</i>
CMSE3846	First-Principle Studies of Al-Fe-Ti-Cr-Zn-Cu High Entropy Solid Solutions <i>Ms. Lanxin Wang, Yuncheng University, China</i>
CMSE3900	Degradable, Reprocessable, Self-Healing PDMS/CNTs Nanocomposite Elastomers with High Stretchability and Toughness Based on Novel Dual-Dynamic Covalent Sacrificial System <i>Mr. Chi Lv, Tianjin University, China</i>
CMSE3937	An Uncommon Defect of Galvanized Outside Plate Caused by Tiny Hot Rolled Peel Off- Mechanism and Certification <i>Dr. Fang Fang, Wuhan Branch of Baosteel Central Research Institute, China</i>
CMSE3949	Efficient and Color-Tunable Organic Light-Emitting Diodes for the Application of the Rear Lighting of Automotive <i>Ms. Yilian Li, Shanghai University, China</i>
CMSE3950	Novel Alternative Current-Driving Organic Light-Emitting Didoes with Bipolar Charge-Transporting Layers <i>Ms. Yuxin Guan, Shanghai University, China</i>
CMSE3956	Effect of Ni Doping on the Properties of NIR-Reflective ZnFe ₂ O ₄ Black Pigments <i>Ms. Mantana Suwan, National Science and Technology Development Agency (NSTDA), Thailand</i>
CMSE3958	InCl ₃ Coated Lithium Powder Anode at Facile Method for Lithium-Metal Batteries <i>Mr. Byunghyuk Kim, Korea University, South Korea</i>
CMSE3970	Influence of the Addition of Pore Foaming Agent on Mechanical and Thermal Properties of Porcelain Tiles <i>Ms. Panida Wimuktiwan, National Science and Technology Development Agency (NSTDA), Thailand</i>
CMSE3975	Analysis and Elimination of Circular Structures on MgB ₂ Thin Films Grown by HPCVD <i>Dr. Yanli Li, Institute of Electrical Engineering, CAS, China</i>
CMSE4003	Properties and Microstructure Evolution of Domestic Super304H Stainless Steel During High Temperature Creep Rupture Testing <i>Ms. Xiao Tian, Xi'an Thermal Power Research Institute Co., Ltd, China</i>

CMSE4006	Band Gaps of a Fan-Like Solid-Fluid Phononic Crystal <i>Mr. Hongfeng Zhai, Wenzhou University, China</i>
CMSE4026	Effects of Active Adsorption on Thermodynamic Equilibrium of Solid-Liquid Interface <i>Dr. Lanxian Cheng, South China Agricultural University, China</i>
CMSE4027	Design and Experimental Study of Magnetically Controlled Shape Memory Alloy Sensor <i>Prof. Jun Lu, Shenyang Ligong University, China</i>
CMSE4035	The Influence of Poling Conditions on Surface Crystallization of a Silicate Glass <i>Prof. Andrey Lipovskii, Peter the Great St. Petersburg Polytechnic University, Russia</i>
CMSE4051	The Research of the Flexible Heating Wire by Coating Polyester Yarns with Carbon Nanotubes and the Influence of Process Parameters <i>Mr. Lirui Zhang, Xi'an Polytechnic University, China</i>
CMSE4057	Antifungal Activity and Theoretical Study of Synthesized Pyrazole-Imidazole Hybrids <i>Dr. Dhafer S. Zinad, University of Technology, Iraq</i>
CMSE4063	Effect of Ni and Mo Contents on Microstructure, Magnetic and Mechanical Properties of Ti(C,N)-Based Cermets <i>Dr. Xiangyu Xu, Nanjing University of Aeronautics and Astronautics, China</i>
CMSE4071	Effect of Mo Content on Microstructure and Mechanical Properties of WCoB-TiC Based Cermets <i>Dr. Ke Zheng, Nanjing University of Aeronautics and Astronautics, China</i>
CMSE4086	Effect of SnO ₂ Content on Properties and Microstructure of Ag/SnO ₂ Electric Contact Materials <i>Prof. Junbo Wang, Xi'an Polytechnic University, China</i>
CMSE4088	Switchable Wettability of Electrospun Poly(NIPAAm-co-HEMA-co-NMA) Nanofiber Membranes and Their Applications for Smart Textiles <i>Prof. Chang-Mou Wu, National Taiwan University of Science and Technology, Taiwan, China</i>
CMSE4089	Failure Analysis of Low Carbon Steel Pipe Clamp of Pressure Pipe <i>Dr. Liuyi Huang, Zhejiang Academy of Special Equipment Science, China</i>
CMSE4100	Construction and Application of a Micro-PEDXRFS with Polycapillary X-ray Lens in a Conventional Laboratory <i>Ms. Mo Zhou, Beijing Normal University, China</i>
CMSE4106	Effect of Stress Triaxiality on the Damage of Polyethylene <i>Ms. Limei Han, China University of Petroleum (East China), China</i>
CMSE4114	Friction and Wear Behaviour of HVOF Sprayed WC-Ni Coatings on Duplex Stainless Steel <i>Dr. Haisong Xu, Hitachi (China) Research & Development corporation, China</i>
CMSE4121	Magnetic and Millimetre Wave Properties of C-Axis Oriented Hexagonal Barium Ferrite Films on Pt-Coated Si Substrates Annealed at Different Temperatures <i>Dr. Daming Chen, Hainan University, China</i>

CMSE4135	Simulation and Experimental Study on Selective Laser Melting of 90W-7Ni-3Fe <i>Mr. Bokang Zhou, Xi'an Jiaotong University, China</i>
CMSE4137	Thermodynamics and Morphology Numerical Simulation Analysis of Micro-Melting Pool in Tungsten Selective Laser Melting Process <i>Mr. Yunxiao Wu, Xi'an Jiaotong University, China</i>
CMSE4152	Data Mining Applications in Materials Science and Engineering <i>Prof. Agnieszka Dardzinska, Bialystok University of Technology, Poland</i>
CMSE4154	Comparative Oxidation Study of Aviation Lubrication Oil <i>Dr. Jun Ma, Air Force Logistics College, China</i>
CMSE4172	Study on Irradiation Crosslinked, Low-Smoke and Halogen-Free High Flame Retardant Polyolefin Cable Material <i>Dr. Jingang Li, Hitachi (China) Research & Development Corporation, China</i>
CMSE4188	Copper Matrix Composites with CNTs/Cu Composite Foams as Three-Dimensional Reinforcing Skeletons <i>Prof. Yichun Liu, Kunming University of Science and Technology, China</i>
CMSE4203	One-Pot Large-Scale Synthesis of Carbon Dots-Based Lubricants with Excellent Friction-Reducing and Antiwear Performance <i>Mr. Chuang He, Dalian University of Technology, China</i>
CMSE4193	Enzyme-Responsive Nanoparticles for Targeted Drug Delivery to Ischemic Stroke <i>Prof. Xing Guo, Southwest Jiaotong University, China</i>

Part V Conference Venue

Access to Doubletree Resort by Hilton Sanya Haitang Bay

1. Sanya Phoenix International Airport to Doubletree Resort by Hilton Sanya Haitang Bay. (About 42km)

(1) Airport free Shuttle bus: (about 50 minutes)

Guests who have booked a hotel in Doubletree Resort by Hilton Sanya Haitang Bay will enjoy free shuttle bus from the airport to the hotel.

Airport Shuttle bus timeline:

Double Tree Resort Lobby		Sanya Phoenix International Airport		Double Tree Resort Lobby
09:35	→	10:30	→	11:40
13:05	→	14:00	→	15:10
15:35	→	16:30	→	17:40

(2) City bus No.33: (about 1 hour and 50 minutes)

Take city bus No.33, start from Phoenix International Airport station (凤凰机场站), get off at the 20th stops to the hotel(Doubletree Resort by Hilton Sanya Haitang Bay)(海棠湾万达希尔顿逸林度假酒店)

(3) Taxi: About 45 minutes' drive. Taxi fare around 160 RMB.

2. Sanya Railway Station to Doubletree Resort by Hilton Sanya Haitang Bay. (About 40 km)

(1) City bus No.33: (about 1 hour and 35 minutes)

Take city bus No.33, start from Sanya Railway Station(火车站), get off at the 18th stops to the hotel(Doubletree Resort by Hilton Sanya Haitang Bay)(海棠湾万达希尔顿逸林度假酒店).

(2) City bus No.35: (about 1 hour and 35 minutes)

Take city bus No.35, start from Sanya Railway Station(火车站), get off at the 17th stops to the hotel(Doubletree Resort by Hilton Sanya Haitang Bay)(海棠湾万达希尔顿逸林度假酒店).

(3) Taxi: About 38 minutes' drive. Taxi fare around 140 RMB.

Show to the taxi driver:

请送我到/ Please take me to
海棠湾万达希尔顿逸林度假酒店
Doubletree Resort by Hilton Sanya Haitang Bay
地址：海南省三亚市海棠区海棠北路 3 号
Address: Haitang North Road, Haitang Bay, Sanya, Hainan, China
电话 (Tel:) 0898-88826666

Part VI Acknowledgements

On behalf of the Organizing Committee of CMSE 2019, we would like to take this opportunity to express our sincere thanks to the support and contributions of participants from all over the world. We would also like to express our sincere acknowledgements to the Technical Program Committee members who have given their professional guidance and valuable advice to the conference. Below are the lists of the Technical Program Committee members. For those who contribute to the success of the conference organization without listing the name here, we would love to say thanks as well.

Technical Committee Chair

Dr. William M. Cox, Corrosion Management Limited, UK

International Technical Program Committee

Prof. Jamal Khatib, University of Wolverhampton, UK

Prof. Mohamed Bournane, Université du Québec à Chicoutimi, Canada

Prof. Antonio Gloria, National Research Council of Italy, Italy

Prof. Rajkumar Durairaj, Universiti Tunku Abdul Rahman (UTAR), Malaysia

Prof. Meor Othman Hamzah, Universiti Sains Malaysia, Malaysia

Prof. Ali Zaidi, Laghouat University, Algeria

Prof. Tan Peng, University of Science and Technology of China, China

Prof. Tevfik Küçükömeroğlu, Karadeniz Technical University, Turkey

Prof. Gianni Barucca, University Politecnica delle Marche, Italy

Prof. Randa Abdel-Karim, Cairo University, Egypt

Prof. Qixin Guo, Saga University, Japan

Prof. Osman Adiguzel, Firat University, Turkey

Assoc. Prof. Bing Yang, Southwest Jiaotong University, China

Assoc. Prof. Fateh Mebarek-Oudina, Skikda University, Algeria

Assoc. Prof. Kaili Zhang, City University of Hong Kong, China

Assist. Prof. Timur Sh. Atabaev, Nazarbayev University, Kazakhstan

Dr. Payam Shafigh, University of Malaya, Malaysia

Dr. Xiaoxing Lu, Integra Technologies Inc, USA

Dr. Boliang Zhang, Consortium for Innovation in Manufacturing and Materials (CIMM), USA

Dr. Mohamed Sayed Selim, Ministry of Scientific Research, Egypt

Dr. Rezwanul Haque, University of the Sunshine Coast, Australia

Dr. Alokesh Pramanik, Curtin University, Australia

Dr. Yuling Niu, Qualcomm Technology Inc., USA

Dr. Santiranjana Shannigrahi, Agency for Science Technology and Research (A*STAR), Singapore

Dr. Lai Chin Wei, University of Malaya, Malaysia

Dr. Francisco José Gomes da Silva, Polytechnic of Porto, Portugal

Memo Pages

[illegible]