

The 11th Global Conference on

Materials Science and Engineering CMSE 2022

September 16-19, 2022

Online - Microsoft Teams

CONFERENCE PROGRAM

China Standard Time - GMT+8

* The Program is used for CMSE2022 Academic Exchange Only



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Part I Conference Schedule Summary

Day 1 – September 16, 2022 / China Standard Time - GMT+8

Online MS Teams Link: <http://www.academicconf.com/teamslink?confname=cmse2022>

09:00-11:00 MS Teams Online Conference Testing and Ice Breaking
14:00-16:00

Day 2 - September 17, 2022 / China Standard Time - GMT+8

Online MS Teams Link: <http://www.academicconf.com/teamslink?confname=cmse2022>

08:35-08:40 **Opening & Welcome Speech**

Dr. Liyuan Sheng, Peking University Shenzhen Institute, China

08:40-09:20 **Keynote Speech 1: Color-Tunable Light Emitting Diodes Based on Rare Earth Doped Gallium Oxide Films**

Prof. Qixin Guo, Department of Electrical and Electronic Engineering, Director of Synchrotron Light Application Center, Saga University, Japan

09:20-10:00 **Keynote Speech 2: Multi-application for Quinternary Alloys**

Prof. Yarub Al-Douri, American University of Iraq, Sulaimani, Kurdistan, Iraq

10:00-10:20

Coffee Break

10:20-10:45 **Invited Speech 1: The Influences of B-site Doping on Ferroelectric and Energy-Storage Properties of $\text{Bi}_{0.5}(\text{Na}_{0.82}\text{K}_{0.18})_{0.5}\text{TiO}_3\text{-LiSbO}_3$ Ceramics**

Dr. Guangping Zheng, Department of Mechanical Engineering, The Hong Kong Polytechnic University, China

10:45-11:10 **Invited Speech 2: Synthesis and Application of Micro-Calcite Bearing Ca-Montmorillonite Reinforced Oilwell Cement in CO_2 -Rich Environments**

Dr. Liwei Zhang, State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Sciences, China

11:10-11:50

Poster Session

12:00-14:00

Lunch Break

14:00-14:40 **Keynote Speech 3: Carbon Neutrality: A New Era of Green and Low-Cost Electronics**

Prof. Rodrigo Martins, Department of Materials Science, Faculty of Science and Technology, Universidade Nova de Lisboa, and CEMOP-UNINOVA, Portugal

14:50-17:45

Oral Session 1: Characterization and Testing

Day 3 - September 18, 2022 / China Standard Time - GMT+8

Session 2&3 Online MS Teams Link:

<http://www.academicconf.com/teamslink?confname=cmse2022>

Session 4 Online MS Teams Link:

<http://www.academicconf.com/teamslink?confname=cmse2022&sessionid=4>

08:30-11:45 **Oral Session 2: Metals, Ceramics, Composites, Polymers**

12:00-14:00

Lunch Break

14:30-17:50 **Oral Session 3: Nanostructured Materials, Sensors**

14:15-18:20 **Oral Session 4: Mechanical Properties of Materials**

Day 4 - September 19, 2022 / China Standard Time - GMT+8

Online MS Teams Link: <http://www.academicconf.com/teamslink?confname=cmse2022>

08:30-12:20 **Oral Session 5: Materials for Electronics, Optoelectronics, Semiconductors**

Part II Keynote Speeches

Keynote Speech 1: Color-Tunable Light Emitting Diodes Based on Rare Earth Doped Gallium Oxide Films



Prof. Qixin Guo

**Department of Electrical and Electronic Engineering,
Director of Synchrotron Light Application Center,
Saga University, Japan**

Biography: Prof. Dr. Guo received B. E., M.E., and Dr. E degrees in electronic engineering from Toyohashi University of Technology in 1990, 1992, and 1996, respectively. He is currently a Professor of Department of Electrical and Electronic Engineering, Saga University and was the Director of Saga University Synchrotron Light Application Center in Japan from April 2012 to March 2022. His research interests include epitaxial growth and characterization of semiconductor materials. Prof. Guo has published more than 360 papers in scientific journals including Nature Communications, Advanced Materials, Physical Review B, and Applied Physics Letters with more than 8700 citations (h-index: 49).

Abstract. Artificial lighting technology is of vital importance because it has involved in almost every aspect of modern society. As the next-generation light source to replace traditional incandescent and fluorescent lamps, white light emitting diodes are of crucial significance for illumination and displays owing to their excellent merits including small size, environmental friendliness, high reliability, low power consumption, longevity, and high luminous efficiency. Color-tunable light emitting diodes are of high interest because they would rely on primary color mixing rather than blue-light stimulated phosphors, avoiding impact on human sleeping habits and circadian rhythms caused by excessive blue light, and allowing for smaller pixels in display applications. Color-tunable light emitting diodes can be fabricated by using GaInN with different indium concentration as luminescence layers. However, the emission wavelength is unstable due to its temperature dependence of bandgap.

Rare earth (RE) doped semiconductors, which exhibit strong and sharp emission due to intra-4f-shell transitions in RE ion cores, have potential applications in color display and luminescence devices. Historically, much effort has been made to produce visible color emission using RE doped GaN. It has been reported that the luminescence efficiency of dopant emissions could be highly improved with a wide bandgap host. Moreover, the wide bandgap semiconductors exhibit highly thermal and chemical stability, which make them ideal hosts for RE ions. We have demonstrated that red, green and blue emissions are clearly observed from the Eu, Er, and Tm doped Ga₂O₃ films respectively. We found that the normalized emission intensity of the RE doped Ga₂O₃ films has a smaller temperature variation compared to that of the RE doped GaN films. In this talk, we report on the structure, surface morphology and optical properties of these RE doped Ga₂O₃ films. Recent progress on the characteristics of the color-tunable light emitting diodes by using Eu, Er, and Tm co-doped Ga₂O₃ films will also be presented.

Keynote Speech 2: Multi-application for Quaternary Alloys

Prof. Yarub Al-Douri

American University of Iraq, Sulaimani, Kurdistan, Iraq



Biography: Prof. Dr. Yarub Al-Douri is from American University of Iraq, Sulaimani. Al-Douri has Doctorat D'etat in Materials Science. He was appointed Full-Professor, Visiting Professor, Adjunct Professor, Consultant Expert, Associate Professor, Assistant Professor, Research Fellow (A), Scientific Collaborator and Post-doc in Iraq, Malaysia, Turkey, Algeria, Yemen, Singapore, Germany and France, respectively. Al-Douri has initiated Nanotechnology Engineering MSc Program and Nano Computing Laboratory, the first initiatives in Malaysia. He has received numerous accolades including World's Top 2% Scientist Career-Long Citation Impact by Stanford University, USA 2020, World's Top 2% Scientists by Stanford University, USA 2021 & 2020, OeAD Award, Austria 2020, Japan Society for the Promotion of Science (JSPS) Award 2019, Asian Universities Alliance (AUA) Award 2019, Iraqi Forum for Intellectuals and Academics Award (IFIA) 2019, TWAS-UNESCO Associateship (Twice) Award 2015 & 2012 and Best Paper Award at Global Conference on Energy and Sustainable Development in UK 2015, the total is 69 awards. He has almost 30 years' experience of research, teaching, administrative and editorial board managing, organizing events, research grants and consultations, in addition to more than 759 publications currently including patents, books, chapters review, papers, articles and conferences and US\$ 5M research grants. Al-Douri has citations = 7212, h-index = 43 and i10-index = 199 for the moment. He has graduated under his own supervision many of PhD and MSc students. Al-Douri is Associate Editor of Nano-Micro Letters (Springer-Q1), Editor-in-Chief of Experimental and Theoretical NANOTECHNOLOGY, Editor-in-Chief of World Journal of Nano Science and Engineering, Editor and Peer-reviewer of different international journals, member of different international scientific associations. His research field focuses on renewable energy, modelling and simulation, semiconductors, optical studies, nanoelectronics and nanomaterials.

Abstract. The $\text{Cu}_2\text{Zn}_{1-x}\text{Cd}_x\text{SnS}_4$ quaternary alloy nanofibres with different Cd concentrations were grown on glass substrate using the electrospinning technique. The structural properties of $\text{Cu}_2\text{Zn}_{1-x}\text{Cd}_x\text{SnS}_4$ quaternary alloy nanofibres were investigated by X-ray Diffraction (XRD), Field Emission-Scanning Electron Microscopy (FE-SEM) and Atomic Force Microscopy (AFM). Optical properties were analysed through UV-visible Spectrophotometry (UV-Vis) and Photoluminescence Spectroscopy (PL), which revealed that there is a decrease in band gap from 1.75 eV to 1.61 eV, with the increasing Cd concentration from $x = 0$ to $x = 1$. The current-voltage measurements exhibited a power conversion efficiency of 3% under the solar illumination with intensity of 100 mW/cm^2 . Electrical properties supported that the $\text{Cu}_2\text{Zn}_{1-x}\text{Cd}_x\text{SnS}_4$ quaternary alloy can be used as an absorber in solar cells. The bulk modulus, refractive index and dielectric constant, were also investigated.

Keywords: Alloy, Nanostructures, Optical.

Keynote Speech 3: Carbon Neutrality: A New Era of Green and Low-Cost Electronics



Prof. Rodrigo Martins

Department of Materials Science, Faculty of Science and Technology, Universidade Nova de Lisboa, and CEMOP-UNINOVA, Portugal

Biography: Rodrigo Martins, President of the European Academy of Sciences; President of the International Union of Materials Research Societies; Full Professor at FCT-NOVA. He is member of the Scientific Council of the European Research Council, Portuguese Academy of Engineering, Portuguese Order of Engineers, OE, Board of Admission and Qualification of OE, etc.

Prof. Rodrigo Martins is the founder and director of the Centre of Excellence in Microelectronics and Optoelectronics Processes of Uninova; leader of the Materials, Optoelectronics and Nanotechnologies group of I3N/CENIMAT and its sub-director; member of the nomination committee of the EIT KIC Raw Materials; Editor in Chief of the journal Discover Materials. He is Expert in the field of advanced functional materials, nanotechnologies, microelectronics, transparent electronics (pioneer) and paper electronics (inventor), with more than 575 papers published in WoK. He is member of the Steering Committee of European Technology Platform for Advanced Engineering Materials and Technologies, EuMat, Joint Innovation Centre for Advanced Material Sino-Portuguese, administration board of the nature journal: npj 2D Materials and Applications.

Prof. Rodrigo Martins was decorated with the gold medal of merit and distinction by the Almada Municipality for his R&D achievements, in 2016. He got more than 18 international and national prizes and distinctions for his scientific work. ORCID: <http://orcid.org/0000-0002-1997-7669>; Webpage: <https://cemop.uninova.pt/>

Abstract. Currently, energy management plays a crucial role for the internet of things (IoT) growing with the increment of the amount of data to handle. The pursue of more and more comfort in society will lead to an exponential increase of IoT nodes, since almost every device has embedded electronics. However, this will lead to a high quantity of electronic waste (e-waste) accumulation that will not be recycled and will most likely end in landfills of developing countries. In 2019, 53.6 Mt of e-waste was generated worldwide, and it is expected to reach 74 Mt by 2030. To overcome this serious societal problem, it is necessary to rethink the production process of some electronic devices and to reconsider their life cycle assessment, more specifically their environmental footprint. Printed electronics can be a solution and its market is expected to have a compound annual growth rate of 21.5 % from \$7.8 billion in 2020 to \$20.7 billion by 2025. By adopting abundant and sustainable materials (metal oxides) and processes electronics waste is reduced, leading to the reduction of the carbon footprint, and paving the way for green electronics. In this work, suitable processes and materials are developed to assure the upscale of metal oxide-based devices to printing industry levels.

Keywords: Internet of things (IoT), e-waste, Printed electronics, Metal oxides, Sustainability

Part III Oral Presentations

Online Oral Presentation Guidelines

- ✚ Online Oral Presentation will be conducted via Microsoft Teams (Click to see [how to join CMSE 2022 via MS Teams](#)).
- ✚ All online presenters are requested to reach the Online Session Room prior to the scheduled time and deliver their presentations on time.
- ✚ The presentation timetable is shown in **China Standard Time (GMT+8)**.
- ✚ If a presenter is not able to show up via MS Teams, the session chair / conference secretary will download and play the pre-recorded video presentation during his/her scheduled presentation time; if listeners have questions about the presentation, please contact the conference secretary to forward the questions.
- ✚ If a presenter cannot show up on time or have problems with Internet connection, the session chair has the right to rearrange the presentation order and let the next presenter start.
- ✚ Signed and stamped electronic presentation certificate would be issued and delivered via e-mail after the conference.

Best Oral Presentations Award

The session chair will select one best oral presentation from his/her session based on the following criteria:

- ✓ Research Quality
- ✓ Presentation Performance
- ✓ Presentation Language
- ✓ PowerPoint Design

Best Presenters will receive an official certificate and free registration to the CMSE 2023.

Oral Session 1: Characterization and Testing

Time: 14:50-17:45, September 17, 2022. China Standard Time (GMT+8)

Session Chair: Dr. Zuhair Jamain, Universiti Malaysia Sabah, Malaysia

Session Chair: Dr. Collin G. Joseph, Universiti Malaysia Sabah, Malaysia

Online Session Room Link: <http://www.academicconf.com/teamslink?confname=cmse2022>

14:50-15:05	CMSE4671	Spinodal Decomposition and Surface Modification of 38CrMoAl based on Plasma Diffusion <i>Mr. Zhehao Zhang, State Key Laboratory of Tribology, Tsinghua University, China</i>
15:05-15:20	CMSE4685	Comparisons of I⁻ and Cl⁻ Concentrations on the Corrosion Behavior of TA4 Titanium Alloy in Azeotropic Acetic Acid Solutions <i>Mr. Cong Deng, Guangdong Institute of Special Equipment Inspection and Research, China</i>
15:20-15:35	CMSE4742	Friction and Wear of Polytetrafluoroethylene on the Surface of Carbon Fiber Reinforced Aluminum Alloy Composites <i>Dr. Chengzhi Li, College of Mechanical & Electronic Engineering, Xi'an Polytechnic University, China</i>
15:35-16:00	CMSE4713	Preparation and Characterization of Activated Carbon from Coffee Waste for the Removal of 2,4-Dichlorophenol in Aqueous Medium <i>Dr. Collin G. Joseph, Sonophotochemistry Research Group, Faculty of Science and Natural Resources, Universiti Malaysia Sabah, Malaysia</i>
16:00-16:20		Coffee Break
16:20-16:35	CMSE4676	Tradescantia Spathacea Extract as an Economical and Efficient Corrosion Mitigate <i>Dr. Dwarika Prasad, Department of Chemistry, Shri Guru Ram Rai University, India</i>
16:35-16:50	CMSE4695	Structure and Properties Formation of AlMgB₁₄ Coatings <i>Dr. Dmitrii Tkachev, National Research Tomsk State University, Russia</i>
16:50-17:05	CMSE4717	Monitoring the Effect of Alloying Elements Segregation in Fe Mn Ni Al High Entropy Alloy <i>Dr. Abdelrhman Ibrahim Hassan, Tabbin Institute for Metallurgical Studies (TIMS), Egypt</i>
17:05-17:30	CMSE4763	Thermal Performance of Super Insulation Materials <i>Dr. Akos Lakatos, Department of Building Services and Building Engineering, University of Debrecen, Hungary</i>
17:30-17:45	CMSE4794	Alkali-Silica Reaction Induced Expansion with Multiple Factors: A Numerical Study <i>Mr. Yu Zhou, School of Naval Architecture, Ocean and Civil Engineering, Shanghai Jiao Tong University, China</i>

Oral Session 2: Metals, Ceramics, Composites, Polymers

Time: 08:30-11:45, September 18, 2022. China Standard Time (GMT+8)

Session Chair: Dr. Guangping Zheng, Department of Mechanical Engineering, The Hong Kong Polytechnic University, China

Online Session Room Link: <http://www.academicconf.com/teamslink?confname=cmse2022>

08:30-08:45 CMSE4652	Recent Developments in Producing Low Porous Ti Matrix Composites <i>Mr. Yuchao Song, College of Materials Science and Engineering, Jilin University, Changchun, China</i>
08:45-09:00 CMSE4773	Photocatalytic Application of Carbon Nitride/Black Phosphorus Composites <i>Dr. Min Wen, Peking University Shenzhen Institute, China</i>
09:00-09:25 CMSE4725	Study on the Interface Properties and Associated Void of the Nanoscale Al Precipitates in Al-Si Alloys <i>Dr. Yanli Lu, State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, China</i>
09:25-09:40 CMSE4769	Design of Porous Ceramics to Optimize Fluid Transfer Properties: Case Studies in Industrial Product Design <i>Dr. Jiadong Zang, Geekvape Technology Co., Ltd., China</i>
09:40-09:55 CMSE4761	A Combined Theoretical and Experimental Project for the Development of a Zirconium Based Nuclear Alloy <i>Dr. Paula Alonso, Comisión Nacional de Energía Atómica- UNSAM, San Martín, Buenos Aires, Argentina</i>
09:55-10:10 CMSE4723	Precipitation Behavior and Phase Stability in Precipitation-Strengthened Medium-Entropy Alloys <i>Ms. Jieyichen Fang, Department of Mechanical Engineering, The Hong Kong Polytechnic University, China</i>
10:10-10:30	Coffee Break
10:30-10:45 CMSE4661	Microwave Heating: A Novel Method to Minimize Volatilization Loss During Melting of Glass <i>Dr. Ashis Kumar Mandal, CSIR- Central Glass and Ceramic Research Institute, India</i>
10:45-11:00 CMSE4692	Chromium Doped Tungsten Alloy for Plasma-Facing Components Formed by Compression Plasma Flows <i>Ms. Shamma Al Mazrouei, Directed Energy Research Centre, Technology Innovation Institute, UAE</i>
11:00-11:15 CMSE4722	Functionally Graded Ceramics Fabricated by Spark Plasma Sintering <i>Dr. Eszter Bódis, Institute of Materials and Environmental Chemistry, Research Centre for Natural Sciences, Hungary</i>
11:15-11:30 CMSE4637	Silica Nanofillers-Reinforced Polyimide Composites for Mechanical, Thermal, and Electrical Insulation Applications and Recommendations: A Review <i>Mr. V.E. Ogbonna, Chemical, Metallurgical & Materials Engineering, Tshwane University of Technology, South Africa</i>

11:30-11:45 CMSE4795 **A Chemo-damage-transport Model for Concrete Subjected to Sulfate Attack Under Wetting-drying Cycles**
Mr. Lie Ji, School of Naval Architecture, Ocean and Civil Engineering, Shanghai Jiao Tong University, China

Oral Session 3: Nanostructured Materials, Sensors

Time: 14:30-17:50, September 18, 2022. China Standard Time (GMT+8)

Session Chair: Dr. Pratap Kollu, School of Physics, University of Hyderabad, India

Online Session Room Link: <http://www.academicconf.com/teamslink?confname=cmse2022>

14:30-14:45 CMSE4650 **Efficient in situ Synthesis of Mussel-Inspired Cu-doped Polydopamine Nanocomposites with Unique Nanostructure for Extreme Lubricating Applications**
Dr. Guangyan Chen, State Key Laboratory of Tribology, Tsinghua University, China

14:45-15:00 CMSE4740 **Top-Down Approach to the Synthesis of Metal-Oxide Nanocomposite Catalysts**
Dr. Sergei Malyshev, Department of Materials Science, Shenzhen MSU-BIT University, China

15:00-15:15 CMSE4657 **Photocatalytic Degradation of Methyl Orange Dye over CO₃O₄-ZnO Nanoparticles Using Solar Light**
Dr. Tran Anh Vy, Department of Chemical and Biological Engineering, Gachon University, Republic of Korea

15:15-15:30 CMSE4715 **Synthesis of Graphene Nano-Flakes with in-situ Spectroscopic Investigation of Inductively Coupled Ar-H₂-CH₄ and Ar-H₂-C₂H₂ Plasma**
Dr. Antaryami Mohanta, Directed Energy Research Centre, Technology Innovation Institute, Abu Dhabi, UAE

15:30-15:55 CMSE4748 **Photocatalytic Materials based on CeO₂ Nanoparticles and Photocrosslinked Cellulosic Matrices. Insights into the Pollutant Removal Catalysis Mechanism**
Dr. Andreea Chibac-Scutaru, Polyaddition and Photochemistry Department, Petru Poni Institute of Macromolecular Chemistry, Romania

15:55-16:20 CMSE4698 **TiO₂ Nanostructures by Electrochemical Anodization – Morphology and Biomedical Applications**
Dr. Mazare Anca Valentina, Department of Materials Science – WW4-LKO, Friedrich-Alexander University of Erlangen Nurnberg, Germany

16:20-16:40

Coffee Break

16:40-17:05 CMSE4755 **Enhanced Performance of Oxide Thermoelectrics by Reduced Graphene Oxide Nanoadditive and Nanostructuring**
Dr. Oleksandr Tkach, CICECO – Aveiro Institute of Materials, Department of Materials and Ceramic Engineering, University of Aveiro, Portugal

17:05-17:20 CMSE4751	<p>Investigation of the Structural, Optical and Electrical Properties of Copper and Nickel- co-doped SnO₂ Nanoparticles Prepared by Sol-gel Method</p> <p><i>Mr. Wegene Lema Lachore, Faculty of Materials Science and Engineering, Jimma Institute of Technology, Jimma University, Ethiopia</i></p>
17:20-17:35 CMSE4733	<p>Production of Magnetic Cellulose Nanocomposite from A Natural Resource</p> <p><i>Mr. Kebede Gamo Sebehanie, Nanotechnology Directorate, Bio and Emerging Technology Institute, Ethiopia</i></p>
17:35-17:50 CMSE4730	<p>Plasmonic Nanostructures Embedded in a Dielectric Host for SERS Applications</p> <p><i>Dr. Promod Kumar, Department of Physics, University of the Free State, South Africa</i></p>

Oral Session 4: Mechanical Properties of Materials

Time: 14:15-18:20, September 18, 2022. China Standard Time (GMT+8)

Session Chair: Dr. Sofia W Alisjahbana, Universitas Bakrie, Indonesia

Session Chair: Dr. Osman Adiguzel, Department of Physics, Firat University, Turkey

Online Session Room Link:

<http://www.academicconf.com/teamslink?confname=cmse2022&sessionid=4>

14:15-14:30 CMSE4665	<p>The Influence of Service Temperature and Thickness on the Tensile Properties of Thin T2 Copper Sheets</p> <p><i>Dr. Ruibin Gou, College of Mechanical Engineering, Anhui Science and Technology University, China</i></p>
14:30-14:45 CMSE4619	<p>Anti-seismic Behavior of Welded Box Section Column Considering Welding Residual Stress at High Temperature</p> <p><i>Mr. Xueyu Dai, Department of Civil Engineering, China Agricultural University, Beijing, China</i></p>
14:45-15:00 CMSE4687	<p>Enhancement of Oxidation Resistance in Titanium by Plasma Treatment</p> <p><i>Mr. Jarrah Alhammadi, Directed Energy Research Centre, Technology Innovation Institute, UAE</i></p>
15:00-15:25 CMSE4662	<p>Thermomechanical Processes and Reactions in Thermal and Mechanical Memory in Shape Memory Alloys</p> <p><i>Dr. Osman Adiguzel, Department of Physics, Firat University, Turkey</i></p>
15:25-15:40 CMSE4727	<p>Slabs Reinforced with Fiber Reinforced Polymers Under Closing Explosions: Experimental and Numerical Features</p> <p><i>Dr. Ricardo Castedo, School of Mines and Energy, Universidad Politécnica de Madrid, Spain</i></p>
15:40-15:55 CMSE4772	<p>Crack Propagation in Flexural Fatigue of Concrete Using Rheological Dynamical Theory</p> <p><i>Dr. Aleksandar Pančić, Faculty of Civil Engineering Subotica, University of Novi Sad, Serbia</i></p>

15:55-16:10 CMSE4762	Load Bearing Capacity Analysis of An Infinite Plate Weakened by Multiple Collinear Straight Cracks with Coalesced Yield Zones <i>Dr. Naved Akhtar, Department of Applied Sciences and Humanities, Jamia Millia Islamia, India</i>
16:10-16:30	Coffee Break
16:30-16:45 CMSE4693	Effect of Yttria on Thermal Transport and Vibrational Modes in Yttria-Stabilized Zirconia/Hafnia <i>Dr. Xuezhi Wang, Department of Applied Physics, Chang'an University, China</i>
16:45-17:10 CMSE4765	Mechanical Behavior of an Eco -composite Laminated in Green Epoxy 56 Resin Reinforced with Jute Fibers <i>Dr. Abderrahim Benmoussat, Corrosion Research Team, LAEPO Research Laboratory, University of Tlemcen, Algeria</i>
17:10-17:35 CMSE4642	The Negative Phase of Localized Blast Load Effects on Rigid Concrete Pavement Plate <i>Dr. Sofia W Alisjahbana, Universitas Bakrie, Civil Engineering Department, Indonesia</i>
17:35-17:50 CMSE4749	Eco-efficient Lightweight Concrete with High Volume Micro Fines via the Box Behnken Design Approach of Response Surface Methodology <i>Dr. Rajesh Kumar, Organic Building Materials Group, CSIR- Central Building Research Institute, India</i>
17:50-18:05 CMSE4760	Tensile Strength Behavior of Heat-Treated Hydrogen –Charged 316L Stainless Steel <i>Dr. Graciela Mansilla, Departamento Metalúrgica/DEYTEMA, Universidad Tecnológica Nacional, Argentina</i>
18:05-18:20 CMSE4799	Fire Dynamic Simulation and Numerical Analysis of Reinforced Concrete and Reverse Ability of Fire Damaged Reinforced Concrete <i>Ms. Despoina Symeou, School of Naval Architecture, Ocean and Civil Engineering, Shanghai Jiao Tong University, China</i>

Oral Session 5: Materials for Electronics, Optoelectronics, Semiconductors

Time: 08:30-12:20, September 19, 2022. China Standard Time (GMT+8)

Session Chair: Dr. Arun Kumar Singh, Guru Ghasidas Vishwavidyalaya, India

Session Room Link: <http://www.academicconf.com/teamslink?confname=cmse2022>

08:30-08:45 CMSE4735	Ru-CeO₂ Co-infiltrated Sr_{1.9}Fe_{1.5}Mo_{0.5}O_{6-δ} Electrode Supported on Bi-Layered Solid Oxide Electrolyte for CO₂ Electrolysis <i>Dr. Mingming Li, Faculty of Materials Science, Shenzhen MSU-BIT University, China</i>
08:45-09:00 CMSE4739	Solution Crystallization Features of Lead Halide Perovskites <i>Dr. Andrey Petrov, Faculty of Materials Science, Lomonosov Moscow State University, Russia</i>

09:00-09:15 CMSE4736	<p>Smart Optical Measurement Probe for Autonomously Detecting Nano-Defects on Bare Semiconductor Wafer Surface: Highly Sensitive Observation System Using Phase-Contrast Microscopy with a Spatial Light Modulator</p> <p><i>Mr. Yizhao Guan, Department of Precision Engineering, The University of Tokyo, Japan</i></p>
09:15-09:30 CMSE4741	<p>A Thin-film Waveguide Problem with Positive Kerr nonlinearity and its TM Standing Wave Solution</p> <p><i>Dr. O Nyamsuren, Department of Fundamental Sciences, New Mongol Institute of Technology, Mongolia</i></p>
09:30-09:55 CMSE4753	<p>PEC Water Splitting technology: a New Dawn for the Hydrogen Economy</p> <p><i>Dr. Chin Wei Lai, University of Malaya, Malaysia</i></p>
09:55-10:10 CMSE4690	<p>Growth and Characterization of β-Ga₂O₃ Thin Films for Fast-Response Solar-Blind Ultraviolet Photodetectors</p> <p><i>Dr. Hao Shen, School of Science, Chang'an University, China</i></p>
10:10-10:30	Coffee Break
10:30-10:45 CMSE4669	<p>Theoretical Design of Organic/Inorganic Semiconductors</p> <p><i>Dr. Dhruba Jyoti Kalita, Department of Chemistry, University of Gauhati, India</i></p>
10:45-11:10 CMSE4635	<p>Molecular Alignment of Conjugated Polymer Films for High-Performance Organic Field-Effect Transistors</p> <p><i>Dr. Arun Kumar Singh, Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, India</i></p>
11:10-11:25 CMSE4666	<p>Synthesis, Thermal and Structural Properties of Amorphous and Crystalline Phases in Bi₂O₃-SrO-TeO₂ System</p> <p><i>Dr. Ramzi Zahra, Chemistry Department, Cadi Ayyad University, Morocco</i></p>
11:25-11:40 CMSE4780	<p>Anionic Surfactant Anchoring Enables Efficient and Stable Perovskite Solar Cells</p> <p><i>Mr. Tao Wang, School of Material Science and Engineering, Shanghai Jiao Tong University, China</i></p>
11:40-11:55 CMSE4781	<p>Phase Transition Stability of Formamidine (FA)-based Perovskite Films</p> <p><i>Mr. Weiyu Kong, School of Materials Science and Engineering, Shanghai Jiao Tong University, China</i></p>
11:55-12:20 CMSE4800	<p>Microwave-assisted Solvothermal Route for One-step Synthesis of Pure Phase Bismuth Ferrite Micro Flowers with Improved Magnetic, Dielectric, and Optical Properties</p> <p><i>Dr. Pratap Kollu, School of Physics, University of Hyderabad, India</i></p>

Part IV Poster Session

Online Poster Presentation Guidelines

- ✚ **Poster Presentations:** A collection of posters in PDF format (with/without audio) are available at conference website for attendees to view.
- ✚ **Poster Q&A:** Attendees could type the questions in the chatbox on MS Teams or leave questions in the notebbox below the posters on the conference page. Presenters will answer the questions as soon as they can.
- ✚ Signed and stamped electronic presentation certificate would be issued via e-mail after conference.

List of Posters

Time: 11:10-11:50, September 17, 2022. China Standard Time (GMT+8)

Online Posters are updated on the official website:

<http://www.academicconf.com/poster?confname=cmse2022>

**Should you have any questions on the online posters, please feel free to write down in the notebbox of each poster at CMSE2022 official website. The organizer will forward your questions to the presenters.*

CMSE4223	Microstructural Evolution and Statistical Model on Thermal Stress Evaluation of Laser Cladding with HVOF Sprayed WC/Co Deposits <i>Dr. Chaoyang Zhang, College of Arts and Design, Jimei University, Xiamen, China</i>
CMSE4225	Numerical Modelling of the Tensile Properties of Friction Stir Welding using RSM with Experimental Design <i>Dr. Mingder Jean, College of Arts and Design, Jimei University, Xiamen, China</i>
CMSE4636	Comparison of Wear Resistance in Polycrystalline and Monocrystalline Iron <i>Dr. Zhiming Liu, China University of Mining and Technology (Beijing), China</i>
CMSE4647	Research on Fretting Fatigue of Tungsten Carbide Coating Based on Strain Energy Density Methods <i>PhD Xin Zeng, School of Mechanical Engineering, Tianjin University of Science and Technology, China</i>
CMSE4651	Ultraprecise Antigen 10-in-1 Pool Testing by Multiantibodies Transistor Assay <i>PhD Changhao Dai, Department of Macromolecular Science, Fudan University, China</i>
CMSE4658	Microstructure and Micromechanical Behaviors of Bulk Amorphous Alloy Prepared by Spark Plasma Sintering <i>Dr. Yaqiong Ge, College of Materials Science and Engineering, Taiyuan University of Science and Technology, China</i>
CMSE4679	Development of Resistance Spot Welding Material Card for Dissimilar Automobile Plates <i>Mr. Jing Guo, R&D Institute of Bengang Steel Plates Co., Ltd, China</i>
CMSE4683	Three-Dimensional Simulation of the Effect of Operating Conditions on the Performance of the Air Ejector <i>Dr. Lifu Han, Department of Engineering Mechanics, Inner Mongolia University of Technology, China</i>
CMSE4684	Research on Influence of New Structural Design Regulations on General Design of Steel Towers <i>Mr. Yigang Li, China Electric Power Research Institute, China</i>
CMSE4694	Boriding Kinetics and Mechanical Properties of X65Cr14 Martensitic Stainless Steel by Pack Method <i>Mr. Xiaoming Zong, Avic Jonhon Optronics Technology Co., Ltd, China</i>
CMSE4700	Mechanical Property and Cushioning Efficiency of Rigid Polyurethane Foam Study <i>Mr. Zexiong Zhang, College of Engineering Science, University of Science and Technology of China, China</i>
CMSE4706	Self-rectifying Effect in Au/Al₂O₃/Si Resistive Memory Structure <i>Dr. Jianling Meng, College of Mathematics and Physics, Beijing University of Chemical Technology, China</i>

CMSE4711	Properties of Ni60/SiO₂ Coating Prepared by the Pyrolysis Products of Rice Husk <i>Dr. Chunxue Wei, Henan Light Industry Vocational College, China</i>
CMSE4714	Vibration Fatigue Analysis of the Main Pulley Frame of a Rotary Drilling Rig Based on a Real Vehicle Test <i>Mr. Haiyong Guo, College of Mechanical and Electronic Engineering, Shandong University of Science and Technology, China</i>
CMSE4731	The Effect of the Raw Material Hydration on the Performance of MgO / MgAl₂O₄ Ceramic Core <i>Dr. Yao Yao, School of Materials Science and Engineering, Beihang University, China</i>
CMSE4734	Design and Analysis of Vibration Isolation Based on Electromagnetic Shunt Damping for Reaction Flywheel <i>Dr. Han Zhang, College of Aerospace, National University of Defense Technology, China</i>
CMSE4737	Effect of Support Settlement on Ultimate Bearing Capacity of Zhoukoudian Steel Structure <i>Dr. Yan Li, Heritage Office of Administrative Office of Peking Man Site at Zhoukoudian, China</i>
CMSE4738	Analysis on Progressive Collapse Resistance of Zhoukoudian Single-Layer Latticed Shell Structure <i>Mr. Yushuo Zhang, Department of Civil Engineering, China Agricultural University, China</i>
CMSE4744	Research Progress of Super-Hydrophobic Coatings Based on Silicone Rubber Surface <i>Mr. Xiwei Xie, Beijing Guo Dian Futong Science and Technology Development Co., Ltd, China</i>
CMSE4746	Numerical Simulation and Experimental Study of the Compressive Energy Absorption Characteristics of a Multi-Layered Gradient Egg-Box Structure <i>Ms. Hao Niu, School of Mechanical Engineering of University of Science and Technology Beijing, China</i>
CMSE4756	Effect of Double Annealing on Microstructure and Mechanical Properties of Mn-TRIP Steel <i>Mr. Xiaoyu Sun, Ansteel Guangzhou Automotive Steel Co., Ltd, China</i>
CMSE4757	Effect of Different Microstructural Design on Properties for Quenching and Partitioning Steel with Tensile Strength of 980Mpa <i>Mr. Xingli Gu, Automobile and Home Application Steel Institute, Technology Center of Angang Steel Company Limited, China</i>
CMSE4764	Microstructure and Mechanical Property of a Novel Hot Dip Galvanized Dual Phase Steel with High Ductility <i>Dr. Zhiping Hu, Automobile and Home Application Steel Institute, Technology Center of Angang Steel Company Limited, China</i>
CMSE4767	Utilization of the Modified Taguchi Method in CFD Simulations for Optimal Laser Beam Welding Parameters of Zr-Nb Alloy for Nuclear and Chemical Industrial Applications <i>Dr. B. Nageswara Rao, Koneru Lakshmaiah Deemed to be University, India</i>

CMSE4777 **Study On Shear Performance of Multiple-bolt Joints of Bamboo Curtain Plywood**
Dr. Ziheng Ye, 1Department of Civil Engineering and Airport Engineering, Nanjing University of Aeronautics and Astronautics, China

CMSE4791 **Study on Strength and Toughness of CrN Coating Modified by Atomic Layer Deposition**
Dr. Zhao Jiang, Science and Technology on Vacuum Technology and Physics Laboratory, Lanzhou Institute of Physics, China

Part V Acknowledgements

On behalf of the CMSE2022 Organizing Committee, we would like to take this opportunity to express our sincere gratitude to our participants. Without their support and contributions, we would not be able to hold the conference in any form. We would also like to express our acknowledgements to the Technical Program Committee members who have given their professional guidance and valuable advice as reviewers. For those who contribute to the success of the conference organization without listing the name here, we would love to say thanks as well.

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