



CMSE 2024

The 13th Global Conference on Materials Science and Engineering

November 17-20, 2024 Kampar, Perak, Malaysia

Conference Program



Wholly owned by UTAR Education Foundation
(Co. No. 578227-M)
DU012(A)



Table of Contents

Part I Conference Schedule Summary	1
Part II Keynote Speeches	3
Keynote Speech 1: Photoluminescence Characteristics of Rare Earth Doped Ultrawide Bandgap Semiconductors by Synchrotron Radiation Excitation	3
Keynote Speech 2: Production, Optical Studies and Applications of Metasurfaces	4
Keynote Speech 3: Fresh, Mechanical, and Microstructural Properties of Concrete Containing Lithium Slag (Lithium Refinery Residue)	5
Keynote Speech 4: On the Crystallography of Shear Banding in FCC Metals Deformed at High Strain Rates: A Study Modeled on Copper Single Crystals with (112)[11-1] and (346)[63-5] Orientations	6
Part III Oral Presentations	7
Oral Presentation Guidelines.....	7
Best Oral Presentations Award	7
Oral Session 1: Electronic, Photonic & Magnetic Materials & Nanomaterials.....	9
Oral Session 2: Metals, Ceramics, Composites, Polymers	10
Oral Session 3: Characterization and Testing.....	12
Part IV Poster Session.....	14
Poster Presentation Guidelines	14
Best Poster Presentation Selection Procedure	14
List of Posters	15
Part V Conference Venue	18
Venue: Universiti Tunku Abdul Rahman (Kampar)	18
Access to Universiti Tunku Abdul Rahman (Kampar)	18
Part VI Acknowledgements	20

Part I Conference Schedule Summary

DAY 1 | November 17, 2024

Location: Outside EDK2 (Ground Floor), Block E, Faculty of Engineering and Green Technology, Universiti Tunku Abdul Rahman (Kampar)

Registration @ 14:00-19:00

Note for on-site registration:

* Please show us your name or paper number for registration.

* Please pick up all the conference materials at the registration desk (Name Card, Conference Program, Lunch & Dinner Tickets etc.).

DAY 2 | November 18, 2024

Location: EDK2 (Ground Floor), Block E, Faculty of Engineering and Green Technology

*Chaired by: **Dr. Wong Lai Peng**, Faculty of Engineering and Green Technology, Universiti Tunku Abdul Rahman, Malaysia*

Opening & Welcome Speech @ 08:30-08:35

***Ir. Prof. Dr. Ng Choon Aun**, Faculty of Engineering and Green Technology, Universiti Tunku Abdul Rahman, Malaysia*

Group Photo @ 08:35-08:50

Keynote Session

08:50-09:30

Keynote Speech 1: Photoluminescence Characteristics of Rare Earth Doped Ultrawide Bandgap Semiconductors by Synchrotron Radiation Excitation

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

09:30-10:10

Keynote Speech 2: Production, Optical Studies and Applications of Metasurfaces

Prof. Sigita Tamulevičius, Institute of Materials Science, Kaunas University of Technology, Lithuania

Coffee Break 10:10-10:30

10:30-11:10	Keynote Speech 3: Fresh, Mechanical, and Microstructural Properties of Concrete Containing Lithium Slag (Lithium Refinery Residue) Prof. Faiz Shaikh , <i>School of Civil and Mechanical Engineering, Curtin University, Australia</i>
11:10-11:50	Keynote Speech 4: On the Crystallography of Shear Banding in FCC Metals Deformed at High Strain Rates: A Study Modeled on Copper Single Crystals with (112)[11-1] and (346)[63-5] Orientations Prof. Henryk Paul , <i>Institute of Metallurgy and Materials Science, Polish Academy of Sciences, Poland</i>
Lunch Break 12:00-13:30 <i>Cafeteria (Ground Floor), Block E</i>	
Afternoon Oral Session 14:00-17:35 Oral Session 1: Electronic, Photonic & Magnetic Materials & Nanomaterials	
Welcome Banquet @18:00-20:00 <i>Grand Kampar Hotel (gathering at 17:40 @EDK2)</i>	

DAY 3 | November 19, 2024

Location: EDK2 (Ground Floor), Block E, Faculty of Engineering and Green Technology

Morning Oral Session 08:30-11:55 Oral Session 2: Metals, Ceramics, Composites, Polymers
Lunch Break 12:00-13:30 <i>@ Cafeteria (Ground Floor), Block E</i>
Afternoon Oral Session 14:00-16:15 Oral Session 3: Characterization and Testing
Poster Session 16:30-17:30

DAY 4 | November 20, 2024

One Day Tour in Perak 08:30-16:00
--

Note: Gathering at Lobby of Grand Kampar Hotel; Please take your Tour Ticket while getting on the tour bus.

Part II Keynote Speeches



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 380 papers in scientific journals including Nature Communications, Advanced Materials, Physical Review B, and Applied Physics Letters with more than 10,000 citations (h-index: 53). He is ranked as world top 2% scientists by Stanford University.

Prof. Qixin Guo

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

Keynote Speech 1: Photoluminescence Characteristics of Rare Earth Doped Ultrawide Bandgap Semiconductors by Synchrotron Radiation Excitation

Abstract. Ultrawide bandgap (UWBG) semiconductors, including AlN, BN, diamond, and Ga₂O₃ are at the forefront of extensive research efforts, covering a wide spectrum of materials, physics, devices, and applications. Microscale light emitting diodes (μ LEDs) have attracted significant attention for their applications in augmented and virtual reality displays. Achieving high pixel density, efficiency, brightness, stable emission, and full-color emission is crucial for μ LEDs. However, realizing full color μ LED display technology poses challenges due to conventional mass transfer processes necessitating the extraction and precise transfer of red, green, and blue μ LED chips from different epitaxial wafers. Rare earth (RE) doped semiconductors, characterized by strong and sharp emission resulting from intra-4f-shell transitions in RE ion cores, hold promise for applications in color display and luminescence devices. Extensive efforts have historically been dedicated to achieving visible color emission using RE doped GaN. Reports suggest that the luminescence efficiency of dopant emissions could significantly improve with an ultrawide bandgap host.

We have shown clear observations of red, green, and blue emissions from Eu, Er, and Tm doped ultrawide bandgap Ga₂O₃ films, respectively. We have also observed that the normalized emission intensity of RE-doped Ga₂O₃ films exhibits smaller temperature variations compared to RE-doped GaN films. Investigating the optical luminescence phenomena of semiconductors provides valuable insights into both the host lattices and defects, offering essential information for enhancing growth processes. Synchrotron radiation emerges as an ideal excitation source for studying UWBG semiconductors due to its remarkable tunability of photon energy and high brightness. We have constructed the Saga University beamline BL13 at Saga Light Source (SAGA-LS), Japan, to serve as a platform for such studies. In this talk, we will present recent advancements in the luminescence experiment system and share related experimental findings on UWBG semiconductors at the conference.



Biography

Prof. Dr. Sigitas Tamulevičius obtained a Physics Engineer degree from the Moscow Engineering Institute of Physics (Moscow, former USSR) in 1979, a Ph.D. degree from the University of Vilnius in 1984, Doctor Habilitus degree from Kaunas University of Technology (1994). From 1990 to 1991, he was a postdoc at the Royal Institute of Technology (Stockholm, Sweden). In 1994 he was a Research Scholar, Fulbright Scholarship, Department of Physics, Massachusetts Institute of Technology (USA). Since 1996, he is a full professor in the Physics Department and Research director of the Institute of Materials Science of Kaunas University of Technology. He has co-founded a spin-off company and co-authored approx. 250 peer-reviewed publications in the field of vacuum and plasma technologies and optical technologies and spectroscopy with more than 3600 citations in Web of Science (h-index: 29), and is (co-) author of 15 textbooks on different aspects of Materials Science. Since 2002 he was a Member expert and since 2010 he is a Full Member of the Lithuanian Academy of Sciences. Prof. Sigitas Tamulevičius has received a series of awards including the Soros Foundation Research Grant, (1993) (Awarded by American Physical Society), Fulbright certificate (1997), National Award for Science (2000 and 2019), Recognition letter by the President of EMRS (2010), Honorary Professor of Southern Denmark University (2016), Laureate of Kaunas City Scientist Award (2017). He is Editor in Chief of the Scientific Journal "Materials Science (Medžiagotyra)", Member of the Editorial Board of "American Journal of Nanomaterials" (Science and Education Publishing), "Coatings" (MDPI), member of the steering committee of European doctoral network Physics and Chemistry of Advanced Materials. He was a national representative in the FP7 program "Nanosciences, nanotechnologies, materials and new production technologies". He headed multiple research projects funded by FP, Horizon 2020, COST, Eureka, NordForsk, Lithuanian State Foundation for Research and Studies, the Research Council, as well as Science and Innovation Agency of Lithuania. 18 Ph.D. theses were defended under his guidance; he has supervised six postdoctoral researchers.

Prof. Sigitas Tamulevičius

Institute of Materials Science, Kaunas University of Technology, Lithuania

Keynote Speech 2: Production, Optical Studies and Applications of Metasurfaces

Abstract. The field of plasmonics broadly encompasses the interaction of light with metal nanostructures and, during recent years, has generated a lot of interest. Metal nanoparticles can resonate with light if their frequency matches the natural electron plasma oscillation, invoking a localized surface plasmon resonance (LSPR). This resonance can be further modified through hybridization with photonic modes when the nanoparticles are arranged in regular arrays exhibiting the collective response - surface lattice resonance (SLR). Moreover, these ultrafast processes can manifest themselves at the photonic length scale in arranged nanoparticle lattices.

In the current work the recent research results on the optical studies of colloidal solutions of silver and gold nanoparticles, production of metasurfaces (regular two-dimensional nanostructures) employing capillarity assisted particle assembly (CAPA) as well as studies of surface lattice resonance (SLR - mixed mode of LSPR and light diffraction in a regular structure) will be presented and discussed. The steady state light absorption measurements performed together with ultrafast transient pump-probe spectroscopy enabled to define spectral response as well as kinetics of the processes on the

picosecond time scale. The ultrafast electron-phonon (e-ph) coupling relaxation processes for different average sizes and crystallinity of chemically synthesized silver nanoparticles were evaluated utilizing transient absorption spectroscopy. These issues are important in various fields of applications, including development of smart sensors exhibiting high sensitivity, as well as nanolasers. As an example, we present a comprehensive theoretical and experimental study of wavelength-tailored SERS substrates with improved sensitivity, exploiting surface lattice resonance in a plasmonic lattice comprised of CAPA-assembled Ag nanoparticles. Furthermore, we compared monomer and tetramer unit cell cases and found that the combined effect of tuned SLR and hot spots improves the enhancement factor more than 400 times over a substrate with a random layer of nanoparticles. The developed sensor was applied for the real-time leakage detection of electrolyte in lithium ion batteries.

Keywords: Noble metal nanoparticles, metasurfaces, surface lattice resonance.



Biography

Prof. Faiz Shaikh received his Ph.D. degree in civil engineering from the National University of Singapore (NUS) in 2005. Since 2009, he has been with Curtin University, Australia. He is a Chartered profession engineer (CPEng.) of Australia, fellow of Engineers Australia (FIEAust) and member of Concrete institute of Australia. Among much research interests the sustainable use of various industrial by-products in infrastructure application e.g. in low carbon concrete and fibre reinforced cementitious composites, pavement material, etc. is his one of the key research areas where he has contributed in terms of research publication, industry collaboration, training/mentoring of young engineers and success in research fund. He has successfully completed various research projects on the utilization of fly ash, blast furnace slag, ferro-nickel slag, lithium refinery residue and silica fume as partial replacement of cement in concrete; construction and demolition wastes, recycled glass aggregates, waste tyres crumb rubbers, copper heap leach residue as aggregates in concrete; and development of geopolymer concrete using fly ash or fly ash-slag blend or lithium refinery residue-fly ash. He has supervised 11 PhD and 3 MPhil students and currently supervising 6 PhD students.

Prof. Faiz Shaikh

School of Civil and Mechanical Engineering, Curtin University, Australia

Keynote Speech 3: Fresh, Mechanical, and Microstructural Properties of Concrete Containing Lithium Slag (Lithium Refinery Residue)

Abstract. In this study, fresh properties, mechanical, and microstructural properties of 0–60 % cement replaced lithium slag (LS) concretes were thoroughly determined with a total binder content of 400 kg/m³ and water-binder ratio of 0.435, and the properties were compared with the same mix proportion of FA concrete. The results show that 20–60 % LS concrete mixes produced normal density concrete within the design slump of 125 ± 25 mm and air content of 2 ± 0.5 %. At 90 days, the average compressive strength, tensile strength, and elastic modulus of 40 % LS concrete were 58.6 MPa, 4.10 MPa, and 39 GPa, respectively, which are higher compared to 40 % FA concrete of 35.5 MPa, 3.0 MPa, and 31.1 GPa, respectively, revealing that LS concrete offers better mechanical strength. However, mechanical strengths decreased significantly beyond 40 % LS incorporation. The experimentally determined 28 days mechanical strengths of 40 % LS concrete were underestimated by ACI 318 and AS 3600 standard equations. The BSE-EDS on the ITZ of fine and coarse aggregate

confirmed a consistent development of amorphous and amorphous intermediate hydration products in the development of mechanical properties of LS concrete mixes.



Biography

Prof. Henryk Paul received his Doctor of Engineering degree from the Institute of Metallurgy and Materials Science (IMMS) at the Polish Academy of Sciences in Kraków, Poland, in 1989. After serving as an assistant professor, he was promoted to associate professor in 2003 and to full professor in 2010, all at IMMS. He has completed numerous fellowships and internships at French institutions, including an extended stay at the École des Mines de Saint-Étienne and several study visits to LLB Saclay and Université Paris-Sud. He has

authored over 280 original papers, 22 book chapters, and 22 review papers on various aspects of phase transformations. His research interests include explosive welding technology, the formation of plastic flow instabilities during the deformation of metallic materials, recovery and recrystallization, phenomena associated with high strain rate deformation of metals, and phase transformations. He has been a plenary, keynote, or invited speaker at 42 international conferences. His publications have been cited over 2,300 times, and he has an h-index of 31.

Prof. Henryk Paul

Institute of Metallurgy and Materials Science, Polish Academy of Sciences, Poland

Keynote Speech 4: On the Crystallography of Shear Banding in FCC Metals Deformed at High Strain Rates: A Study Modeled on Copper Single Crystals with (112)[11-1] and (346)[63-5] Orientations

Abstract. The formation of shear bands at extremely high strain rates directly precedes the fracture of metals. Their appearance in the structure signals a reduction or complete loss of the load-bearing properties of a metallic parts. This paper analyses the crystallographic aspects of the mechanism responsible for the occurrence of this form of unstable metal flow under model conditions. The study examined copper single crystals with unstable orientations of C(112)[11-1] and S(346)[63-5], which were deformed up to 60% in a channel-die, with the punch driven by explosive energy to achieve a strain rate of $4 \times 10^5 \text{ s}^{-1}$. Microstructure and texture evolutions were characterized in a wide range of scales, primarily using scanning and transmission electron microscopy techniques. In both orientations analysed, the extremely high strain rate leads to intense nucleation of deformation twins, forming on all four {111} planes in two generations. The appearance of compact twin bundles directly precedes the formation of shear bands. In each case, rigid-body rotation of the twin bundles within the band region, combined with twinning in the reoriented matrix, leads to the formation of texture components close to the G{110}<001> orientation. Finally, crystallographic model for the formation of shear bands in fcc metals deformed at high strain rates were proposed.

Keywords: Adiabatic shear bands, twinning, high strain rates, copper, titanium, SEM/EBSD.

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 (Note: Please show your paper ID as CMSE**** in the last page.)

For presenters who don't send the PowerPoint to the Conference Secretary before the conference, 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.

Duration of Each Presentation

- Invited Oral Presentation: 20 Minutes of Presentation, including 3-5 Minutes of Q&A
- Regular Oral Presentation: 15 Minutes of Presentation, including 3-5 Minutes of Q&A

Best Oral Presentations Award

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

Selectin 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's 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 vote.

Nature of the Award:

- This award consists of free registration to the next conference CMSE 2025 and a certificate.
- The awards will be announced at the official website after the conference.

Assessment Sheet Sample
CMSE 2024 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 TWO Best Oral Presentation in this session. If there is a tie, the Session Chair will make the final decision.

The winner will be announced at the official website after the conference.

You can refer to the following Criteria:

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

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

Paper ID	Reasons

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 Presentations in this session can be selected.

Oral Session 1: Electronic, Photonic & Magnetic Materials & Nanomaterials

Time: 14:00-17:35, November 18, 2024

Location: EDK2 (Ground Floor), Block E, Faculty of Engineering and Green Technology

Session Chair: Prof. Sigitas Tamulevičius, Kaunas University of Technology, Lithuania

Time	Paper ID	Presentation title & Presenter
14:00-14:15	CMSE5150	A New Structure for High-Performance Operation of Oxide and Organic Semiconductor Heterojunction Transistors: Spatially Separating Layer Sandwiched Anti-Ambipolar Transistor <i>Mr. Youngmin Han, Department of Semiconductor Engineering, Gachon University, Republic of Korea</i>
14:15-14:30	CMSE5162	Current Saturation-Negative Differential Transconductance Devices and Photo Memory Devices Utilizing Tunneling Dielectric Thickness-Dependent Small Molecules/Insulator Sandwiched Structures <i>Dr. Dong Hyun Lee, Department of Semiconductor Engineering, Gachon University, Republic of Korea</i>
14:30-14:45	CMSE5115	Two-dimensional Valleytronic Materials: From Principles to Device Applications <i>Dr. Sake Wang, College of Science, Jinling Institute of Technology, China</i>
14:45-15:05	CMSE5185	Flipping a Coin with Light: Photo-Induced Random Number Generators <i>Prof. Hocheon Yoo, Department of Semiconductor Engineering, Gachon University, Republic of Korea</i>
15:05-15:25	CMSE5103	Materials Design of Highly Transparent Conductive Oxides with Thicknesses Ranging from 2 to 2000 nm for Wide Applications <i>Prof. Tetsuya Yamamoto, Materials Design Center, Research Institute, Kochi University of Technology, Japan</i>
15:25-15:40	CMSE5151	Well-balanced Hole and Electron Charge Transport in an Organic P-type-Insulator-N-type Layered Sandwich Structure <i>Ms. Jaechan Song, Department of Semiconductor Engineering, Gachon University, Republic of Korea</i>
15:40-15:55	CMSE5090	The Interfacial Oxidation between Metal and Oxide <i>Mr. Byung Seol Hwang, Department of Semiconductor Engineering, Hoseo University, Republic of Korea</i>
Coffee Break @15:55-16:10		

16:10-16:25	CMSE5075	Effects of 20MeV Gold Ion and 7 MeV Proton Irradiations on Structural and Morphological Properties of Cadmium Sulfide (CdS) Thin films <i>Dr. Rafik Hazem</i> , Physics Department, Faculty of Sciences, University of M'Hamed Bougara of Boumerdes (UMBB), Algeria
16:25-16:40	CMSE5073	Investigation of Half-Metallic Dichalcogenide Alloy for Highly Selective Gas Adsorption <i>Prof. Ahmad I. Ayeshe</i> , Department of Physics and Materials Sciences, College of Arts and Sciences, Qatar University, Qatar
16:40-16:55	CMSE5089	Phytochemical Analysis of Polygonum Bistorta L. Subsp. Carneum (Koch): Quantitative Analysis of Phenolics, Synthesis of Silver Nanoparticles and Antioxidant Activity <i>Prof. Ramazan Erenler</i> , Research Laboratory Practice and Research Center, Igdir University, Turkey
16:55-17:15	CMSE5109	Synthesis of Zinc Oxide Nanoparticles (ZnONP) from Arbutus unedo Fruit Extracts by Green Synthesis Method and its Effect on Urease Enzyme Inhibition <i>Dr. Mahfuz Elmastas</i> , Department Biochemistry, Hamidiye of Faculty Pharmacy, University of Health Sciences, Turkey
17:15-17:35	CMSE5200	First-principles Material Design of Graphene and Related Materials for Nanoelectronics Devices <i>Dr. Yoshitaka Fujimoto</i> , Graduate School of Engineering, Kyushu University, Japan

Oral Session 2: Metals, Ceramics, Composites, Polymers

Time: 08:30-11:55, November 19, 2024

Location: EDK2 (Ground Floor), Block E, Faculty of Engineering and Green Technology

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

Time	Paper ID	Presentation title & Presenter
08:30-08:50	CMSE5071	Effect of Carbon Contents on Microstructure and Properties of Nb-Si Based Ultrahigh Temperature Alloys <i>Prof. Xiping Guo</i> , State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, China
08:50-09:10	CMSE5056	Nano-Bainitic Steel - Effect of TMP Parameters on Isothermal Bainite Transformation Kinetics and Microstructure <i>Dr. Raj Kumar Prasad Singh</i> , Kalyani Center for Technology and Innovation, Bharat Forge Limited, India

09:10-09:30	CMSE5034	Microstructure and Mechanical Properties of Biomedical Alloys Spark Plasma Sintered from Elemental Powders <i>Prof. Milos Janecek, Department of Physics of Materials, Charles University, Czech Republic</i>
09:30-09:50	CMSE5170	Development of VAW Alumina Technology <i>Dr. Horst Peters, Business owner, ATC Bonn, Germany</i>
09:50-10:10	CMSE5146	Optimizing Gamma Radiation Shielding in Pr³⁺ Doped Boro-Tellurite Glasses: A Study of Attenuation Properties and Performance <i>Dr. Surbhi Sharma, P.G. Department of Physics, Kanya Maha Vidyalaya, India</i>
10:10-10:25	CMSE5182	Tribological Behavior Investigation of Enset/Sisal Hybrid Reinforced Composites <i>Prof. Hirpa Lemu, Faculty of Science and Technology, University of Stavanger, Norway</i>
Coffee Break @10:25-10:40		
10:40-10:55	CMSE5067	New Alternative Equivalent Phantom Materials Developed for Radiotherapy Applications <i>Dr. Damilola Oluwafemi Samson, Department of Physics, Faculty of Science, University of Abuja, Nigeria</i>
10:55-11:10	CMSE5046	Effect of Slip Velocity and Roughness on the Jenkins Model Based Ferrofluid Lubrication of a Curved Rough Annular Squeeze Film <i>Dr. Jimitkumar R. Patel, Department of Mathematical Sciences, P. D. Patel Institute of Applied Sciences, Charotar University of Science and Technology (CHARUSAT), CHARUSAT Campus, India</i>
11:10-11:25	CMSE5088	Microstructure and Mechanical Properties of Ti-Nb-Zr-Cr and Ti-Nb-Fe-Sn Biocompatible Alloys Prepared by Additive Manufacturing <i>Dr. Tomas Krajnak, Department of Physics of Materials, Charles University, Czech Republic</i>
11:25-11:40	CMSE5181	Inelastic Buckling of Reinforcing Bars - Constitutive Model for Monotonic Compression <i>Dr. Jacek Korentz, Institute of Civil Engineering, University of Zielona Góra, Poland</i>
11:40-11:55	CMSE5121	Recent Trends of Polymer Composites for Future Applications <i>Dr. Marwa Eid Abdel Aziz Mohamed, Composite Materials Department, Advanced Materials Division, Central Metallurgical Research and Development Institute, Egypt</i>

Oral Session 3: Characterization and Testing

Time: 14:00-16:15, November 19, 2024

Location: EDK2 (Ground Floor), Block E, Faculty of Engineering and Green Technology

Session Chair: Dr. Maria del Carmen Moran, Universitat de Barcelona, Spain

Time	Paper ID	Presentation title & Presenter
14:00-14:20	CMSE5125	Superhydrophobic Materials in Marine Environment and Underwater Robotic Applications <i>Dr. Michele Ferrari, CNR - ICMATE, Italy</i>
14:20-14:40	CMSE5126	Superhydrophobic Coatings for Functional Biomedical Materials <i>Dr. Maria del Carmen Moran, Departament de Bioquímica i Fisiologia, Secció de Fisiologia—Facultat de Farmàcia i Ciències de l'Alimentació, Universitat de Barcelona, Spain</i>
14:40-15:00	CMSE5112	Synthesis of Circularly Polarized Luminescence Emitters Based on Planar Chiral [2.2]Paracyclophanes <i>Prof. Yasuhiro Morisaki, School of Biological and Environmental Sciences, Kwansei Gakuin University, Japan</i>
15:00-15:15	CMSE5106	An Analytical Approach to Examine the Behavior of a Rotating Annular Bearing System under Squeeze Film Conditions Using the Rabinowitz Fluid Model (RFM) <i>Dr. Rakesh Manilal Patel, Department of Mathematics, Gujarat Arts & Science College, India</i>
15:15-15:30	CMSE5122	Investigating the Corrosion Rate and Hardness of Mild Steel Jointed by Arc and CO₂ Welding Processes <i>Dr. Mothibeli Pita, Department of Mechanical, Bioresources and Biomedical Engineering, University of South Africa, South Africa</i>
15:30-15:45	CMSE5081	Synthesis and Characterization of Novel 5-Bromindenones via Suzuki Coupling Reactions <i>Prof. Salih Ökten, Department of Maths and Science Education, Faculty of Education, Kırıkkale University, Türkiye</i>
15:45-16:00	CMSE5082	The Synthesis of New 1-indanone Derivatives by Suzuki Miyaura Reaction of 6-bromoindanone with Boronic Acids and Their Characterization by NMR, FT-IR Techniques <i>Dr. Yavuz Derin, Department of Chemistry, Faculty of Science, Sakarya University, Türkiye</i>

16:00-16:15	CMSE5105	<p>Optimizing Chitosan Conjugation with Eriocitrin: Enhancing Antioxidant Properties Through Conventional and Microwave Heating Methods</p> <p><i>Dr. Zafer Ömer Özdemir, Hamidiye Faculty of Pharmacy, University of Health Sciences Türkiye, Türkiye</i></p>
-------------	----------	---

Coffee Break @16:15-16:30

Poster Session @16:30-17:30

Part IV Poster Session

Poster Presentation Guidelines

Materials Provided by the Conference Organizer:

- Poster Softboard
- Adhesive Tapes or Clamps

Materials Provided by the Presenters:

- Home-Made Posters
- Posters Printed by Conference

Requirement for the Posters:

- Material: not limited
- Size: A1, 841 cm (height) x594 cm (width)

Best Poster Presentation Selection Procedure

Selection Criteria:

- Research Quality
- Presentation Skill
- Design

Selection Procedure:

- 10 volunteers will be invited from the participants to serve as the judges to review the posters (Note: A judge would not have a poster or know the participant exhibiting a poster)
- 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 of high quality or well designed and well presented, please be noticed that the judge cannot give 2 red or 2 green stickers to the same poster (one red and one green sticker are acceptable)
- After the poster session, the conference secretary will count the points from each poster and ONE best poster presentation with more points will be selected. If there is a tie, the one with more red (Research Quality) stickers wins.

Nature of the Award

- This award consists of free registration to the CMSE 2025 and a certificate.
- **ONE Best Poster Presenters** will be selected after session finishes with certificate issued and results announced on CMSE2024 website.

Samples of Stickers



List of Posters

Time: 16:30-17:30, November 19, 2024

Location: Outside EDK2 (Ground Floor), Block E, Faculty of Engineering and Green Technology

CMSE5066	<p>Outline on Selected Properties of Densified Veneers and the Produced Plywood</p> <p><i>Dr. Emilia-Adela Salca Manea, Faculty of Furniture Design and Wood Processing, Transilvania University of Brasov, Romania</i></p>
CMSE5083	<p>Development of MXene-based Composite Material with Electromagnetic Shielding Effectiveness of More than 75 dB for Hologram HUD Driving Parts Used in Automobiles</p> <p><i>Ms. Il-Ji Bae, Smart Electronics Research Center, Korea Electronics Technology Institute, Republic of Korea</i></p>
CMSE5085	<p>Electrical Insulation Property of Amorphous Carbon Films Classified Based on Optical Constants</p> <p><i>Mr. Eito Ichijo, Department of Electrical and Electronic Engineering, Graduate School of Engineering, Tokyo Denki University, Japan</i></p>
CMSE5086	<p>Antibacterial and Antiviral Properties of Cu-DLC by Using Targets Mixed with Different Cu:C Ratio</p> <p><i>Mr. Kentaro Takizawa, Department of Electrical and Electronic Engineering, Tokyo Denki University, Japan</i></p>
CMSE5087	<p>Evaluation of Carbon Films Produced by Convertible Sputtering and Analysis of the Influence of Deposition Conditions Using Machine Learning</p> <p><i>Mr. Katsuki Hirose, Department of Electrical and Electronic Engineering, Graduate School of Engineering, Tokyo Denki University, Japan</i></p>
CMSE5099	<p>A Study on the Interaction and Inhibition of Important Compounds in the Cannabis Sativa Plant with the 5p21 Receptor</p> <p><i>Dr. Faik Gökalp, Department of Mathematics and Science Education, Kırıkkale University, Turkey</i></p>
CMSE5113	<p>Formation and Characterization of Interfacial Oxide</p> <p><i>Mr. Sang Hun Hwang, Department of Semiconductor Engineering, Hoseo University, Republic of Korea</i></p>
CMSE5119	<p>Crystal Structure and Antibacterial Activity of Silver-Doped Zirconia on Heat Treatment</p> <p><i>Mr. Tadahiro Higashinakao, Graduate School of Medical and Dental Sciences, Kagoshima University, Japan</i></p>

CMSE5123	<p>Investigate the Aluminum 1050-H4 Microstructure, Hardness, and Wear Characteristics when Reinforced with Maize Cob Particles</p> <p><i>Dr. Mothibeli Pita, Department of Mechanical, Bioresources and Biomedical Engineering, University of South Africa, South Africa</i></p>
CMSE5140	<p>Enhanced Thermoelectric Properties in $\text{Co}_3(\text{BO}_3)_2$- and NaF-doped $\text{Bi}_2\text{Sr}_2\text{Co}_2\text{O}_y$ Ceramics</p> <p><i>Dr. Giorgi Mumladze, Institute of Cybernetics, Georgian Technical University, Georgia</i></p>
CMSE5155	<p>Comprehensive Analytical Model for Free Vibration of Graphene - Reinforced Composite Beams on Elastic Supports</p> <p><i>Dr. Amale Mahi, Laboratory of Aeronautical Sciences, Institute of Aeronautics and Space Studies, University of Blida 1, Algeria</i></p>
CMSE5159	<p>Microstructure and Surface Morphology of Cu(FeCo) Thin Films Obtained by Thermal Evaporation of Milled Powder</p> <p><i>Dr. Zineb Hamlati, Laboratory of Aeronautical Sciences, Institute of Aeronautics and Space Studies, University of Blida 1, Algeria</i></p>
CMSE5160	<p>Structure, Microstructure and Hyperfine Properties of Nanostructured FeAl and FeAl-2wt.%Sn Powders</p> <p><i>Dr. Zineb Hamlati, Laboratory of Aeronautical Sciences, Institute of Aeronautics and Space Studies, University of Blida 1, Algeria</i></p>
CMSE5164	<p>Twinning and Deformation Banding in Copper Single Crystals of Nominally Stable Orientations Deformed at High Strain Rates</p> <p><i>Dr. Sandra Puchlerska, AGH University of Science and Technology, Poland</i></p>
CMSE5166	<p>Investigation of the Cathode Fabrication with Fluorine-free Binder</p> <p><i>Dr. Je-Nam Lee, Advanced Batteries Research Center, Korea Electronics Technology Institute (KETI), Republic of Korea</i></p>
CMSE5167	<p>Investigation of the Effect of the Cathode Fabrication on the Electrochemical Performance of the Dry Process Cathode Electrode</p> <p><i>Dr. Je-Nam Lee, Advanced Batteries Research Center, Korea Electronics Technology Institute (KETI), Republic of Korea</i></p>
CMSE5171	<p>Study of Human Synovial Hip Joint in View of Squeeze Film Lubrication</p> <p><i>Dr. Rakesh M. Patel, Department of Mathematics, Gujarat Arts & Science College, India</i></p>

CMSE5172

Impact of Couple Stresses on the Static and Dynamic Characteristics of a Magnetohydrodynamic (MHD) Wide Tapered Land Slider Bearing

Dr. Rakesh M. Patel, Department of Mathematics, Gujarat Arts & Science College, India

CMSE5176

Development of Dielectric Ceramic Capacitors using Sr^{2+} and Co^{2+} Co-Substituted Lanthanum Orthoferrite Perovskite for Energy Storage Applications

Prof. M.A. Gabal, Chemistry Department, Faculty of Science, King Abdulaziz University, Saudi Arabia

Part V Conference Venue

Venue: Universiti Tunku Abdul Rahman (Kampar)

Address: Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia

Website: <https://utar.edu.my/>



Access to Universiti Tunku Abdul Rahman (Kampar)

1. Kuala Lumpur International Airport (KLIA) T1 or T2 →Universiti Tunku Abdul Rahman (Kampar)



(The whole journey will take about 3.5 hrs)

- ◆ First, from the airport (**KLIA T1 or KLIA T2**), take **KLIA Ekspres** to reach **KL Sentral Station** (about 35 - 40 min).

The KLIA Ekspres service links KLIA T1 and KLIA T2 to Kuala Lumpur Sentral Station.

KLIA T1 - KL Sentral Station 35 min (available every 20 min; Earliest 05:00, Latest 00:05)

KLIA T2 - KL Sentral Station 40 min (available every 20 min; Earliest 04:55, Latest 00:00)

For more details, please refer to <http://www.kliaekspres.com/>

- ◆ Then take **KTM ETS train** from **KL Sentral Station** to reach **Kampar Railway Station** (about 2h 14 min).

Please click here for the **ETS train timetable** for references (it may change subjected to actual conditions) or please check more details at <http://www.ktmb.com.my/ktmb/index.php?r=portal/index>

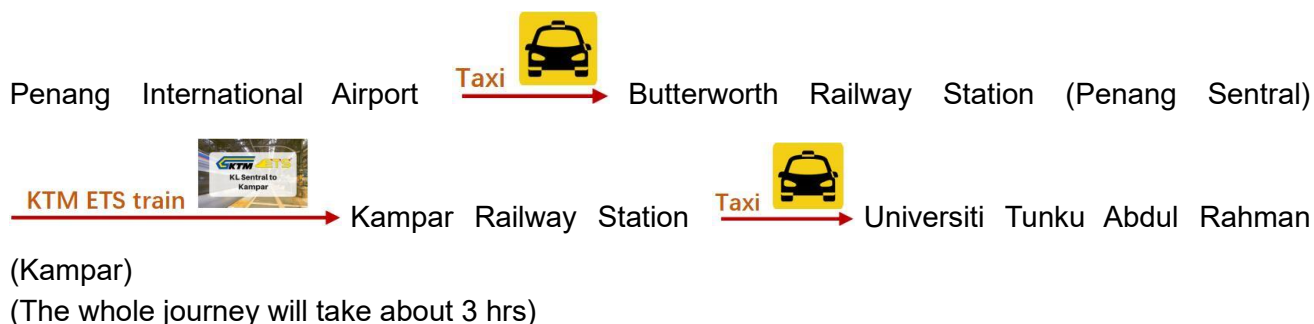
- ◆ At last, from **Kampar Railway Station**, take a taxi to **Universiti Tunku Abdul Rahman (Kampar)** (About 2.2 km).

(2) Directly By Taxi (About 2.5 hrs-3.5 hrs)

Kuala Lumpur International Airport Terminal 1 (KLIA) practices a Two-Tier Taxi Services system, involving both limousines provided by taxi concessionaire Airport Limo and city cabs to pick up passengers at the KLIA, to reduce waiting time for passengers to under 10 minutes. More information about Taxi Service could be found via <https://www.klia2.info/klia/taxi-services/>

- ◆ Meterer Taxis are available at level 1 and 3 of the Main Terminal Building;
- ◆ The taxi and limo services at KLIA operate through a coupon system that you purchase at Airport Limo counters at:
 1. International Arrival Hall (just after Customs, before the public arrival area)
 2. Domestic Arrival Hall (public area after Domestic Baggage Clearance)
 3. Domestic Baggage Reclaim, Arrival Level
- ◆ It takes about 2.5 hrs to 3.5 hrs by taxi.
- ◆ More information about the Airport Taxi and Metered Taxi Service could be found via
 - [Airport Taxi & Limo Services](#)
 - [Metered Taxi Services](#)

2. Penang International Airport → Universiti Tunku Abdul Rahman (Kampar)



- ◆ First, from the airport, **take a taxi** to reach **Butterworth Railway Station (Penang Sentral)** (about 27km, 26 min).

Taxis at the Penang International Airport are managed by a consortium, using a coupon system. Coupon are to be purchased at the counter just outside the arrival hall, immediately after custom clearance. After purchasing the coupon, go directly to the taxi waiting area, where a number of taxis will be available.

- ◆ Take **KTM ETS** from **Butterworth (Penang Sentral)** to reach **Kampar Railway Station** (about 2h 10 min).

Please click here for the [ETS train timetable](#) for references (it may change subjected to actual conditions).

- ◆ At last, from **Kampar Railway Station**, **take a taxi** to **Universiti Tunku Abdul Rahman (Kampar)** (About 2.2 km).

Part VI Acknowledgements

On behalf of the CMSE2024 Organizing Committee, we would like to take this opportunity to express our sincere gratitude to all participants. Without their support and contributions, we would not have been possible to hold the conference successfully. We would also like to extend our thanks to the Technical Program Committee members for providing their professional guidance and invaluable feedbacks as reviewers. Additionally, we wish to acknowledge and thank all those who contributed to the successful organization of the conference but whose names are not listed here.

Technical Program Committee

Local Committee Chair

Ir. Prof. Dr. Ng Choon Aun, Faculty of Engineering and Green Technology, Universiti Tunku Abdul Rahman, Malaysia

Local Committee Member

Assist. Prof. ChM. Dr. Wong Lai Peng, Faculty of Engineering and Green Technology, Universiti Tunku Abdul Rahman, Malaysia

Assoc. Prof. Dr. Guo Xinxin, Faculty of Engineering and Green Technology, Universiti Tunku Abdul Rahman, Malaysia

Ms. Au Chui Ling, Faculty of Engineering and Green Technology, Universiti Tunku Abdul Rahman, Malaysia

Technical Committee Member

Prof. Osman Adiguzel, Department of Physics, Firat University, Turkey

Prof. Ignazio Blanco, Department of Civil Engineering and Architecture, University of Catania, Italy

Prof. Raul Duarte Salgueiral Gomes Campilho, Department of Mechanical Engineering, Instituto Superior de Engenharia do Porto (ISEP), Portugal

Prof. Chin-hua Chia, Materials Science Program, Universiti Kebangsaan Malaysia, Malaysia

Prof. Soner Cubuk, Faculty of Science, Marmara University, Turkey

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

Prof. Pavlo Maruschak, Vice-Rector for Scientific Research of Ternopil Ivan Puluj National Technical University, Ukraine

Prof. Ruzica Nikolic, Research Center, University of Zilina, Slovakia

Prof. Leonardo Pagnotta, Department of Mechanical, Energy and Management Engineering, University of Calabria, Italy

Prof. Henryk Paul, Institute of Metallurgy and Materials Science, Polish Academy of Sciences, Poland

Prof. T V V L N Rao, Faculty of Engineering, Assam Down Town University, India

Prof. Stefan Segla, Department of Applied Mechanics and Mechanical Engineering, Technical University of Kosice, Slovakia

Prof. Sigita Tamulevičius, Physics Department, Kaunas University of Technology (KTU), Republic of Lithuania

Prof. Ali Zaidi, Department of Civil Engineering, Laghouat University, Algeria

Assoc. Prof. Luís F. A. Bernardo, Department of Civil Engineering and Architecture, University of Beira Interior, Portugal

Assoc. Prof. Muhammad Akram Chaudhry, Chemistry Department of Education, Government of the Punjab, Pakistan

Assoc. Prof. Lai Chin Wei, Nanotechnology & Catalysis Research Centre, University of Malaya, Malaysia

Dr. Nikolai Boshkov, Department "Electrochemistry and Corrosion", Bulgarian Academy of Sciences, Bulgaria

Dr. Abderrazak Boutramane, Ibn Zohr University, Morocco

Dr. N. Ethiraj, Dr.M.G.R Educational and Research Institute - University, India

Dr. Fábio Fernandes, Centre for Mechanical Technology and Automation, Department of Mechanical Engineering, University of Aveiro, Portugal

Dr. Boutheina Ben Fraj, Nanomaterials and Systems for Renewable Energy Laboratory (LaNSER), Research and Technology Center of Energy (CRTEn), Tunisia

Dr. Azman Ismail, Universiti Kuala Lumpur Malaysian Institute of Marine Engineering Technology, Malaysia

Dr. Alexander Khotsianovsky, Pisarenko Institute of Problems of Strength of the National Academy of Sciences of Ukraine, Ukraine

Dr. Laszlo Peter Kiss, Institute of Applied Mechanics, University of Miskolc, Hungary

Dr. Edgar Clyde R. Lopez, Department of Chemical Engineering, University of the Philippines, Philippines

Dr. Jason Ludovic, CEA SACLAY, Mechanics and System Simulation Laboratory, France

Dr. Siti Nur Liyana Mamaud, Institute of Science, Universiti Teknologi MARA, Malaysia

Dr. Diana Manukovskaya, I.V.Tananaev Institute of Chemistry and Technology of Rare Elements and Mineral Raw Materials (ICTREMRM KSC RAS), Russia

Dr. Wahida Abdul Rahman, School of Chemistry, Universiti Teknologi MARA, Malaysia

Dr. Erik Vargas Rojas, Metropolitan Technological University, UTM Merida, Mexico

Dr. Liyuan Sheng, Peking University Shenzhen Institute, China

Dr. Eslam Syala, Materials Science Department, Institute of Graduate Studies and Researches, Alexandria University, Egypt

Dr. Enrico Zacchei, Itecons - Institute for Research and Technological Development in Construction, Energy, Environment and Sustainability, Portugal

Ts. Dr. Farah Hanani binti Zulkifli, Faculty of Industrial Sciences & Technology, Universiti Malaysia Pahang Al-Sultan Abdullah, Malaysia

Website



Contact Us

Conference Secretary: Ms. Ling Li, Ms. Kelly Feng

E-mail: cmse@cmseconf.org

www.cmseconf.org