ARC - IPN Conferences 2023

2nd International Conference on Engineering Research and Application 2023 (ICERA 2023)

International Conference on Chemistry, Chemical Engineering and Biology (ICCCB 2023)

International Conference on Electrical, Electronic and Systems Engineering (ICEESE 2023)

4th International Conference on Business and Social Sciences (ICBSS 2023)

5th Advances in Social Sciences Research International Conference (ASSRIC 2023)

24-26 May 2023
Bangkok, Thailand

CONFERENCE PROGRAM & ABSTRACT

ARC – IPN BANGKOK
<u>Conference 2023</u>

2nd International Conference on Engineering Research and Application 2023 (ICERA 2023)

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Welcome to ARC-IPN Conferences 2023

Dear Professor, Dr and distinguished delegates,

Welcome to the ARC-IPN Conferences 2023 in Bangkok, Thailand. On behalf of *AAN Research Center (ARC) and IPN Education Group Conference Management (IPN)*, I would like to thank all the Conference Chair, Program Chairs and the Technical Committees. Their high competence and professional advice enable us to prepare the high-quality programs. For the participants, we hope all of you have a wonderful time at the conference and also in Bangkok, Thailand.

We believe that by this excellent conference, you can get more opportunities for further communication with researchers and practitioners. For **ICERA 2023, ICCCB 2023, ICEESE 2023, ICBSS 2023** and **ASSRIC 2023** more than 65 submitted papers have been received and 45 papers have been accepted and published finally.

In order to hold more professional and significant international conferences, your suggestions are warmly welcomed. And we are looking forward to meet you again next time.

Best Regards,
Thank you.

Yours Sincerely,

Dato' Syed Azuan Syed Ahmad, DIMP
Director of Conference Management
AAN Research Center

Message from ARC Honorary Advisor

On behalf the AAN Research Center (ARC), it is my privilege to welcome you to the ARC-IPN Bangkok Conferences 2023. ARC is an independent, non-political, non-governmental organization of distinguished scientists dedicated to advancing science around the world. We aim to help scientists and researchers to publish their findings in scientific journals and to promote and help to organize worldwide conferences. We believe that has no boundaries, regardless of the great distances between countries and continents. Thus ARC welcomes contributions from researchers from all concern irrespective to the race, colour, religion and nationality.

Best Regards

Prof. Dr. Makhmud Kharun
Advisor of AAN Research Center

About AAN Research Center

AAN Research Center, we perceive the process of discovery as a creative and rigorous endeavor. We encourage such exploration by supporting the research and development of ideas, solutions, and applications to benefit our community. AAN Research Center strives to inspire students and academic staff to share and serve in the educational field. The AAN Research Centre at ASEAN Academic Network aims to promote the enjoyment of learning and publishing research. ASEAN community values learning and research at all levels. A dynamic range of conferences, workshops, and programs related to research in all disciplines exists to supplement this research center's ongoing development.

www.aseanacdemicnetwork.org
http://www.aseanacademicnetwork.org/arc-conferences.html
www.ipneducationgroup.org

ANNOUNCEMENT

All accepted papers will be published in AIP Conference Proceedings (Indexed by Scopus)
You can view 2nd ICERA 2023 in the Forthcoming Proceedings in AIP Conference Proceeding website

All accepted papers will be published in International Referred Journal indexed in MyCITE, Crossref, Google Scholar etc.
Selected papers subject to reviewers' comments will be invited for submission to the Scopus / WOS-ESCI Indexed journals with extra publication fee.

One Best Presenter Award will be selected from each oral session. The Certificate for Best Presenter award will be awarded after presentation session.

KEYNOTE SPEAKER:

Keynote 1

Dr. Chai Ching Tan
Rajamangala University of Technology Tawan-Ok, Thailand
Vice President ASEAN Academic Network

Keynote 2

Dato' Syed Azuan Syed Ahmad Al-Idrus
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INSTRUCTION FOR ORAL PRESENTATION

Devices Provided by the Conference Organizer:

- Laptop (with MS-Office & Adobe Reader)
- Projector & Screen
- Laser Sticks

Materials Provided by the Presenters:

- PowerPoint or PDF files

Duration of each Presentation (Tentatively):

- Regular oral presentation: about 12 minutes and Q&A 3 minutes
- Keynote speech: about 30 minutes (including Q&A)

Notice: Please keep your belongings (laptop and camera etc) with you!

During registration:

Original Receipt
Representative / Pass Card with lanyard
Participation Certificate (collected from Session Chair after the session)

ICERA 2023
24-26 May 2023
Bangkok, Thailand

May 24, 2023	Venue:	1000 - 1200	Registration	
	Venue:	0830 – 0845	Opening Remarks	**Opening Remarks**
		0845 – 0945	Plenary Speech 1	**Keynote Speaker**
		0945 – 1015	Group Photo and Coffee Break	
May 25, 2023	Venue:	1030 – 1230	Session 1	
	Venue:	1230 – 1330	Lunch	
	Venue:	1330 – 1530	Session 2	
	Venue:	1330 - 1530	Session 3	
May 26, 2023	Lobby hotel	0800 - 1200	Networking	

Session 1
Time: 1030-1230
Venue:
Session Chair:

No	Paper ID	Presenter
1	**005-icera**	**Historical Structure Design Method Trough Data Analysis and Soft Programming** Makhmud Kharun, **Mohammad Hematibahar** and Alireza Esparham *Moscow State University of Civil Engineering, Moscow, Russia*
2	**002-icera**	**Development of Welding Fumes Extractor and Air Purifier for Safety and Risk Reduction** **Johnnie P. Santos** *Don Bosco Technical Institute of Makati, TVET Department, Makati City, Philippines*
3	**011-icera**	**Effect of printing parameters on surface roughness and mechanical properties of wire arc additive manufactured carbon steel** **M. Hietala, T**. Rautio, M. Keskitalo and A. Järvenpää *University of Oulu, Finland*
4	**034-icera**	**Delay in Construction and Failure Mitigation Plan** **Diyana Syafiqah Binti Abd Razak** and Sarvesh A/L Gobi Nath *Heriot-Watt University Malaysia, Malaysia.*
5	**007-icera**	**Tools Selection for Townhouse Demolition in Bangkok: Environmental Impact Analysis** **E. Bamisaye** and T. Chinda *Thammasat University, Thailand*
6	**003-icera**	**1D Steady Flow Flood Modeling of Bacoor River using LiDAR Digital Elevation Model** **Kirson Maynard E. Nodado** and Federico B. dela Peña *Mapúa University, Muralla St. Intramuros, Manila 1002 Philippines*
7	**012-icera**	**Fatigue strength and mechanical properties of laser welded wire arc additive manufactured (WAAM) 316L butt joints** **M. Hietala,** T. Rautio, M. Keskitalo, M. Jaskari and A. Järvenpää *University of Oulu, Finland*
8	**022-icera-jesr**	**Smart and Safe Mock-up Design in Electrical Installation Training** **John Dave Gopez** *Don Bosco Technical Institute-Makati Inc., Chino Roces Ave, Makati, 1230 Metro Manila*

Session 2
Time: 1330-1530
Venue:
Session Chair:

No	Paper ID	Presenter
1	017-icera	**Investigation of Bonding Behaviour of Grouted Bar Connection Using Pull-Out Test** M. R. Md Zain, **C. L. Oh**, M. A. Mohd Khairul Annuar, T. B. Ong, M. A. A. Saiful Madzi and A. Mishad *Universiti Teknologi MARA, Malaysia.*
2	013-icera	**Improving the Fatigue Performance of Binder Jet Manufactured 316L by Severe Shot Peening Surface Mofification** **Timo Rautio,** Matias Jaskari, Mikko Hietala, and Antti Järvenpää *University of Oulu, Finland.*
3	021-icera-jesr	**Technical-Vocational Education and Training in a Bubble Community through Open and Distance e-Learning: An Evaluative Study** **Jhenly Asedillas** *Don Bosco One-TVET Philippines Inc., Chino Roces Ave, Makati, 1230 Metro Manila*
4	032-icera	**Revolutionizing Wind Energy Harvesting: Design and Performance Analysis of A Small-Scale ARC-Shaped Pendulum Vortex Bladeless Turbine** **Abdul Hadi Shaisham,** Mohamad Ikhwan Syafiq Zaidi, Mohamad Alif Omar and Azfarizal Mukhtar *Universiti Tenaga Nasional (UNITEN), Malaysia*
5	018-icera	**Conceptual Design of Hybrid Renewable Energy System with Hydrogen-Battery Storage Systems** W.W. Tan, H. Zen and **S.L. Leo** *i-CATS University College, Kuching, Malaysia*
6	014-icera	**Fatigue Properties of MEX Manufactured 316L and The Effect of Severe Shot Peening** **Timo Rautio,** Miguel Araya, Matias Jaskari, Mikko Hietala, and Antti Järvenpää *University of Oulu, Finland.*
7	004-icera	**Behavioral Intention of Overseas Students to Study Online: Social Impact Theory Perspective** **Bin Chen** and Xuemei Sun *International College of National Institute of Development Administration (ICO NIDA). Thailand*
8	023-icera-jesr	**Design of Portable Electronic Brake Bleeder with Interchangeable Adapter and Integrated Trouble Light** **Marshall Nicolane Pagayon** *Don Bosco Technical Institute-Makati Inc., Chino Roces Ave, Makati, 1230 Metro Manila*
9	028-icera	**An Analysis of Direct Pressure Performance of a Wave Energy Converter using Dielectric Elastomer Generators (DEGs) with Different Topologies** **Mohamad Alif Omar**, Zykri bin Ahmad Firdaus, Mohamad Ikhwan Syafiq Zaidi, Abdul Hadi Shaisham, Ahmad Shah Hizam Md Yasir, Azfarizal Mukhtar and Mohd Zamri Yusoff *Universiti Tenaga Nasional (UNITEN), Malaysia*

Session 3
Time: 1330-1530
Venue:
Session Chair:

No	Paper ID	Presenter
1	024-icera-jesr	**Fabrication of Jigs in Toolbit Grinding for Shop Safety and Efficiency** **Jerwin dela Fuente** *Don Bosco Technical Institute-Makati Inc., Chino Roces Ave, Makati, 1230 Metro Manila*
2	015-icera	**Macrostructure Behaviour of Self-Compacting Concrete (SCC) Encompassing Eggshell** **M R Md Zain**, C L Oh, S W Lee, A Mishad[1] and N A Mohd Sofi *Universiti Teknologi MARA, Malaysia.*
3	009-icera	**The Knowledge Management Process of Construction Companies in Vietnam: Exploratory Factor Analysis** **Vo Dang Khoa** and Thanwadee Chinda *Thammasat University, Pathum Thani, Thailand*
4	036-icera	**Assessment of Building Information Modelling (BIM) Contract Application in Malaysia Construction Industry** **R.A Rahman** and M.H.A.R Najib *Heriot-Watt University Malaysia, Malaysia.*
5	037-icera	**Rain Attenuation in Worst Month for 5G network in Tropical Region (Malaysia) for Terrestrial Link** **Kesavan Ulaganathen,** G.L.D. Wicramasinghe, Mian K. Ehsan, Tharek A.R. and Rafiqul M. Islam *Colombo Plan Staff College, Metro Manila, Philippines*
6	025-icera-jesr	**Used-Engine Oil in Aluminum Metal Upcycling: A Proposed Circular Economy Strategy** **Syrael Soque** *Don Bosco Technical College, Chino Roces Ave, Makati, 1230 Metro Manila*
7	018-icera	**FEM on Short T Normal Curing Carbon Fiber Reinforced Polymer (CFRP) Strengthened to RC Beam** **Amiruddin Mishad,** Mohd Hisbany Mohd Hashim, Azmi Ibrahim, Oh Chai Lian, Nurnajmi Safiuddin bin Husain and Mohd Raizamzamani Md Zain *Universiti Teknologi MARA (UiTM) Shah Alam, Selangor, Malaysia*
8	031-icera	**CFD Simulation of The Effectiveness of Wind Catchers in Improving the Ventilation Rate of Underground Parking Garages** **Mohamad Ikhwan Syafiq Zaidi,** Abdul Hadi Shaisham, Mohamad Alif Omar, Ahmad Shah Hizam Md Yasir and Azfarizal Mukhtar *Universiti Tenaga Nasional (UNITEN), Malaysia*

Session 4
Time: 1545 - 1745
Venue:
Session Chair:

No	Paper ID	Presenter
1	001-iceese	**Adaptive Wavelet De-noising Algorithm using Absolute Difference Optimization Technique for Partial Discharge Signal** Chin Kui Fern, **Chai Chang Yii,*** Asfarina Abu Bakar, Herwansyah Lago, Pungut Ibrahim, Ahmad Razani Haron *i-CATS University College, Kuching, Sarawak, Malaysia.*
2	001-icbss	**Uncovering the Intention to Use Digital Banking Services among Commercial Banks' Customers: Structural Equation Modelling Approach** **Liana Mohamad,** Zahir Osman, Ratna Khuzaimah Mohamad, Zulaihan Ismail and Mohd Irman Mohd Din *Open University Malaysia, Malaysia*
3	008-icccb	**Development of Pyrochlore Structured Materials for Intermediate Temperature Solid Oxide Fuel Cell Applications** Ajay Raj, **Anjana P. Anantharaman** *National Institute of Technology Warangal, India*
4	002-assric	**Spatial Intelligence for Senior High School Students** **Fellix Rimba**, Nandi and Annisa Joviani Astari *Universitas Pendidikan Indonesia, Indonesia*
5	006-icccb	**Survival of Isolated Probiotic Yeast Strains from Kefir Towards Bile and Acidic Environments** **Azhar, M.A** *Universiti Malaysia Pahang, Pahang, Malaysia*
6	003-assric	**Market sentiment in a nancial evolutive model with biased fundamentalist and chartists** **N. Pecora** *Catholic University, Piacenza, Italy*
7	007-icccb	**Elucidating the Toxicity of Imidazolium-based Surface-Active Ionic Liquids (Im-SAILs) against Gram Positive and Gram Negative Bacteria** **Magaret Sivapragasam,** Mok Shue Yee and Kafilat Bawa-Allah *QUEST International University, Perak, Malaysia.*

Conference Venue

Ibis Bangkok Riverside
27 Soi Charoen Nakhon 17, Bang Lamphu Lang,
Khlong San, Bangkok 10600, Thailand

Conference Secretariat Contact:
AAN RESEARCH CENTER
No. 7, Tingkat Atas,
Jalan Penjara, 01000 Kangar,
Perlis, Malaysia

Programme website:
www.aseanacademicnetwork.org

Note

List of Abstract

No	Paper ID	Presenter
1	002-icera	**Development of Welding Fumes Extractor and Air Purifier for Safety and Risk Reduction** **Johnnie P. Santos** *Assistant Technical Director, Don Bosco Technical Institute of Makati, TVET Department, Makati City, Philippines* **Abstract:** The study, Development of an Emission Extractor and Air Purifier for safety and risk reduction, aims to extract hazardous emissions from Shielded Metal Arc Welding (SMAW) process in an indoor fabrication specially in a confined work area. The prototype has five major parts such as extraction nozzle, paper filter, activated carbon filter, wet scrubber and automatic motor control. The prototype is tested in a confined work area to determine its performance in terms of air purification as compared to welding machine aided with ordinary ventilation. Comparative test results show that using the prototype in welding of galvanized iron pipe and E6011 reduced the concentration of carbon monoxide to 100 % and metal fume concentration to 70 %. Welding of mild steel plate using E7018 electrode reduced carbon monoxide, nitric oxide, and nitrogen oxide concentration to 100% and metal fume concentration to 92 %. Welding using 304 stainless steel and E308 electrode reduced the nitric oxide and nitrogen oxide concentration to 75 %, nitrogen dioxide to 100 % and fume concentration to 97 %. The results of the prototype complied with the rules of Clean Air Act of the Philippines and Occupational Safety and Health Standard of the Philippines. The prototype was evaluated by 33 experts and got an overall rating of 4.77 with a descriptive rating of Highly Acceptable. This proves that the prototype was successfully designed and fabricated to extract and purify hazardous fumes and gases during welding operation.
2	003-icera	**1D Steady Flow Flood Modeling of Bacoor River using LiDAR Digital Elevation Model** **Kirson Maynard E. Nodado**[1] and Federico B. dela Peña[1,2]

[1]Mapúa University, Muralla St. Intramuros, Manila 1002 Philippines
[2]Department of Public Works and Highways, Manila, National Capital Region, Philippines

Abstract: In the 2021 World Risk Report, the Philippines is ranked 8th in global disaster risk worldwide which made the country highly vulnerable to extreme weather events. On the 24th of July 2021, Typhoon Fabian still affected some areas in the country. Among the areas flooded by the Typhoon is Bacoor, Cavite. The study aims to create a 1D Steady flow flood model using HEC-RAS to determine the flood-prone areas in the downstream portion of the Bacoor River. The Hydraulic model flood map verified from Flood Hazard Map showed the critical areas in the downstream portion of the Bacoor river: Campo Santo, Habay II, Alma, P.F. Espiritu VII, and P.F. Espiritu VIII. HEC-RAS flood modeling is beneficial for flood hazard awareness in selected low-lying areas.

3	004-icera	**Behavioral Intention of Overseas Students to Study Online: Social Impact Theory Perspective**

Bin Chen and Xuemei Sun

International College of National Institute of Development Administration (ICO NIDA). 19th Floor Navamindradhiraj Building, 148 Serithai Road, Klong-Chan, Bangkapi, Bangkok Thailand 10240.

Abstract: The impact of social uncertainties on human beings is a force that should be concerned. Therefore, in order to determine the possible impact of social changes on college students, this study presents a conceptual model of online learning acceptance based on the social impact theory and unified theory of acceptance and use of technology model. The data from 527 college students who attended Thailand University is analyzed using partial least squares and structural equation modelling. Software for data analysis and model validation included JASP and Smart-PLS. The analysis revealed that the updated model fit with the data well, and the investigation discovered that exogenous latent variables: The behavior intention in online learning was favorably connected with social influence, effort expectancy, and performance expectancy($R2=0.416$), furthermore, social isolation and plague fear is significant positively to the online learning attitude, and attitude is significant positively to behavior intention, finally, behavior intention and facilitating conditions were positively correlated with online learning actually use ($R2=0.366$). This paper found under the special situation, when students have to encounter social isolation and feel fear of plague, they were willing to conduct online learning. This study shows that universities should help college students overcome the problems they encounter when they are hit by social impact, such as social isolation and fear of plague, so as to enhance the effect of online learning.

4	005-icera	**Historical Structure Design Method Trough Data Analysis and Soft Programming**

Makhmud Kharun[1], **Mohammad Hematibahar[1]** and Alireza Esparham[2]

[1]Department of Reinforced Concrete and Stone Structures, Moscow State University of Civil Engineering, Moscow, Russia
[2]Department of Environmental Engineering, University of Tehran, Tehran, Iran

Abstract: The present study is focused on the method of designing historical structures through data analysis and soft programming. The current research aimed to find the design method of the old columns of the structure and compare it with modern design methods. The case study was Goharshad Mosque (1400

		AC) located in Iran, Mashhad. A correlation matrix was created to find the relationship between structure parameters by data mining in Python. The results indicate that the modern design method was more reliable than the old method due to the safety factor, but some parameters such as loading calculation in the historical method and the modern method were the same with more than 70% similarity. But the results of the coefficient of determination show that the loading of the R2 results was more than 0.44 and the area of the columns was more than -0.5. The modern and old design has a big engineering gap. Finally, the current study shows the old structure design method and compares it with the new design method.
5	007-icera	**Tools Selection for Townhouse Demolition in Bangkok: Environmental Impact Analysis** **E. Bamisaye** and T. Chinda *School of Management Technology, Sirindhorn International Institute of Technology, Thammasat University, 99 Moo 18, Km. 41 on Paholyothin Highway Khlong Luang, Pathum Thani 12120, Thailand* **Abstract:** In Bangkok, many structures have been built to accommodate the needs of the rapidly developing economy, leading to higher construction and demolition, the construction sector is the major source of environmental issues and any typical demolition activities that involve using different demolition tools generate many pollutants, therefore there is the necessity to accelerate research in the field of demolition works that will have the least impact on the environment. this research study aims to assess an overview of demolition tools used in townhouse demolition in Thailand with their environmental impact. The tools selection and their combinations for townhouse demolition are adopted from the interview of experts in the construction industry. The identifications of environmental impacts caused by the usage of each demolition tool are based on an in-depth literature review. Five impacts include noise, dust, heat, primary energy consumption and CO_2 equivalent emissions are identified in this study. Combination 4 with the usage of demolition robots and hydraulic splitters generates least impact. It is concluded that environmental protection, surroundings, and safety of workers are vital in the selection of demolition tools in the demolition process. Although demolition robot is not yet available in Thailand, it is safe, effective, and fast as it produces little to no dust, noise, or vibration and reduced air pollution.
6	009-icera	**The Knowledge Management Process of Construction Companies in Vietnam: Exploratory Factor Analysis** **Vo Dang Khoa** and Thanwadee Chinda *School of Management Technology, Sirindhorn International Institute of Technology, Thammasat University, Pathum Thani, Thailand* **Abstract:** The construction industry has been undergoing a transformation in management and production processes through the adoption of Industry 4.0 technology. Implementing a knowledge management process is crucial in helping companies design processes and digitize operations to reduce costs, increase productivity, improve quality, and enhance competitiveness. This study aims to examine the factors of the knowledge management process in the Vietnamese construction industry. Firstly, a literature review was conducted to define the factors of the knowledge management process from previous studies. Subsequently, a questionnaire was developed with 28 items of factors, which

		were used for data collection. Finally, exploratory factor analysis was performed on data collected from respondents who work in construction companies in Vietnam through questionnaire surveys. The research findings reveal that the knowledge management process comprises five key factors: knowledge utilization, knowledge responsiveness, knowledge acquisition, knowledge storage, and knowledge distribution. Construction managers and practitioners can refer to these factors to develop an effective strategy for knowledge management and digital transformation in their respective companies.
7	011-icera	**Effect of printing parameters on surface roughness and mechanical properties of wire arc additive manufactured carbon steel** **M. Hietala, T**. Rautio, M. Keskitalo and A. Järvenpää *University of Oulu, Kerttu Saalasti Institute, Pajatie 5, FI-85500 Nivala, Finland* **Abstract:** In this paper effect of printing parameters on surface roughness and mechanical properties of wire arc additive manufactured (WAAM) carbon steel is evaluated. WAAM has become more common as an additive manufacturing method, especially in the production of large parts. Using welding equipment that utilizes the cold metal transfer (CMT) in the production of WAAM parts enables good quality of the parts. However, the printing parameters are important in terms of material properties. The effects of five different printing parameters on the material properties were evaluated. The microhardness measurements were made in the deposition direction of the printed walls. The optical microscopy was used to evaluate surface roughness of the printed carbon steel. Tensile tests were conducted to evaluate mechanical properties of the WAAM printed carbon steel. Based on hardness measurements, the material is uniformly hard with all printing parameters. There were also no defects on the material, such as pores. Clear differences were noticed in the surface roughness of the material between different printing parameters. The printing parameters did not affect the tensile strength of printed carbon steel significantly, but there were clear differences between the elongations with different parameters.
8	012-icera	**Fatigue strength and mechanical properties of laser welded wire arc additive manufactured (WAAM) 316L butt joints** **M. Hietala,** T. Rautio, M. Keskitalo, M. Jaskari and A. Järvenpää *University of Oulu, Kerttu Saalasti Institute, Pajatie 5, FI-85500 Nivala, Finland* **Abstract:** In this study fatigue strength and mechanical properties of laser welded wire arc additive manufactured AISI 316L butt joints are investigated. The laser welding experiments were performed with two different welding parameters. Microstructure of the joints was analysed utilizing electron back scattering diffraction (EBSD). The weld morphologies were investigated using optical microscopy. Hardness measurements were conducted on the joints in order to evaluate the mechanical properties of the heat-affected-zone (HAZ). The mechanical properties of the joints were also evaluated by performing tensile tests. The fatigue strength of the joints was evaluated by performing bending fatigue tests. The microstructure studies showed that the HAZ was not visible, and the microstructure of the material had changed only in the weld metal. According to the hardness measurements, the hardness of the joints was slightly higher than the hardness of the base material. The welding parameters clearly influenced the morphology of the weld. The tensile tests revealed that the tensile strength of the laser welded joints was equivalent to the strength of the base material. Based on fatigue tests, the fatigue limit of the welded joints was

		significantly lower than that of the base material.
9	013-icera	**Improving the Fatigue Performance of Binder Jet Manufactured 316L by Severe Shot Peening Surface Modification** **Timo Rautio,** Matias Jaskari, Mikko Hietala, and Antti Järvenpää *Future Manufacturing Technologies, University of Oulu, Pajatie 5, Nivala, Finland.* **Abstract:** Binder jetting is currently one of the most promising techniques challenging the position of laser powder bed fusion as the top technology for metal additive manufacturing. This work focuses on the material properties of austenitic stainless steel 316L manufactured with binder jet technique. Porosity is an issue with all additive manufacturing technologies, and it has a detrimental effect on material properties and is known to reduce fatigue life of the parts. Post treatment utilizing surface modification by severe shot peening is proposed to overcome these issues. To reveal the effects, microstructural analysis including EBSD was carried out and tensile testing used to reveal the mechanical properties. Both axial and flexural bending fatigue testing was utilized to investigate the fatigue behaviour of the material. The results showed that a considerable increase in strength of the material could be obtained with the post treatment. This was also reflected in the fatigue performance of the material as the fatigue limit in bending fatigue could be raised from the 120 MPa level of the base material to 190 MPa. It was concluded that this type of post processing is very suitable for improving the material properties in demanding applications and increases the use cases for the binder jet printed 316L.
10	014-icera	**Fatigue Properties of MEX Manufactured 316L and The Effect of Severe Shot Peening** **Timo Rautio[1],** Miguel Araya[2], Matias Jaskari[1], Mikko Hietala[1], and Antti Järvenpää[1] *[1]Future Manufacturing Technologies, University of Oulu, Pajatie 5, Nivala, Finland.* *[2]Bio-inspired Materials and Processes, Instituto Tecnológico de Costa Rica, Cartago, Costa Rica* **Abstract:** Additive manufacturing using material extrusion (MEX) for metals has been available for years, but little research has been done on the fatigue properties of metal materials manufactured using this method. This study investigates the fatigue properties of austenitic stainless steel 316L manufactured using MEX, including the effects of severe shot peening on reducing the impact of porosity. Samples were subjected to axial and flexural bending loading conditions, and the microstructure and mechanical strength of the material were analyzed using electron backscatter diffraction (EBSD) and other techniques. The results of the study show that MEX-manufactured 316L exhibits improved material properties, including grain refinement and martensite transformation, compared to traditional sheet metal materials. Furthermore, the severe shot peening treatment significantly increased both the strength and fatigue life of the material. In flexural bending testing, the fatigue limit was over 60% higher than the as-built condition, even surpassing the level of sheet metal materials in the low cycle regime. This study demonstrates the potential of MEX as a viable additive manufacturing method for metal materials, particularly in applications where fatigue properties are critical. The results suggest that severe shot peening can be an effective post-processing technique to reduce the impact of porosity and improve the fatigue properties of MEX-manufactured 316L.

11	015-icera	**Macrostructure Behaviour of Self-Compacting Concrete (SCC) Encompassing Eggshell**

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Abstract: Recent development has expanded to include self-compacting concrete (SCC) in the ever-challenging sector of the construction industry. With its high calcium compound, agro-waste products such as eggshells can potentially be used as cement substitute for SCC. This endeavour is primarily driven by the restriction of the area of landfills and the goal of reducing the greenhouse effects. This research examined the hardened properties of SCC through assessing the suitable mix proportion of SCC mixes comprising eggshell and failure mode behavioural patterns of the proposed SCC. The volume of eggshell powder employed varied by 0 percent, 5 percent, 10 percent and 15 percent. Forty-eight (48) number of concrete cubes were cast and tested for failure. Water-cement and fine-coarse aggregate ratios were set at 0.55 and 2.0, respectively. The splitting tensile and compressive strength tests were conducted to estimate the mechanical properties of a mixtures and the performance of the mixtures was discussed and assessed. Experimental findings showed that 5 percent and 10 percent of eggshells as a partial replacement for cement had the strongest tensile and compressive strengths, respectively. An optimal blend is then proposed for the tensile and compressive strengths of the SCC.

12	017-icera	**Investigation of Bonding Behaviour of Grouted Bar Connection Using Pull-Out Test**

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Abstract: Grouted bar connections are widely utilised in precast concrete constructions to transfer stresses operating transversely to their axes between two independent parts. At present, the research about the grouted bar connection system is widely open. Therefore, in this study, the cuboid specimen with an end plate and various embedded length of bar was studied. A total of four specimens with embedded lengths of $15D$, $20D$, $25D$ and $30D$, with D, is diameter, were tested under a monotonic pull-out test. The experimental bond strength were then compared with the theoretical equations. There is good agreement between the experimental and theoretical bond strength.

13	018-icera	**FEM on Short T Normal Curing Carbon Fiber Reinforced Polymer (CFRP) Strengthened to RC Beam**

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Abstract: Nowadays, the structures made of reinforced concrete that were constructed a few years or decades ago are becoming progressively out-of-date and no longer functional. Deterioration from natural and environmental ageing causes is the cause of these problems, not a lack of function, a design flaw, or an external mechanical impact such as heavy workloads or earthquakes. Furthermore, it has become increasingly challenging in civil and structural engineering to design structures with long-term stability and durability utilising sustainable materials. Because today's technological tools and materials are incapable of reducing weight, increasing spans, or thin buildings, so the hunt for the desired composite material has begun, as well as the exploration of alternative processes for producing better and stronger reinforced concrete by reducing energy consumption and conserving resources. This is because the CFRP is a light and strong material, making it ideal for use in innovation and technology. Construction must be made easier and more cost-effective by innovative technology that is both appealing and functional. As a new reinforced concrete material, CFRP must have a high strength and be lightweight to minimise the structure's load, as well as a feasible option for future concrete design work. As the main goal of this research are use London University Structural Analysis System (LUSAS) modeler software to create a Finite Element Method (FEM) model of a reinforced concrete (RC) beam. The 4 rectangular 2-dimensional element was used to define the RC beam with the size selected was 125 mm x 300 mm x 1800 mm beam with a concrete strength of 30 N/mm². As a control beam, the first beam was a standard rectangular reinforced concrete beam that was cured for 28 days. Meanwhile, the second, third and fourth beams are reinforced concrete beams with rod, horizontal and vertical plates made of CFRP. The result is to determine the behaviour of the reinforced concrete beam under cracking or yielding, initial load–deflection output, load-strain output, strain distribution, moment curvature characteristics, neutral axis position, structure ductility with using Finite Element Analysis (FEA).

14	019-icera	**Conceptual Design of Hybrid Renewable Energy System with Hydrogen-Battery Storage Systems**

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Abstract: The fact is that the world is not running short of fossil-fuelled energy resources; however, due to their detrimental impact on the environment, there is an urgency to explore alternative, reliable, and sustainable energy sources. Renewable electricity produces only intermittently and with variability; therefore, it doesn't matter how affordable the electricity is if it is inaccessible in times of need. Utilizing fully the freely available sources such as wind and solar in a particular area is the most economical way, provided with the right combination of energy storage systems, to have full autonomy of electricity supply. Though Malaysia is blessed with plenty of resources, the majority of its electricity generation capacity is natural gas-fired, and this has increased greenhouse gas emissions intensely. This study aims to propose the conceptual design of a hybrid energy system with robust energy storage implementation for remote locations to provide an attractive cost of energy with environmental credits.

15	021-icera-jesr	**Technical-Vocational Education and Training in a Bubble Community through Open and Distance e-Learning: An Evaluative Study** **Jhenly Asedillas** *Don Bosco One-TVET Philippines Inc., Chino Roces Ave, Makati, 1230 Metro Manila* **Abstract:** Technical-Vocational Education and Training should continue for students to obtain a National Certification from Technical Education and Skills Development Authority (TESDA) amidst the disruptions brought by the pandemic. This study which was conducted in a bubble community in Cavite, Philippines, utilized an open and distance e-learning to educate and train fifty (50) students in Technical Drafting NCII course for one hundred forty-eight hours (148 hours). With the competency-based curriculum and training plan as the training reference, the students were expected to develop skills in drafting mechanical drawings using both manual drafting methods and computer-aided design (CAD) system to be competent in Technical Drafting NCII. The technical trainer subjected the students to institutional assessment prior to national competency assessment. Together with one TESDA representative, the assessors in Technical Drafting NCII conducted the national assessment for six hours. Results revealed that eighty-eight percent (88%) of the students are competent in Technical Drafting NCII. It is important to note that all students were competent in computer-aided design system. Students who failed in the national assessment shared that there is a need for more training in manual drafting methods and the need to be mentally prepared. Given the needed technology infrastructure, open and distance e-learning is effective in technical-vocational education and training. While the effect of the pandemic is recognized, this study recommends that schools and universities should continually take a proactive stance in anticipating and planning for various delivery conditions to help the equally diverse students to be equipped with the skills necessary for authentic work environments.
16	022-icera-jesr	**Smart and Safe Mock-up Design in Electrical Installation Training** **John Dave Gopez** *Don Bosco Technical Institute-Makati Inc., Chino Roces Ave, Makati, 1230 Metro Manila* **Abstract:** This study aimed to design a smart and safe residential electrical mock-up system for Electrical Installation and Maintenance NCII training. The mockup was designed using a modular approach which would involve breaking down the system into smaller, self-contained modules that can be easily modified or replaced as needed. The smart technology includes lighting control, phone alert, controlled appliances, and motion detection while its safety features include safety switches, circuit breakers, fuses, ground fault circuit interrupters (GFCI), arc fault circuit interrupters (AFCI), and surge protectors. The design of the smart and safe mock-up system is an effective tool to enhance the skills of the students to practice, as well as safety and effectiveness of electrical installation and maintenance training. It is recommended that mock-up meets the required specifications and can be easily modified or adapted to meet changing requirements.
17	023-icera-jesr	**Design of Portable Electronic Brake Bleeder with Interchangeable Adapter and Integrated Trouble Light** **Marshall Nicolane Pagayon**

		Don Bosco Technical Institute-Makati Inc., Chino Roces Ave, Makati, 1230 Metro Manila
		Abstract: This study explored on the design of a portable electronic brake bleeder with interchangeable adapters and integrated trouble lights, which can assist in brake fluid testing and maintenance. Educational technology is evolving rapidly, and educators must keep up with these advancements to remain effective. The researchers designed a portable electronic brake bleeder with interchangeable adapters and integrated trouble lights to assist in the brake fluid testing process. The interchangeable adapters were designed to fit different types of brake systems, while the integrated trouble lights provided real-time feedback on the status of the brake fluid during testing. The use of microfluidic technology in brake fluid testing has the potential to improve safety and reduce the risk of brake system failure in automotive vehicles. Using information from existing literatures, the prototype developed in the study has the potential to demonstrate accurate and reliable measurement of the boiling point of brake fluid samples and has a useful feature in assisting with the brake fluid testing process. This study will also consider optimizing the design of the microfluidic chip and improve the accuracy and reliability of the measurements in the development phase.
18	024-icera-jesr	**Fabrication of Jigs in Toolbit Grinding for Shop Safety and Efficiency** **Jerwin dela Fuente** *Don Bosco Technical Institute-Makati Inc., Chino Roces Ave, Makati, 1230 Metro Manila* **Abstract:** This technology research aimed to fabricate jigs in toolbit grinding for shop safety and efficiency in the workshop. The toolbit is a high-speed steel, The sleeve is made from a round bar stock measuring Ø 50.80 mm X 75 mm long, and the barrel is made from a square bar stock measuring 50.8 X 50.8 X 75 mm long. The essential machining skills needed in fabricating jigs includes lathe and milling operation, drilling and tapping, grinding, sawing, deburring and CNC programming. The skills are taught in Machining NCII qualification offered in Don Bosco Technical Institute-Makati. The fabricated jig output was used in the machining process and was compared to the manual jig output. After the machining process, the fabricated jigs are safer compared to manual grinding output because it holds and supports the workpiece securely in place during the machining process and allows for more consistent and accurate machining operations. It also results in faster machining process and higher production rates compared to manual grinding and reduces the need for manual repositioning and realignment of the workpiece, which can save time and increase efficiency. The operator-researcher recommends future studies should explore on attaching the barrel and sleeve to the fabricated jig so that the operator will not hold the barrel while grinding.
19	025-icera-jesr	**Used-Engine Oil in Aluminum Metal Upcycling: A Proposed Circular Economy Strategy** **Syrael Soque** *Don Bosco Technical College, Chino Roces Ave, Makati, 1230 Metro Manila* **Abstract:** This study analyses the upcycling of aluminium scraps to new training materials using charcoal and used engine fuel in a furnace. The author experimentally compares the performance of the charcoal from used engine as a fuel by measuring the melting rate, furnace efficiency and specific fuel consumption and the cost of each fuel when used. The study revealed that the

		melting rate (2.5 vs 3.1 kg/hr) and furnace efficiency (18% vs 63 %) in charcoal fuel is lower than used engine fuel. The specific fuel consumption (6 vs 0.28 kilogram / kilogram) and the cost ($1.5 vs 0) is higher in charcoal fuel than used engine fuel. The quality of the melted aluminium was studies and find that it meets the required standards for aluminium casting. In upcycling the aluminium scraps to aluminium sheet, the institution saves up to $250 per month per student. The success of DBTC-Cebu's upcycling program shows that upcycling is a viable circular economy strategy that promotes sustainable development. It also highlights the important role technical vocational institutions can play in promoting the circular economy model.
20	028-icera	**An Analysis of Direct Pressure Performance of a Wave Energy Converter using Dielectric Elastomer Generators (DEGs) with Different Topologies** **Mohamad Alif Omar**[1], Zykri bin Ahmad Firdaus[2], Mohamad Ikhwan Syafiq Zaidi[2], Abdul Hadi Shaisham[2], Ahmad Shah Hizam Md Yasir[3], Azfarizal Mukhtar[1,2] and Mohd Zamri Yusoff[1] [1]*Institute of Sustainable Energy, Universiti Tenaga Nasional (UNITEN), Putrajaya Campus, Jalan IKRAM-UNITEN, 43000 Kajang, Selangor Darul Ehsan, Malaysia* [2]*Department of Mechanical Engineering, College of Engineering, Universiti Tenaga Nasional (UNITEN), Putrajaya Campus, Jalan IKRAM-UNITEN, 43000 Kajang, Selangor Darul Ehsan, Malaysia.* [3]*Rabdan Academy, 65, Al Inshirah, Al Sa'adah, Abu Dhabi, 22401, UAE* **Abstract:** The potential of ocean energy as a renewable energy source is discussed in this paper, but the high cost and difficulty of constructing facilities that can withstand harsh ocean conditions have hindered the economic feasibility of existing wave energy converter technology. Since it is a simple and reliable design with low maintenance requirements, the oscillating water column (OWC) has received much attention and research. However, it still requires a PTO system with moving parts. Dielectric elastomer generators (DEGs) are a form of electromechanical transducer that can be used as an alternative PTO technology for OWCs due to their advantages, such as high energy/power density per unit mass and tolerance to harsh marine environments. The objective of this study is to investigate the status of DEGs and evaluate their potential applications for energy harvesting from various sources, comparing the advantages and disadvantages of three primary DEG topologies. The results show that the conical DEG is generally more effective for generating voltage and power at lower wave heights, while the equibiaxial DEG is more effective at higher wave heights. The study also found that the voltage performance differed significantly from previous studies due to differences in experimental variables, such as wave height and equipment. The results suggest that DEGs have potential as a renewable energy source, but further research is needed to optimize their performance and efficiency.
21	031-icera	**CFD Simulation of The Effectiveness of Wind Catchers in Improving the Ventilation Rate of Underground Parking Garages** **Mohamad Ikhwan Syafiq Zaidi**[1], Abdul Hadi Shaisham[1], Mohamad Alif Omar [2], Ahmad Shah Hizam Md Yasir[3], and Azfarizal Mukhtar[1, 2] [1]*College of Engineering, Universiti Tenaga Nasional (UNITEN), Putrajaya Campus, Jalan IKRAM-UNITEN, 43000 Kajang, Selangor Darul Ehsan, Malaysia* [2]*Institute of Sustainable Energy, Universiti Tenaga Nasional (UNITEN), Putrajaya Campus, Jalan IKRAM-UNITEN, 43000 Kajang, Selangor Darul Ehsan, Malaysia* [3]*Rabdan Academy, 65, Al Inshirah, Al Sa'adah, Abu Dhabi, 22401, UAE*

		Abstract: The issue of global warming is of great concern to society, mainly because of the increasing emissions of greenhouse gases from the use of fossil fuels in buildings, especially CO_2. The construction of high-rise buildings and underground parking garages in urban areas contributes to air pollution from vehicles. Mechanical ventilation systems, while often used for safety and user comfort, consume a significant amount of electricity. Natural ventilation systems, particularly windcatchers, can provide an energy-efficient alternative. In this paper, the effectiveness of windcatchers on the ventilation rate of underground garages is investigated using simulation CFD. Different designs and arrangements of underground garages were simulated, and it was found that rectangular windcatchers with a diagonal arrangement attached to a ramp achieved the highest ventilation rate. All in all, natural ventilation systems, such as wind catchers, are a viable alternative to mechanical ventilation to improve the ventilation rate of underground parking garages.
22	032-icera	**Revolutionizing Wind Energy Harvesting: Design and Performance Analysis of A Small-Scale ARC-Shaped Pendulum Vortex Bladeless Turbine** **Abdul Hadi Shaisham[1],** Mohamad Ikhwan Syafiq Zaidi[1], Mohamad Alif Omar[2] and Azfarizal Mukhtar[1,2] [1]*College of Engineering, Universiti Tenaga Nasional (UNITEN), Putrajaya Campus, Jalan IKRAM-UNITEN, 43000 Kajang, Selangor Darul Ehsan, Malaysia* [2]*Institute of Sustainable Energy, Universiti Tenaga Nasional (UNITEN), Putrajaya Campus, Jalan IKRAM-UNITEN, 43000 Kajang, Selangor Darul Ehsan, Malaysia* **Abstract:** This study highlights the importance of renewable energy sources such as wind and solar energy to meet the increasing energy demand in Malaysia. However, conventional wind turbines are impractical due to low and variable wind speeds, necessitating the development of low wind speed technologies. This study focuses on a bladeless wind turbine that uses the vortex-induced oscillatory motion of a pendulum to achieve this objective. In this study, the oscillatory performance of the pendulum is improved by considering factors such as the dimensions of the design body, the centre of gravity of the pendulum, and the arrangement of the magnet and coil. Three locations with moderate wind speeds were selected for the study, and the results showed that the millivolt oscillation was highest in the coastal area with an average of 345 mV and lowest in the industrial area with 260 mV. The study also demonstrates that the distance between the wind source and the bladeless wind turbine is an important factor in determining its efficiency. All in all, this study provides important insights into the performance of bladeless wind turbines that could be useful for future research on this technology.
23	034-icera	**Delay in Construction and Failure Mitigation Plan** **Diyana Syafiqah Binti Abd Razak** and Sarvesh A/L Gobi Nath *The School of Energy, Geoscience. Infrastructure and Society (EGIS), Heriot-Watt University Malaysia, No1, Jalan Venna P5/2, Precint 5, 62200 Putrajaya, Malaysia.* **Abstract:** Construction industry plays significant roles worldwide. However, construction industry faced many failures throughout the project delivery as well as at its operations. As part of the failure, project delays are becoming a problem in the Malaysian construction industry that is evidenced by many projects across the country. In understanding failure in construction, this study is to look at the causes of failure specifically project delay and how can innovation being made

		to learn from these failures. This is to ensure construction failure could be mitigated in future project and to look at how learning could be captured. The study will first explore the causes of delay in project and then to elaborate on the causality of construction failure within the organisation's managerial and project team by looking into their projects. A mixed methods will be adopted to understand the construction failures, this will include web-based survey as well as semi-structured interviews. This exploratory study seeks to explore the nature of construction failure that focus of project delay as part of failure and its relationship with all the stakeholders. Understanding the causes of construction failure could help provide a greater understanding of the linkage of failure that incurred, responsible parties and the chain that constitute the event. In this way, failure can be better understood, to enable stronger project management to provide a high-quality performance in developing the integrated and innovative approach for failure mitigation.
24	036-icera	**Assessment of Building Information Modelling (BIM) Contract Application in Malaysia Construction Industry** **R.A Rahman** and M.H.A.R Najib *Heriot-Watt University Malaysia, No 1, Jalan Venna P5/2, Precint 5, 62200 Putrajaya, Malaysia.* **Abstract:** The emerge of Building Information Modelling (BIM) in construction industry has rapidly evolve and expected to be further utilize in the post-pandemic situation. This study would benefit for facilitating use of BIM on public and private sector projects which are contained in the PWD 203A and PAM 2018. In Malaysia, there are only BIM Execution Plan (BEP) in BIM Guide 4 published by Construction Industrial Board (CIDB) Malaysia that outline use of common standard, procedure and protocol. It is however claimed to be insufficient to address all contract administration issues pertaining to BIM process., This study underpinned three objectives with the aim of determine the current level of BIM Contract application used within the various form of contract in Malaysian construction industry. The methodology adopted in the study combines overview of literature, content analysis, and semi-structured interviews, with experts in the field of Contract Administration, Building Information Modelling, Designers and Project Data. The outcome demonstrate the current level of BIM contract provisions application within standard form of contract in Malaysia Construction Industry. This will help the industry to understand the current level of the Contractual aspect application thus further research could be done to have an integrated team working through the use of BIM' within a typical project's contractual arrangements.
25	037-icera	**Rain Attenuation in Worst Month for 5G network in Tropical Region (Malaysia) for Terrestrial Link** **Kesavan Ulaganathen[1]**, G.L.D. Wicramasinghe[1], Mian K. Ehsan[1], Tharek A.R.[2] and Rafiqul M. Islam[3] *[1]Colombo Plan Staff College, Building Block C, Department of Education Complex, Meralco Avenue, Pasiq City,1600, Metro Manila, Philippines* *[2]Wireless Communication Centre, Electrical Engineering Faculty, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia* *[3]Faculty of Engineering, International Islamic University Malaysia, Malaysia* Abstract: Millimeter wave (mm Wave) is today's breakthrough frontier for emerging wireless mobile cellular networks, wireless local area networks,

		personal area networks, and vehicular communications. In the near future, mm Wave products, systems, theories, and devices will come together to deliver mobile data rates thousands of times faster than today's existing cellular and WiFi networks for an example from the era of 3G,4G towards 5G mobile communication near future. However, for Tropical countries the data link reliability is affected during rain. This paper presents studies on rain attenuation in Worst Month at 5.8 GHz and 26 GHz, In this paper, discussion and comparison of two different operating frequency link for rain attenuation in worst month have been presented. The objective of these studies to identify Besides the complementary cumulative distribution function (CCDF), the worst month statistics for average annual rain rate and rain attenuation for a one-year time period was measured and compared against the global ITU-R worst month predicted model and other regions model for the both links. From the measurements, comparisons and validation of results with the ITU-R worst month prediction, new values of $Q_1 = 1.2$ and $\beta = 0.1$ was proposed. The proposed values for the Q_1 and β can be used for the worst month on average annual rain rate and average annual rain attenuation. This study will provide useful information for researchers by understanding and good considerations in rain attenuation predictions in a Worst Month Senario for a terrestrial link operating frequency at lower and higher operating frequencies in a tropical region. This finding will useful for future 5G network designers to consider the effect of rain impairments especially in tropical region
26	006-icccb	**Survival of Isolated Probiotic Yeast Strains from Kefir Towards Bile and Acidic Environments** **Azhar, M.A** *Faculty of Chemical and Process Engineering Technology, Universiti Malaysia Pahang, Lebuh Persiaran Tun Khalil Yaakob, 26300 Kuantan, Pahang, Malaysia* Abstract: Probiotic yeast is one of the most important probiotics in kefir drinks and has been shown to have positive effects on gut health. The abundance of probiotic yeast strains in kefir drinks provides an opportunity to identify potential probiotic yeast as dietary supplements or functional food. Currently, yeast products are not as widely available as bacterial strains, but this is expected to change in the near future. Probiotics must resist acid and bile and adhere to the intestinal surface to thrive and colonise the gastrointestinal tract. Therefore, this study aims to investigate the ability of locally isolated yeast strains to resist acid and bile stress. An in vitro experiment was conducted using sample strains isolated from kefir beverages such as *Kodamaea ohmeri, Kazachstania unispora, Saccharomyces cerevisiae,* and *Saccharomyces boulardii.* Acid tolerance was determined by varying the pH of YEPD broth from 2 to 7, and bile tolerance was determined using YEPD broth with bile salt concentrations of 0%, 0.3%, 0.5%, and 1%. The study findings show that most isolated yeast strains survive acidic and bile environments. They were able to survive pH 3 for 24 hours (about log 6 CFU/mL). Only *Saccharomyces boulardii* and *Kodamea ohmeri* could survive for 24 hours in 1% bile acid (log 6.41 to log 7.34 CFU/mL), whereas all strains survive in 0.3% bile salt (log 3.42 to 8.95 CFU/mL). This study shows that all isolated yeasts have remarkable potential probiotic properties.
27	007-icccb	**Elucidating the Toxicity of Imidazolium-based Surface-Active Ionic Liquids (Im-SAILs) against Gram Positive and Gram Negative Bacteria** **Magaret Sivapragasam[1]*,** Mok Shue Yee[2] and Kafilat Bawa-Allah[3]

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Abstract: Imidazolium-based-Surface-Active Ionic Liquids (Im-SAILs) are a type of surfactants that have gained significant attention in recent years due to their unique properties and potential applications in various fields. They are perceived to be less toxic than other synthetic solvents and are being explored for applications in various fields including biotechnology, chemical engineering, pharmaceutics, and many others. This manuscript investigates the bacterial toxicity of varied concentrations of Im-SAILs to Gram Positive and Negative bacteria. Results show that 1-Methyl-3-octylimidazolium tetrafluoroborate posed a higher overall bacterial toxicity compared to 1- decyl-3-methylimidazolium tetrafluoroborate and 1-dodecyl-3-methylimidazolium tetrafluoroborate with corresponding disk diffusion analysis across various Gram-Negative and Gram-Positive bacteria. These results help establish the perceived safety of Im-SAILs as a choice surfactant for oil spill dispersion in marine ecosystems. Findings from this study will be beneficial to ascertain if this class of surfactant pose a threat to aquatic organisms and would encourage regulated or controlled use, as necessary. This would also ensure the protection of aquatic life and biodiversity as aligned with the United Nations Sustainable Development Goal 14.

| 28 | 008-icccb | **Development of Pyrochlore Structured Materials for Intermediate Temperature Solid Oxide Fuel Cell Applications** |

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Abstract: The pyrochlore structure material ($A_2B_2O_7$) is widely adopted in a variety of applications including catalysis, waste encapsulation from nuclear power plants, and sensors due to the specific electrical, thermal and crystallographic properties. Solid Oxide Fuel Cell (SOFC) with high energy conversion efficiency converts chemical energy from a variety of fuels to electrical energy. High ionic conducting electrolyte materials with good chemical compatibility with electrodes and thermal stability at high temperature is most essential for the satisfactory performance of SOFC. Pyrochlore is a potential electrolyte material due to the in-built oxygen vacancy available in the pyrochlore structure that assures better oxygen ion mobility and thus delivers high ionic conductivity. Zirconate ($A_2Zr_2O_7$) and Titanate ($A_2Ti_2O_7$) pyrochlore material with potential replacement of A cation may lead to modification in structure due to change in cation radius ratio and affects the oxygen vacancy by Frenkel defects. The characterization of material using XRD confirmed the structure formation in the Fm-3m space group with crystallographic properties. Rietveld refinement of the XRD spectra further analyzed the bond length and bond angle that in turn influence the oxygen vacancy formation energy. The Raman analysis identifies the local disorder in the pyrochlore structure. Among various A cation substitutions, a smaller cation radius ratio (r_A/r_B) results in better cation disordering and thus leads to higher ionic conductivity [1]. The ionic conductivity of the pyrochlore structure was analysed using the four-probe conductivity measurement setup under standard conditions. Ionic conductivity is reported to cause due to vacancy hopping between 48f-48f pathways [2].

29	001-iceese	**Adaptive Wavelet De-noising Algorithm using Absolute Difference Optimization Technique for Partial Discharge Signal**

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Abstract: Discrete Wavelet Transform (DWT) de-noising method is widely used for one-dimension partial discharge (PD) signals measured from medium voltage underground cable. However, DWT de-noising has several drawbacks that prevent the DWT de-noising from improving its de-noising effectiveness In DWT de-noising, the two most important parameters are decomposition level and mother wavelet. The aforementioned parameters must be varied according to the noise level in the measured PD signal in order to effectively suppress the noise of the measured PD signal. In this paper, an adaptive DWT de-noising algorithm based on the Absolute Difference Optimizing (ADO) technique is presented to effectively suppress the varying noise levels in measured PD signal. First, the measured PD signal will be de-noised using a Daubechies 3 (db3) mother wavelet and a DWT decomposition level ranging from 1 to 10. Second, the de-noised PD signal will be subjected to the ADO technique. The sum of the absolute difference of local maxima in the de-noised PD signal will be used as an indicator to select the best decomposition level for the de-noised PD signal. Finally, the best-selected de-noised PD signal by using the ADO technique will be used to estimate the PD location on the underground cable. The results of PD location error using the ADO technique and normal DWT de-noising will be compared. The findings show that the ADO-based adaptive DWT de-noising algorithm significantly improved the de-noising process of the measured PD signal.

30	001-icbss	**Uncovering the Intention to Use Digital Banking Services among Commercial Banks' Customers: Structural Equation Modelling Approach**

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Abstract: Digital banking in Malaysia has seen significant growth in recent years, with the government actively promoting digital financial services and regulatory bodies providing support for fintech innovation. However, the factors influencing Malaysians' behavioral intention to use digital banking services are unknown. As a result, this study investigates the factors the attitude influencing Malaysian consumers' willingness to use digital banks. The study aims to assess the factors influencing the attitude and intention to use digital banking in Malaysia among 562 commercial banks' customers in order to better understand public perception of digital banking services based on the technology acceptance model (TAM). All seven hypotheses were supported by the study's statistical findings, which revealed that perceived ease of use has a positive and significant effect on perceived usefulness; perceived ease of use and perceived usefulness both have a positive and significant effect on attitude; and perceived trust has a positive and significant direct effect on attitude and intention. Finally,

		it was discovered to positively and significantly mediate perceived trust and intention to use digital banking among bank customers. The study discovered practical implications that policymakers, bankers, and fintech players can use to create or assist in the creation of a policy that encourages Malaysians to use digital banking services. This study will assist the government and financial institutions involved in this field in understanding consumers' intentions toward digital banks as well as the direction of digital banking development and improvement.
31	002-assric	**Spatial Intelligence for Senior High School Students** **Fellix Rimba**, Nandi and Annisa Joviani Astari *Geography Education, Universitas Pendidikan Indonesia, Bandung 40154, Jawa Barat, Indonesia* **Abstract:** Spatial intelligence is the ability to see and observe space meticulously. Spatial intelligence is a very important part of improving the quality of individuals that will affect the potential progress of the region or country. This intelligence can be developed in learning Geography which studies objects and spatial phenomena on the earth's surface. This research uses qualitative research methods. This study aims to analyze the level of spatial intelligence of high school students in Medan City, North Sumatra Province, Indonesia. The results showed that students' spatial intelligence was in the medium category with a score of 47%. The analysis in detail in 4 categories, first, the Blind Map indicator of locations in Indonesia getting a score of 53.5%. Second, the Natural Resources Indicator regarding the distribution of natural resource locations in Indonesia getting a score of 56.49%. Third, the Icon or Landmark Indicator regarding icons or district/city landmarks in Indonesia with a score of 63.9% and lastly Human Resources Indicators (Ethnicity and Culture) getting a score of 74.9%.
32	003-assric	**Market sentiment in a nancial evolutive model with biased fundamentalist and chartists** **N. Pecora** *Dept. of Economics and Social Science, Catholic University, Piacenza, Italy* **Abstract:** We study a nancial market populated by heterogeneous agents, whose decisions are driven by animal spirits". Each agent may have either optimistic or pessimistic beliefs about the fundamental value or rely on technical analysis. Such beliefs can be changed from time to time on the basis of an evolutionary mechanism, or he/she may eventually rely on technical analysis. The evolutionary selection of beliefs depends on a weighted evaluation of the general market sentiment perceived by the agents and on a protability measure of the existent strategies. We show the emergence of polarized economic regimes that can consist in stable steady states or can be characterized by endogenous complex dynamics, generating persistent alternating waves of optimism and pessimism, as well as return distributions displaying the typical features of nancial time series, such as fat tails, excess of volatility and multifractality.