

ACEM24/Structures24 Program at a Glance

*Time is based on KST/ GMT+9

AUGUST 20 TUESDAY

Rm A	Rm B	Rm C
12:20 - 12:25 Opening Ceremony TF0: Opening Remarks		
12:25 - 13:05 Plenary Keynote Speech I TF1: Urban Risk Mitigation of Tall Building Clusters in Coastal Cities Due to Tropical Storms by Yi-Qing Ni (Hong Kong)		
13:05 - 13:40 Plenary Keynote Speech II TF2: Recent advancements in engineering strategies for the mineral carbonation in cementitious materials: Experiments and simulations by H.K Lee (Korea)		
Break Time 13:40 – 14:00		
	14:00 – 14:30 Keynote Lecture I TB3: Codification of High Intensity Wind by Ashraf El Damatty (Canada)	14:00 – 14:30 Keynote Lecture II TC3: Sensor-data driven quality control and component assembly in prefabricated bridge construction by Sung-Han Sim (Korea)
Break time 14:30 – 14:40		
14:40 – 16:00 TA4: Recent developments in the advanced and functional construction materials	14:40 – 16:00 TB4: Dynamic Behavior of Structures, Wind-Borne Debris and Moving Objects	14:40 – 16:00 TC4: Advanced sensing and data processing technologies for smart construction and monitoring
Break time 16:00 – 16:20		
16:20 – 18:00 TA5: Sustainable Polymers: Green Packaging, Water Suppressants, and Composite Materials	16:20 – 18:00 TB5: Wind Tunnel Testing, CFD and Other Analytical Methods	16:20 – 18:00 TC5: Data-driven structural health monitoring and assessment
18:30 Welcome Reception (Crystal Balroom, Convention 3F)		

ACEM24/Structures24 Program at a Glance

AUGUST 20 TUESDAY

Rm D	Rm E	Rm F
12:20 - 12:25 Opening Ceremony TF0: Opening Remarks		
12:25 - 13:05 Plenary Keynote Speech I TF1: Urban Risk Mitigation of Tall Building Clusters in Coastal Cities Due to Tropical Storms by Yi-Qing Ni (Hong Kong)		
13:05 - 13:40 Plenary Keynote Speech II TF2: Recent advancements in engineering strategies for the mineral carbonation in cementitious materials: Experiments and simulations by H.K Lee (Korea)		
Break Time 13:40 – 14:00		
14:00 – 14:30 Practical Lecture I TD3: Inspire Resort Arena in Incheon by Yeon-Ki Jung (Korea)		
Break time 14:30 – 14:40		
14:40 – 16:10 TD4: Innovations in Concrete and Steel: Voids, Sustainable Materials, Curing Methods, and Corrosion Control	14:40 – 16:10 TE4: Advanced Methods in Aerospace and Coupled Systems Mechanics	14:10 – 16:10 TF4: Skills for water and resource protection responding to climate change (ECO-UP Int'l Conference)
Break time 16:10 – 16:20		
16:20 – 18:00 TD5: Sustainable Solutions for Air Quality, Pollutant Dispersion, and Decarbonization	16:20 – 18:00 TE5: Advanced Design and Simulation in Ocean Systems Engineering	16:20 – 18:00 TF5: ECO-UP English Poster Presentation Contest
18:30 Welcome Reception (Crystal Ballroom, Convention 3F)		

ACEM24/Structures24 Program at a Glance

AUGUST 21 WEDNESDAY

Rm A	Rm B	Rm C
09:00 – 09:10 ICGE24 Opening WB0: Opening / Welcome Address		09:00 – 09: 30 Keynote Lecture IV WC1: High-fidelity Tornado-community Interaction Modeling and Its Application to Enhance Tornado Resilience by Guirong (Grace) Yan (USA)
09:10 – 09:50 Keynote Lecture III WB1: Soil Resistance Estimation using Smart Instrumented Dynamic Penetrometers by Jong-Sub Lee (Korea)		09:30 – 10: 00 Keynote Lecture V WC2: Modeling and parameter identification of nonlinear self-excited forces for coupling flutter of long-span bridges by Le-Dong Zhu (China)
Break Time 10:00 – 10:10		
10:10 – 12:00 WA2: The evaluation of service performance of aggregates and subgrade under repeat loads	10:10 – 12:00 WB2: Exploring Innovations in Geotechnical Engineering I	10:10 – 12:00 WC3: Risk mitigation of coastal infrastructure in extreme meteorological environments I
12:00 – 13:30 Luncheon (Crystal Ballroom, Convention 3F)		
13:30 – 15:00 WA3: Underground Geomechanics and Engineering	13:30 – 15:00 WB3: Exploring Innovations in Geotechnical Engineering II	13:30 – 15:00 WC4: Risk mitigation of coastal infrastructure in extreme meteorological environments II
Break Time 15:00 – 15:10		
15:10 – 16:30 WA4: Site Characterization and Ground Improvement	15:10 – 16:30 WB4: Geomechanics for Sustainable Built Environment	15:10 – 16:30 WC5: Risk mitigation of coastal infrastructure in extreme meteorological environments III
Break Time 16:30 – 16:40		
16:40 – 18:00 WA5: Geo-IT and Energy Geomechanics and Engineering	16:40 – 18:00 WB5: Innovative Techniques in Sensing and Machine Learning for Engineering	

ACEM24/Structures24 Program at a Glance

AUGUST 21 WEDNESDAY

Rm D	Rm E	Rm F
09:30 – 10: 00 Practical Lecture II WD1: OSC SOLUTIONS FOR SUPER-STRUCTURE FRAMING by Seung Hwan Lee (Korea)		
Break Time 10:00 – 10:10		
10:10 – 12:00 WD2: Wind Time History Analysis and Various Analytical Models	10:10 – 12:00 WE2: Recent Advances in Structural Concrete	
Lunch 12:00 – 13:30		
13: 30 – 14:50 WD3: Tall and Special Buildings Subject to Wind and Other Extreme Loads	13: 30 – 14:50 WE3: Innovative Structural Design, Analysis, and Health Monitoring for Buildings and Infrastructures	
Break Time 14:50 – 15:00		
15:00 – 16:30 WD4: Investigation of Wind Field, Wind Load and Wake Flow		
Poster Q&A Session 11:00 – 12:00 2F Lobby		

ACEM24/Structures24 Program at a Glance

AUGUST 22 THURSDAY

Rm A	Rm B	Rm C
	09:00 – 09: 30 Keynote Lecture VI HB1: Decoupling, correlating, and quantifying fluid-structure dynamics by data-driven approaches by Tim K.T. Tse & Cruz Y. Li (Hong Kong)	09:00 – 09: 30 Keynote Lecture VII HC1: Performance Based Wind Design Using Computational and AI Techniques by Thomas Kang (Korea)
Break Time 09:30 – 09:40		
09:40 – 11:10 HA2: Structural Design and Computational Techniques	09:40 – 11:10 HB2: Failure Investigation of Steel, Concrete and Geo-Composite Structures I	09:40 – 11:10 HC2: Forensics of Steel, Concrete and Geo-Composite Structures I
Break Time 11:10 – 11:20		
	11:20 – 13:00 HB3: Failure Investigation of Steel, Concrete and Geo-Composite Structures II	11:20 – 13:00 HC3: Forensics of Steel, Concrete and Geo-Composite Structures II

Pre-recorded Keynote Lectures (Video)

Uncertainty in Wind Action: Modelling and Code Calibration (AWAS24); Vincenzo Picozzi (Italy) [\[Watch now\]](#)

The potential use of urban trees to mitigate extreme wind effects on low-rise buildings (AWAS24); Amal Elawady (USA) [\[Watch now\]](#)

ACEM24/Structures24 Program at a Glance

Zoom-Only Sessions

TX1 (Tue) (15:00 – 16:30)	Failure Analysis of Transmission Line Systems under Extreme Loading Conditions
WA2 (Wed) (10:10 – 12:00)	The evaluation of service performance of aggregates and subgrade under repeat loads

ID: 341 734 9797 / PW: 000111

- Participation in live Zoom sessions:**
- 1) All on-site and on-line participants may access live sessions through Zoom.
 - 2) Please indicate your name and paper ID to participate. [Ex. [0001]_name]
 - 3) Presenters will be given the co-host authority during their presentation.

On-site Poster Sessions

Poster Sessions	8/20 - 8/21 10:00 AM - 06:00 PM Posters will be displayed at the second-floor lobby.
	8/21 11:00 AM – 12:00 PM Q&A Session

All Online Poster/Video presentations will be uploaded to the online proceeding of ACEM24/Structures24.

ACEM24 Online Proceedings: http://www.i-asem.org/acem24_publication.html
Structures24 Online Proceedings: http://www.i-asem.org/structures24_publication.html

MAIN EVENTS

REGISTRATION
 8/19 16:30 – 18:00
 8/20 10:00 – 18:00
The K Hotel Avenue (Annex), 2F Lobby
 8/21 08:00 – 18:00
 8/22 08:30 – 12:00
The K Hotel Avenue (Annex), 3F Lobby

OPENING CEREMONY **08/20 Tue**

Opening Remarks TF0 12:20 – 12:25 *Rm F*
Thomas Kang, Co-Chairman, ACEM24/Structures24

PLENARY KEYNOTE SPEECHES I & II **08/20 Tue**

SESSION TF1 12:25-13:05 *Rm F*
Chairman: Thomas Kang
Urban Risk Mitigation of Tall Building Clusters in Coastal Cities Due to Tropical Storms;
 Yi-Qing Ni (Hong Kong)

SESSION TF2 13:05 – 13:40 *Rm F*
Chairman: Thomas Kang
Recent advancements in engineering strategies for the mineral carbonation in cementitious materials: Experiments and simulations; H.K. Lee (Korea)

KEYNOTE LECTURES (I & II) **08/20 Tue**

SESSION TB3 14:00 – 14:30 *Rm B*
Chairman: Yi-Qing Ni
Codification of High Intensity Wind; Ashraf El Damatty (Canada)

SESSION TC3 14:00 – 14:30 *Rm C*
Chairman: H.K. Lee
Sensor-data driven quality control and component assembly in prefabricated bridge construction;
 Sung-Han Sim (Korea)

KEYNOTE LECTURES (III & IV & V) **08/21 Wed**

SESSION WB1 09:00-09:50 *Rm B*
Chairman: Gye-Chun Cho
Soil Resistance Estimation using Smart Instrumented Dynamic Penetrometers; Jong-Sub Lee (Korea)

SESSION WC1 09:00-09:30 *Rm C*
Chairman: Ashraf El Damatty
High-fidelity Tornado-community Interaction Modeling and Its Application to Enhance Tornado Resilience; Guirong (Grace) Yan (USA)

MAIN EVENTS

SESSION WC2

09:30-10:00

Rm C

Chairman: Ashraf El Damatty

Modeling and parameter identification of nonlinear self-excited forces for coupling flutter of long-span bridges; Le-Dong Zhu (China)

KEYNOTE LECTURES (VI & VII)

8/22 Thu

SESSION HB1

09:00-09:30

Rm B

Chairman: Ashraf El Damatty

Decoupling, correlating, and quantifying fluid-structure dynamics by data-driven approaches; Tim K.T. Tse (Hong Kong)

SESSION HC1

09:00-09:30

Rm C

Chairman: Seungjun Kim

Performance Based Wind Design Using Computational and AI Techniques; Thomas Kang (Korea)

Pre-recorded Keynote Lectures (Video)

Uncertainty in Wind Action: Modelling and Code Calibration; Vincenzo Picozzi (Italy) [\[Watch now\]](#)

The potential use of urban trees to mitigate extreme wind effects on low-rise buildings; Amal Elawady (USA) [\[Watch now\]](#)

PRACTICAL LECTURES (I & II)

08/20 Tue
08/21 Wed

SESSION TD3

14:00 – 14:30

Rm D

Chairman: Thomas Kang

Inspire Resort Arena in Incheon; Yeon-Ki Jung (Korea)

SESSION WD1

09:30 – 10:00

Rm D

Chairman: Thomas Kang

OSC Solutions for Super-Structure Framing; Seung Hwan Lee (Korea)

SOCIAL PROGRAMS

08/20 Tue
08/21 Wed

WELCOME RECEPTION

(08/20 Tue)

18:30-20:00

Crystal Ballroom

The K Hotel Convention 3F

TECHNO-PRESS LUNCHEON

(08/21 Wed)

12:00-13:30

Crystal Ballroom

The K Hotel Convention 3F

TECHNICAL PROGRAM

Wind and Structures

Session TB4 **14:40 - 16:00** **Room: B**
Session Title: Dynamic Behavior of Structures, Wind-Borne Debris and Moving Objects
Chairman: Bassam A. Younis

Flying characteristics of wind-borne debris by empirical models of tornadic flows; Yong Chul Kim* [0045]

Wind-induced vibration analysis of a standing glass structure by an advanced time-marching physics-informed neural network; Zhaolin Chen, S.K. Lai*, Zhicheng Yang, Yi-Qing Ni [0064]

Experimental Study of Effect of Jet flow on Local Scour of Bridge Piers; Yanwei Niu, Chaoqun Feng, Hongliang Qi, Xiaoyan Kuang, Bassam A. Younis* [0071]

Human like driver behavior under crosswind conditions based on driving simulator study; Yiheng Fu*, Wei Cui, Lin Zhao [0302]

Multi-Sphere Deep SVDD for System Identification of Building Structure; Sangmin Lee, Yeong In Lee*, Thomas Kang [0157]

Influence of Core Wall Eccentricity on Stress Concentration in High-Rise Reinforced Concrete Buildings; Chaeyun Ahn*, Thomas Kang [0160]

Session TB5 **16:20 - 18:00** **Room: B**
Session Title: Wind Tunnel Testing, CFD and Other Analytical Methods
Chairman: Seung Yong Jeong

Explicit analytical solutions and evolution mechanisms of 3-DOF flutter for typical structures; Genshen Fang*, Zuopeng Wen, Yajun Ge [0283]

Reproduction of 2-D non-synoptic wind field in an actively controlled wind tunnel; Wei Cui*, Lin Zhao [0295]

Prediction of Fluctuating Wind Load with RANS Computation under Interference Effect; Hansol Lee*, Thomas Kang [0174]

Wind pressure distribution on the open membrane structure; Seung Yong Jeong*, Thomas Kang, Si Yun Kim, Keum Il Song, Hong Suk Yang [0181]

Compensation of extreme wind pressure on saddle roof by partial turbulence simulation method for missing of low-frequency turbulence in wind tunnel test; Min Liu*, Liping Hou, Qingshan Yang, Jiaying Wang [0285]

Wind-wave-current coupling simulation in Open FOAM and evolution of flow field; Zhaohui Luo*, Wei Cui, Lin Zhao [0300]

Session WD2 **10:10 – 12:00** **Room: D**
Session Title: Wind Time History Analysis and Various Analytical Models
Chairmen: Thomas Kang, Byeonguk Ahn

Optimizing wind turbine maintenance strategies through reliability deteriorating modeling; Chizhi Zhang*, Hao Zhang, Jian Jiang [0121]

Performance-Based Wind Design of Tall Moment-Frame Buildings Considering RWR Factor; Byeonguk Ahn*, Hamidreza Alinejad, Thomas Kang [0173]

A Study on FNA Method Calibration for Wind-Resistant High-Rise Building; Seonhyeong Kim*, Thomas Kang [0158]

Peak Factor Evaluation for Wind Pressure and Structural Response of Tall Buildings; Sol-Gi Eun*, Thomas Kang [0165]

Wake meandering of floating wind turbine and its influence on power and fatigue; Yue Cheng*, Lin Zhao [0284]

Time-domain analysis of a floating bridge subjected to wind and wave loads based on state space models; Chaoqi Gao*, Ledong Zhu [0280]

TECHNICAL PROGRAM

A Study on Methodological Differences in Time History Analyses for Performance-Based Wind Design of Tall Buildings; Byeonguk Ahn*, Kyungtae Kim, Yeon-Ki Jung, Thomas Kang [0172]

Wind response of various-shaped RC Chimney; Taniya Saha [0144]

Session WD3 **13:30 – 14:50** **Room: D**
Session Title: Tall and Special Buildings Subject to Wind and Other Extreme Loads
Chairmen: Thomas Kang, Seong Ryong Ahn

Response analysis and collapse simulation of typical latticed tower subjected to gust in high altitude deep canyon; Yuchen Li*, Wei Cui, Lin Zhao [0293]

Performance-Based Seismic-Wind Design of Coupled Structures with Various Connection Details; Min Kyu Kim*, Thomas Kang [0169]

Using real-time hybrid testing to verify the performance of full-scale tuned mass damper against wind forces in high-rise building; Chan-Jung Kang*, Qi-Yang Liao, Jer-Fu Wang, Shih-Yu Joseph Chu, Chung Fang, Chi-Chang Lin [0197]

A Comprehensive Analysis of Projectile Impact on Concrete Panels; Seong Ryong Ahn*, Thomas Kang [0166]

Analytical Study on Blast Behavior of Unbonded PT Panels; Hyeon Sik Choi*, Thomas Kang, Seong Ryong Ahn [0167]

Session WD4 **15:00 – 16:30** **Room: D**
Session Title: Investigation of Wind Field, Wind Load and Wake Flow
Chairmen: Thomas Kang, Min Kyu Kim

WRF-based simulation of wind field at bridge site in a complex mountainous area in southwest China; Yan Luo*, Ledong Zhu [0282]

Machine Learning-Based Approach to Development of Simplified Wind Load Formula for Concrete Structures; Chanho Kim*, Thomas Kang [0177]

Study on spatial-temporal wind characteristics during a cooling process in complex terrain; Qian Chen*, Chuanjin Yu; Yongle Li [0297]

Investigation on aerodynamic stability of stay cables with lighting fixtures; Yongle Li, Zewen Wang*, Haojun Tang, Kemi Hua [0281]

Analysis of wake flow and wind pressure characteristics of split double box girder based on measured data; Wenbin Li*, Wei Cui, Lin Zhao [0299]

A Comparative Assessment of Modal Parameters and Flutter Derivatives Using Multiple Output-Only System Identification Methods; Qi-Yang Liao*, Chan-Jung Kang, Chung-Chun Wu, Shih-Yu Chu, Chung Fang, Cheng-Yang Chung, Chin-Chen Chou [0202]

Session TX1 **15:00-16:30** **Zoom Only**
Session Title: Failure Analysis of Transmission Line Systems under Extreme Loading Conditions
Chairmen: Xing Fu, Dahai Wang
Zoom Room ID: 341 734 9797 PW: 000111

Research on wind load shape coefficient identification of transmission tower considering rotational degree of freedom; Qing Zhang* [0247]

Study on the icing mechanism of bundle conductors considering surface roughness; Chang-Hong Song, Yu-Fen Shan, Chao Zhang, Xiang Gao, Jia-Xiang Li* [0254]

Damping and wind-induced vibration response of T-shaped transmission towers in the torsional direction; Kanghui Han*, Guohui Shen, Yonghan Jiang [0256]

Investigation into the Failure Mechanisms of Overhead Transmission Lines under Combined Wind and Ice; Xiangrui Meng, Li Tian*, Juncai Liu, Kunjie Rong [0258]

Numerical study on ice-shedding dynamic responses of conductors an improved method of ice element with multiple-layer stiffness and corrected damping ratio; Dahai Wang, Yaqi Zhao* [0260]

TECHNICAL PROGRAM

A nonlinear finite element analysis method for cable structures; Zhitao Yan, Liming Gong*, Lingzhi Wang [0262]

Research on coupling vibration characteristics and wind-induced responses of large-span transmission lines; Zhenhua Li*, Xing Fu, Wen-ping Xie [0263]

Effects of Bolt Connection Loosening on the Mechanical Behavior of Angle-steel Transmission Tower; Yujie Xing*, Yunzhu Cai [0255] [\[Video\]](#)

Modeling of Dynamic Characteristics for Transmission Tower Line System Using the Free Interface Modal Synthesis; Xiaoyang Cheng* [0257] [\[Video\]](#)

Research on wind vibration control of lattice landscape tower based on meta-heuristic algorithm and TMDI; Shuang Zhao*, Yongjie Liu, Xueqin Zhang [0259] [\[Video\]](#)

Wind and Structures (Poster/Video)

Establishing a Work-Time Coding System to Aid Engineering Consultant Firms in Project Budgeting and Cost Control; Shih Hsu Wang* [0092]

Development of Robust and Durable UHPC Offshore Wind Towers; C. Shawn SUN, Haik Aslanyan* [0131]

Model surrogation for a nonlinear structure subjected to strong wind loads: A pilot study; Bibek Rana Magar* [0025]

Effects of Bolt Connection Loosening on the Mechanical Behavior of Angle-steel Transmission Tower; Yujie Xing*, Yunzhu Cai [0255]

Modeling of Dynamic Characteristics for Transmission Tower Line System Using the Free Interface Modal Synthesis; Xiaoyang Cheng* [0257]

Research on wind vibration control of lattice landscape tower based on meta-heuristic algorithm and TMDI; Shuang Zhao*, Yongjie Liu, Xueqin Zhang [0259]

TECHNICAL PROGRAM

Geomechanics and Engineering (ICGE24)

Session WB2 **10:10 - 12:00** **Room: B**
Session Title: Exploring Innovations in Geotechnical Engineering (I) (Hybrid)
Chairmen: Soonkie Nam, Boohyun Nam
Zoom Room ID: 972 123 8601 **PW:**000222

Manufacturing geopolymer construction material from lunar soil simulant incorporating biologically precipitated calcium carbonate ; Jinwoo An*, Arthur Cabo, Jae-Hoon Hwang, Yong Je Kim, Boo Hyun Nam, Bubryur Kim [0230] [\[Zoom\]](#)

Estimation of Effective Thermal Conductivity in Micro Carbon Fiber Reinforced Clay Soil (MCFRS) with Different Fiber Distributions; Jongwan Eun (University of Nebraska-Lincoln, United Staes) [\[Zoom\]](#)

Analysis on lateral resistance of precast bored piles based on experimental and numerical approach; Dohyun Kim* [0012]

Delineating Ground Subsidence and Flood Risk in Southeast Texas (SETX) Using PS-InSAR and Deep Learning; Arip Syaripudin Nur, Jinwoo An, Yong Je Kim* [0236] [\[Zoom\]](#)

Effects of edge-oxidized graphene oxide (EOGO) in metakaolin based geopolymer composite; Ho Young Lee, Kyungwon Park, Jinwoo An, Boo Hyun Nam* [0252]

Porous Geopolymer Grout Composite for Geotechnical Applications; Karla Sierra, Jinwoo An*, Yong Je Kim, Jae-Hoon Hwang, Boo Hyun Nam [0240] [\[Zoom\]](#)

Enhancing Cavity Detection in Tunnel Linings Using Electromagnetic Simulation and Machine Learning; Gyu-Hyun Go*, Dinh-Viet Le, Sayali Pangavhane [0228]

Comparative Analysis of Seasonal Ground Deformation: Evaluating Climatic Impacts on Overpasses and Subsidence-Prone Areas in Beaumont, Texas Using PSInSAR and SBAS; Md Saffiquzzaman Chowdhury, Yong Je Kim*, Jinwoo An [0242] [\[Zoom\]](#)

Localized compressive strength profiling of sand columns treated with MICP using surface percolation method; Jinung Do, Turab Jafri* [0279]

Review of Mechanically Stabilized Earth Wall Inspection Guidelines in the United States; Marcel Maghiar, Soonkie Nam*, Gustavo Maldonado, Ana Lanza Hernandez, Anu Pradeep, Tanvir Ahmed [0245] [\[Zoom\]](#)

Use of terrestrial LiDAR to capture potential displacements of mechanically stabilized earth retaining walls; Marcel Maghiar, Gustavo Maldonado*, Soonkie Nam, Tanvir Ahmed, Md. Mehrab Hossain, Shakil Ahmed [0248] [\[Zoom\]](#)

Mechanical properties of biopolymer treated binary soil mixture; Jeong-Uk Bang*, Dong-yeup Park, Minhyeong Lee, Ilhan Chang, Gye-Chun Cho [0209] [\[Zoom\]](#)

Session WA2 **10:10 - 12:00** **Room: A**
Session Title: The evaluation of service performance of aggregates and subgrade under repeat loads (Zoom only)
Chairmen: Jianfeng Xue, Zhiyong Liu
Zoom Room ID: 341 734 9797 **PW:** 000111

Research and application of lifting and rectifying technology for double block ballastless track structure; Zhipeng Su, Junhua Xiao*, Xi Yang, Lingzi Zhao [0138] [\[Zoom\]](#)

Investigating the Reinforcing Effects of Geogrid in Unbound Granular Materials using the Precision Unbound Material Analyzer (PUMA) and Repeated Load Triaxial (RLT) Tests; Ziheng Wang, Yue Chen*, Jianfeng Xue [0056] [\[Zoom\]](#)

Suffusion-induced evolution of cyclic behaviors of subgrade using CFD-DEM; Zheng Hu* [0082] [\[Zoom\]](#)

The mechanical properties of polyurethane treated soil and the application on mud pumping subgrade beds of ballastless tracks; Junhua Xiao, Jiapei Ma, Zhiyong Liu* [0086] [\[Zoom\]](#)

Numerical and experimental modeling dynamic responses of permeable pile in liquefiable sand ground; Jian-Gu Qian, Chi Ma*, Guo-Xiong Mei [0088] [\[Zoom\]](#)

TECHNICAL PROGRAM

Numerical modeling of RC Beams with Hybrid CFRP-Steel Bars; Yi Dong, Tiejiong Lou* [0017] (Tongji University, China) [\[Zoom\]](#)

A Comparative Study of Bonded and Unbonded PC Beams; Xing Liu, Yi Dong, Tiejiong Lou* [0016] [\[Zoom\]](#)

Impact of Salinity on Thermal Properties of Frozen Sand in Artificial Ground Freezing Systems; Hyeontae Park*, Sangyeong Park, Hojong Kim, Hangseok Choi [0188] [\[Video\]](#)

Optimizing Cement-Based Grout Material for Artificial Ground Freezing: Effects of Silica Sand and Graphite Additives on Thermal Conductivity and Workability; Hojong Kim*, Sangyeong Park, Hyeontae Park, Hangseok Choi [0189] [\[Video\]](#)

Session WB3 **13:30 - 15:00** **Room: B**

Session Title: Exploring Innovations in Geotechnical Engineering (II) (Hybrid)

Chairman: Gyu-Hyun Go

Zoom Room ID: 972 123 8601 PW: 000222

Effect of geogrid pullout behavior on biopolymer-based soil treatment (BPST);

Gi-Yun Kim*, Donghyeon Yang, Ilhan Chang [0251]

Behavior of the upper ground during the tunnel excavation in the fragmental rocks;

Yong Eun Roh*, Sang Duk Lee, Ilhan Chang [0253]

A Study on Applicability to Slopes of Water Repellent Soils; Byeong-Su Kim* [0231]

Compressional behavior of fine-grained soils: clastic and biogenic non-plastic soils; Handikajati Kusuma Marjadi*, Junbong Jang [0246]

The Impact of Phosphogypsum on Enhancing the Compressive Strength of CSA-Treated Sand; Anna Loskutova*, Jong Kim, Sung-Woo Moon [0096]

Effect of polysaccharide biopolymer on rheological and shear behavior of soil;

Dong-yeup Park*, Jeong-uk Bang, Minhyeong Lee, Ilhan Chang, Gye-Chun Cho [0210]

Experimental study on the optimal water content for xanthan gum-based treatment sand;

Sanghoon Im*, Dong-yeup Park, Minhyeong Lee, Ilhan Chang, Gye-Chun Cho [0218]

In-situ Estimation of K_0 based on Cone Penetration Tests; Donggun Nam*, Qaisar Abbas, Junhwan Lee [0225]

A study on the effect of geobag connectors on the stability of geobag-reinforced slopes;

Heui-Soo Han, Jun Woo Shin*, Kyungwon Park, Boo Hyun Nam [0261]

Session WA3 **13:30 - 15:00** **Room: A**

Session Title: Underground Geomechanics and Engineering

Chairman: Jinung Do

New formula to prevent settlement induced by EPB tunneling; C. Okay AKSOY*, H. Eray YAMAN [0029]

Numerical analysis on thrust force requirements for TBMs in soft soil using the Coupled Eulerian-Lagrangian approach; Joohyun Park*, Jun-Beom An, Gye-Chun Cho [0195]

Preliminary Study of Different Joint Stiffness Ratio on Tunnel Internal Forces Subjected to Varying Seismic Wave Directions; Hasky Widjaja*, Jun-Beom An, Joohyun Park, Gye-Chun Cho [0208]

Numerical analysis of size effect on the deformation behavior of corrugated steel utility tunnel (CSUT);

Deok-Hwi Hwang*, Joohyun Park, Doyeon Lee, Gye-Chun Cho [0220]

Development of excavation management system for slurry TBM in permeable mixed ground conditions;

Jaehoon Jung, Hangseok Choi, Jongwon Jung, Young Jin Shin* [0238]

Microscopic Analysis of Inter-Particle Bonding in Granular Soil Stabilized with Xanthan gum Biopolymer Hydrogel; Sojeong Lee, Ilhan Chang [0235] [\[On-site\]](#)

Machine learning-based classification of underground utility counts using electrical resistance numerical module; Hee-Hwan Ryu, Suyoung Choi, Song-Hun Chong, Tae-Young Kim, Jiyun Lee, Meiyan Kang* [0175]

Optimization of cutting method for aging pipeline in utility tunnel with AHP approach;

Hyun-Jong Cha*, Tae-Min Oh, Ki-Il Song [0182]

TECHNICAL PROGRAM

Session WB4 **15:10 - 16:30** **Room: B**
Session Title: Geomechanics for Sustainable Built Environment
Chairmen: Jinhyun Choo, Clarence Choi

Water infiltration dynamics in bentonite-based engineered barrier systems investigated by time-lapse photography; Jinwoo Kim*, Hwan-Hui Lim, Jin-Seop Kim, Tae-Hyuk Kwon [0134]

Experimental Study on Abrasive Size Effect in Abrasive Waterjet Drilling; Sejin Park*, Hyun-Joong Hwang, Gye-Chun Cho [0206]

Effect of standoff distance and abrasive particle size on granite drilling performance using abrasive waterjet Hyun-Joong Hwang, Yohan Cha, Sejin Park, Gye-Chun Cho [0213]

Effect of MTBE Contamination on the Geotechnical Properties of Clayey and Sandy Soils; Farhad Khajepour Nasrabadi*, Meysam Lak, Taghi Ebadi [0053]

Simulating the biomechanical behaviors of trees in granular-flow-forest interactions: MPM-LSDEM; Zhengyu Liang*, Clarence Edward Choi, Jinhyun Choo, [0110]

Ice-modeling in saturated phase-transiting porous media; SeonHong Na*, Mahyar Malekzade Kebria [0152]

Hybrid continuum-discrete simulation of soil-object interactions; Jinhyun Choo*, Yidong Zhao [0249]

Session WA4 **15:10 - 16:30** **Room: A**
Session Title: Site Characterization and Ground Improvement
Chairman: Taeseo Ku

Development and Experimental Validation of P-Y Curves for Rectangular Piles; Wenshuai Li*, Weiming Gong, Guoliang Dai [0074]

Behavior of a poorly graded medium sand in undrained cyclic direct simple shear tests; Martin Achmus*, Jann-Eike Saathoff, Norman Goldau [0023]

Unified Strength Prediction Model for Cemented Soils; Taeseo Ku*, Sathya Subramanian [0199]

Dynamic properties of silty sand; Nuraiym Paiyz*, Kamila Khoschanova, Shynggys Abdialim, Jong Kim, Alfrendo Satyanaga, Sungwoo Moon [0094]

Taguchi grey relational analysis for optimum condition of soybean crude urease-calcium carbonate precipitation method as a soil improvement technique for fine-graded sand; Akbar Renaldi Loebis (Ehime University, Japan)

Estimation of Elastic Wave Velocity from Q-system Parameters with an Artificial Neural Network; Minshik Rho*, Seung Bo Shim, Jin Kim, Ji-Won Kim, Gye-Chun Cho [0216]

Database-based Evaluation of Various Capacity Interpretation Criteria for Micropiles in Drained and Undrained Soils; Anjerick Topacio*, Dianne Angcaya, Ruzelle May Flores, Erico Jiovan Naguit, Carmelo Zapanta [0015]

Session WB5 **16:40 – 18:00** **Room: B**
Session Title: Innovative Techniques in Sensing and Machine Learning for Engineering
Chairmen: Jong-Sub Lee, Hyung-Koo Yoon

Identification of Third-Party Reckless Construction Events Based on Distributed Fiber Optic Sensing System Xutao Han*, Youliang Ding, Hanwei Zhao, Xiaonan Zhanging [0179]

Soil Resistance Estimation using Smart Instrumented Dynamic Penetrometers; Geunwoo Park, Namsun Kim, Yong-Hoon Byun, Sang Yeob Kim, Jong-Sub Lee* [0193]

Embedded type new in-situ soil stiffness assessment and monitoring technique; Namsun Kim*, Jong-Sub Lee, Younggeun Yoo, Jinwook Kim, Junghee Park [0194]

A machine learning approach for assessment and prediction of reservoir safety using on-site visual Condition Assessment Index (CAI); Suhyuk Park*, Sihoon Kim, Sunghoon Moon, Ilhan Chang [0250]

Pore Network Approach to Evaluate the Injection Characteristics of Biopolymer Solution into Soil; Jae-Eun Ryou*, Jongwon Jung [0090]

TECHNICAL PROGRAM

A Study on transmission line configuration for structural health monitoring using electromagnetic waves; Dongsoo Lee*, Dong-Ju Kim, Jinwook Kim, Jong-Sub Lee, Sang Yeob Kim [0192]

Prediction of Longitudinal Wave Speed in Rock Bolt coupled with Multilayer Neural Network (MNN) Algorithm; Jungdoug Yu, Geunwoo Park, Dong-Ju Kim, Hyung-Koo Yoon* [0241]

A Study on the Characteristics of Applying Oversampling Algorithms to Fosberg Fire-Weather Index (FFWI) Data; Sang Yeob Kim, Dongsoo Lee, Jungdoug Yu, Hyung-Koo Yoon* [0239]

Investigation of Characteristic Values in TDR Waveform Using SHapley Additive exPlanations (SHAP) for Dielectric Constant Estimation During Curing Time; Won-Taek Hong, WooJin Han, Yong-Hoon Byun, Hyung-Koo Yoon* [0229]

Measurement of temperature change on coil column unit using FBG sensors during thermal response test: A study for geothermal energy system; Young-Sang Kim*, Duc-Thang Hoang, Gyeong-O Kang, Huu-Ba Dinh [0244]

Session WA5 **16:40 - 18:00** **Room: A**
Session Title: Geo-IT and Energy Geomechanics and Engineering
Chairman: Sojeong Lee

Prediction of Resilient Modulus on Unsaturated Geomaterials via DEM Modeling; Hyun-Su Park*, Byeong-Su Kim, Seong-Wan Park [0234]

Numerical analysis on the application of HWAW method on thin surface layer condition assessment: A Preliminary study; Doyeon Lee*, Deok-hwi Hwang, Gye-chun Cho [0215]

Investigating the Potential Use of Microfibre Surgical Face Masks for Soil Improvement; Benyapa Punnoi*, Suched Likitlersuang [0149]

Stress Analysis on Load-bearing Geotextile Tubes during Filling and under Surcharge Loading; Hyeong-Joo Kim, Voltaire Anthony Corsino*, Hyeong-Soo Kim, James Vincent Reyes, Tae-Wong Park, Peter Dinoy, Tae-Eon Kim [0233]

The effect of faults on the behavior of the Ourkiss Algeria reservoir dam; Toufik Karech*, Phd Student Hassiba Baghzim [0010]

Enhanced Excavation Design Method Based on Characterized Stiffness of Support System; Jonghyeong Yoon*, Qaisar Abbas, Jiyeong Lee, Jiyeong Lee [0227]

Utilizing a Hybrid CNN-RNN Machine Learning Approach for Forecasting Time-Series Outlet Fluid Temperature Monitoring by Long-Term Operation of BHEs System; Makarakreasey King*, Chan-Young Yune [0191]

Preliminary Study on the Effects of Temperature, Radiation, and Humidity on Monitoring Sensors for HLW Repository; Sokpheapnika Chea*, Gye-Chun Cho [0219]

Geomechanics and Engineering (Poster/Video)

Estimation of site-specific ground motion coherency function using geotechnical dynamic analysis; Hak-sung Kim*, Yonghee Lee, Jeong-seon Park [0223]

Historical Review of the Geotechnical Data of Saemangeum Sea Dike; Hyeong-Joo Kim, James Vincent Reyes, Hyeong-Soo Kim, TaeWoong Park, Peter Rey Dinoy, Voltaire Anthony Corsino, Tae-on Kim [0232]

Prediction of specifications for steel tower foundations using nondestructive testing method; Hee-Hwan Ryu, Shin-Kyu Choi, Kim Hun Tae, Yang Dae Suck, KyuWon Kim, En-Soo Hong [0180]

Study on the Spacing of Group Piles Considering the Arching Effect; Chan-Hee Kim*, Seong-Jin Kil, Jae-Won Kim, Gap-Bu Kim, Young-Uk Kim, Jun-Ho Moon [0222]

Impact of Salinity on Thermal Properties of Frozen Sand in Artificial Ground Freezing Systems; Hyeontae Park*, Sangyeong Park, Hojong Kim, Hangseok Choi [0188]

Optimizing Cement-Based Grout Material for Artificial Ground Freezing: Effects of Silica Sand and Graphite Additives on Thermal Conductivity and Workability;

TECHNICAL PROGRAM

Hojong Kim*, Sangyeong Park, Hyeontae Park, Hangseok Choi [0189]

Influence of Secant Pile Construction on the Deformation of Pile Foundations in Adjacent High speed Railway Bridges; Changdan Wang, Bingjun Wang, Shunhua Zhou, Jinglong Wang [0309]

TECHNICAL PROGRAM

Membrane and Water Treatment

Session TF4 **14:10 – 16:10** **Room: F**
Session Title: Skills for water and resource protection responding to climate change (ECO-UP Int'l Conference)
Chairman: Youngjin Kim

The fate of Microcystin-LR in a water distribution system; Dooil Kim* [0266]

Field test of a membrane contactor process for ammonia recovery from anaerobic digestion leachate; Youngjin Kim* [0292]

Particulate matter outflow and behavior in ultrapure water pipelines; Bo Hyeon Park, Soohoon Choi*, Won Hyeong Seo, Gaeun Kim [0298]

Biofouling control of FO membrane by non-oxidizing biocide for wastewater reclamation process; Duksoo Jang* [0305]

Fractional-Submerged Membrane distillation crystallizer for resource recovery from desalination plant brine; Youngkwon Choi* [0307]

Session TD5 **16:20 – 18:00** **Room: D**
Session Title: Sustainable Solutions for Air Quality, Pollutant Dispersion, and Decarbonization
Chairman: Cruz Y. Li

High sulfonation and membrane properties of polyphenylsulfone(PPSU) for ion exchange device application; Jedeok Kim*, Fatin Bazilah Binti Fauzi [0026]

Using machine learning and artificial intelligence methods to study the current-voltage characteristics of membrane systems; *Kirillova Evgenia, Kovalenko Anna [0072] [Poster]

Environmental Science and Technology

Session TD5 **16:20 – 18:00** **Room: D**
Session Title: Sustainable Solutions for Air Quality, Pollutant Dispersion, and Decarbonization
Chairman: Cruz Y. Li

A computational platform of Air Quality Analysis for better future sustainability; Peng-Yeng Yin* [0044]

Correlation and quantification of flow field and pollutant dispersion mechanisms in a single street canyon; Xisheng LIN*, Bingchao Zhang, Cruz Y. Li, Tim Tse [0073]

Life Cycle GHG emissions assessment of hybrid power systems for off-grid electrification of remote islands; Angeliki Sagani, Vassilis Dedoussis* [0142]

Circular economy-driven performance assessment of electricity generation options for decarbonization of Islands; Angeliki Sagani, Styliani Sofianopoulou* [0148]

Environmental Science and Technology (Poster/Video)

Estimation of salinity gradient power generation in sea-river systems in Japan; Kotomi Watanabe*, Hiroyuki Shima [0108]

Utilizing Travertine Waste in Sustainable Pervious Concrete Pavement for Heavy Metal Mitigation and Urban Runoff Reduction; Tianzhen Li* [0115]

TECHNICAL PROGRAM

Materials Research

Session TA4 **14:40 – 16:00** **Room: A**
Session Title: Recent developments in the advanced and functional construction materials
Chairman: Joonho Seo

Optimizing Ternary Cement Mixes: Phase Diagrams for Portland Cement-Slag-Fly Ash Blends; Aron Berhanu Degefa* [0027]

An overview of the characteristics of carbonation-cured alkali-activated slag: Effect of activator type and curing condition; SungSik Choi*, Jisoo Kim, Joonho Seo, H. K. Lee [0078]

Recent advances in carbonation curing for improving properties of belite-rich cement; Junjie Pei*, Jeong Gook Jang [0063]

Effects of interior stone waste sludge on the mechanical properties and microstructure of cement mortar; Jae Seok Choi, Beomjoo Yang* [0040]

Enhanced Segmentation Techniques for Images of Concrete sections from Construction Sites; Minwuye Mesfin Woldeamanuel*, Hyeong Ki Kim [0079]

The effect of mortar infill on large internodal bamboo species, Bambusa blumeana, for steel dowel connections; JOMARI TAN [0106]

Session TA5 **16:20 – 18:00** **Room: A**
Session Title: Sustainable Polymers: Green Packaging, Water Suppressants, and Composite Materials
Chairman: Joonho Seo

Development of Water Evaporation Suppressant for Reservoir Utilizing Fern as an Antimicrobial Agent; Drexler Sibal*, Kristian Daile Arellano, Ross Aldrich Perez, Christianne Faye Villanueva, Jessica Michaela Mañago [0018]

Utilization of Plastic Manufacturing Byproducts for Production of Composite Polyethylene Particle Boards; Jazel Dizon*, Jerome Jordan Famadico [0021]

Enhancing the oxidation resistance of metal and alloy at high temperature by surface fluorination; Jae-Ho Kim*, Susumu Yonezawa [0196]

Research on Properties of Eco-Green Ultra-High-Performance Concrete with Distinct Alkali-Activated Contents; Po-yuan Su*, Wen-Cheng Yeh, Ming-Hui Lee [0055]

Combining galactomannans and proteins in the development of green polymers: aiming towards the future of packaging materials; Adriana Franca*, Leandro Oliveira, Layla Alves [0006]

Research and Application of Improved Lithium Mica Leaching Slag Used as Subgrade Filling material; Kun Yu*, Xiao-hui Li, Dong-bo Zou, Hai-yu Xia, Yin Cheng, Qun-yan Liu, Zi-jun Jiang, Qiong-qiong Wang [0058]

Evaluation of the index properties of water hyacinth biochar-treated soiljeann; Patrick Barcelona, Juan Angelo Malaca, Lance Matthew Santiago, Jose Gabriel Zamora, Erica Elice Uy*, Angelo Edora [0062]

Materials Research (Poster/Video)

Hydrogen Damage of 17-4 Precipitation-Hardening Stainless Steel; Wen-Ta Tsai* [0101]

Influence of Cement Fineness on the Performance of Cement Mortar; Zhiyuan Wang* [0111]

Strength and durability against wetting-drying cycles of geopolymer-stabilized reclaimed asphalt pavement for roadway base course materials; Walairat Bunthai*, Narissara Khamtanee, Porntep Puangprakhon [0122]

Recycled Asphalt Pavement Modified with Geopolymer Obtained from Coal Ash as a Roadway Base Course Materials; Narissara Khamtanee*, Chanawat Wongrueang, Nattawut Sukkaew, Phuwanai Meethaem, Phutthichai Tohram, Walairat Bunthai, Porntep Puangprakhon [0123]

Effect of thermal environment on the structural responses of metal-ceramic FGM plates having cutout with and without stiffeners; Balaraman Paneerselvam*, Sreehari VM [0007]

TECHNICAL PROGRAM

Analysis on plastic shrinkage crack with improved bleeding and evaporation evaluation; hyunkyoung kim* Hyo-Gyoung Kwak [0264]

Concrete Construction

Session TD4 **14:40– 16:00** **Room: D**
Session Title: Innovations in Concrete and Steel: Voids, Sustainable Materials, Curing Methods, and Corrosion Control
Chairman: Yoonseong Jeong

Simulation of the influence of initial voids on the mechanical behaviour of steel-concrete-steel structures in shear; Ludovic Jason [0008]

Dimension Limestone Waste as a Component in Concrete Production; Mary Ann Adajar [0013]

Optimizing accelerated curing methods for Ultra-High-Performance Concrete (UHPC): A comparative study of hot-air oven curing and hot water curing techniques; Sujitha Magdalene, Karthikeyan Balasubramaniyan [0014]

Corrosion characteristics of rebar in accelerated carbonation cured OPC and supplementary cementitious materials; Gebremicael Abitew*, Hyeong Ki Kim [0076]

Flexural behaviour of a woodchip geopolymer concrete-steel composite slab; Amar Khennane*, Safat Al-Deen, Joshua Hughes, Firesenay Z. Gigar [0005]

Performance of seawater-derived Mg(OH)₂ as an alternative coating solution for hydrogen sulfide-induced corrosion in concrete pipes; Cheryl Lyne Roxas, Kenneth Jae Elevado, Janelle Patricia Moa*, John Louis Co, Kyle Anderson Co, Bea Angela Gaw [0080]

ESTIMATING GROUNDWATER ELEVATION USING MACHINE LEARNING TECHNIQUES: A CASE OF METRO MANILA, PHILIPPINES; Joenel Galupino* [0114]

Concrete Construction (Poster/Video)

Mechanical Properties of concrete using MICP modified recycled concrete aggregates; Chao-Wei Tang* [0009]

Additive Manufacturing of Cementitious Materials Using a Gantry Printer; C. Shawn Sun*, Nikhil Sagar Dadem, Gevork Gazdzhyan, Mohammed Abdul Riyan Fnu, Mundkur Palguni Panduranga Kamath, Meron Kahsai [0133]

Structural Monitoring and Maintenance

Session TC4 **14:40– 16:00** **Room: C**
Session Title: Advanced sensing and data processing technologies for smart construction and monitoring
Chairman: Sung-Han Sim

Implementation of Bridge Inspection Using In-House Drone; Yen Kuan*, Chia-Ming Chang [0109]

AI-based Structural Damage Detection with Customized Neural Network for Seismically-Excited Buildings; Chieh-Yu Liu*; Chia-Ming Chang [0113]

Long-term shape measurement of bridge using point cloud; Sahyeon Lee*, Sung-Han Sim [0214]

Damage localization in 3D model using NerF; Jonghwa Hong*, Sung-Han Sim [0237]

Automated Measurement of Bridge Expansion Joints Using High-Resolution Imaging and Prompt Engineering with Multimodal Deep Learning; Gyumin Lee*, Sung-Han Sim, Sahyeon Lee, Soojin Cho [0243]

MST-GAN framework for estimating spatio-temporal frequency variation under vehicle bridge interaction; Robin Kim* [0265]

Damage Identification in Concrete Structure using EMI Signals of CSA Sensor and 2D CNN Deep Learning; Quoc-Bao Ta*, Ngoc-Lan Pham, Jeong-Tae Kim [0290]

TECHNICAL PROGRAM

Vibration Signals and 1-D CNN Deep Learning for Damage Identification of Coastal Structural System; Ngoc-Lan Pham*, Quoc-Bao Ta, Jeong-Tae Kim [0294]

Session TC5

16:20 – 18:00

Room: C

Session Title: Data-driven structural health monitoring and assessment

Chairman: Jason Ludovic

Structural Monitoring System for Real-Time Health Management of UAV Composite Wing; Monica Ciminello*, Bogdan Sikorski, Lorenzo Pellone, Umberto Mercurio, Gianvito Apuleo, Shay Shoam, Iddo Kressel, Antonio Concilio [0069]

Incremental Dynamic Analysis of Concrete Gravity Dam under Single and Repeated Ground Motions with Varying Dam Height; Asmidar Mohamad, Nik Zainab Nik Azizan*, Shamilah Anudai Anuar, Tahara Ramadan Md Kassin [0112]

Research on seismic response prediction method of railway bridge based on deep learning; Xinxin Wu*, Guo Junxiao, Yue Zixiang, Ding Youliang [0178]

Machine Learning Based Damage Detection Method for Fiber Metal Laminate Structures with Interlaminar Defects; Daniel Irawan, Evgeny Morozov, Murat Tahtali [0203]

Integrating Tiny Machine Learning and Robotics for Structural Inspection and Maintenance; Tzu-Hsuan Lin [0085]

Overload Overturning Risk Assessment of Single-Pier Bridges Based on Digital Twin Technology; Hua-Qiang Li*, You-Liang Ding [0184]

Identifying the mechanical property of mortar using a solitary wave based deep learning; Tae-Yeon Kim*, Sangyoung Yoon, Chan Yeob Yeun, Ernesto Damiani [0091]

Optimization of the electrical conductivity and mix design of graphene and recycled carbon fiber reinforced self-sensing concrete through the piezoresistive effect; Aldrei Ong*, Bernardo Lejano [0190]

Structural Monitoring and Maintenance (Poster/Video)

Bending Fracture Process of Corroded/Healthy RC Short Scale Beams based on AE Measurement; Yuma Kawasaki* [0087]

Nondestructive Evaluation of Defects in Tendon Ducts of Post-tensioned Concrete Bridge Girders; Christoph Schaal, C. Shawn Sun*, Eduardo Casillas, Saul Romero [0132]

Stochastic Process-Based Optimum Inspection and Maintenance Strategy with Multi-Objective Optimization; Hao Zhang, Jian Jiang, Chizhi Chris Zhang [0310]

Ocean Systems Engineering

Session TE5

16:20 – 18:00

Room: E

Session Title: Advanced Design and Simulation in Ocean Systems Engineering

Chairman: Phill-Seung Lee

The past and future of solid boundary treatment in SPH; Yoon Sung Jeong*, Phill-Seung Lee [0289]

Explicit dynamic interaction analysis between an ultra-high-speed maglev vehicle and the guideway shell structure; Seunghwan Park*, Seung-Min Baek, Hyung-Jo Jung, Phillseung Lee, Man-Cheol Kim [0291]

Fluid Dynamic Design and Construction of a Horizontal Circulating Water Channel; JungHee Cho*, Minseop Lee, Youngsu Kim, Daegyoun Kim, Phill-Seung Lee [0286]

Design of Deployable Underwater Docking Station for Autonomous Underwater Vehicle; Gagyeong Park*, Ki-Hoon Lee, Sung-Jin Lee, Dae-Young Lee [0288]

Design and implementation of hardware-in-the-loop simulation (HILS) system for high-fidelity over-actuated AUV; Hyuntae Bang*, Soobin Ji, Seongjun Yoo, Dongmin Choi, Joohyun Lee, Wonkeun Youn [0296]

TECHNICAL PROGRAM

Advances in Computational Design

Session WC3 **10:10 – 12:00** **Room: C**
Session Title: Risk mitigation of coastal infrastructure in extreme meteorological environments I
Chairman: Yi-Qing Ni

Comparative study of wind parameters during Typhoon event under stationary and non-stationary wind models; Kang Cai* [0030]

Fragility Modeling of Tall Buildings subjected to Windborne Debris during Hurricanes; Yue Dong* [0046]

Observation of wind-driven rain and wind-borne debris of tall buildings based on LiDAR technology; E. Deng*, Yi-Qing Ni [0054]

Effects of Bridge Tower on the aerodynamics of an high-speed train mounted a flat-box girder; Xie Zuy* [0272]

Coupled CFD and MBD methods for dynamic performance analysis of a high-speed train passing through windbreak corridors with various forms; Zhang Qiyue* [0033] (not live)

Session WC4 **13:30 – 15:00** **Room: C**
Session Title: Risk mitigation of coastal infrastructure in extreme meteorological environments II
Chairman: Yi-Qing Ni

Aerodynamic threat of severe wind condition to the running safety of maglev train.; Zi-Jian Guo*, Zheng-Wei Chen, Yi-Qing Ni [0057]

Effects of building complexes on low-level wind shear around an airport: A wind tunnel test; Enze Rui*, Zheng-Wei Chen, Yi-Qing Ni [0061]

The effect of microphysics schemes in numerical typhoon simulation using WRF; Chenguang Guo, Sunce Liao, Kang Cai, Mingfeng Huang* [0099]

Robust pixel-level crack detection for glass curtain wall using synthetic images and EdgeEnhanced-DNet; Wen-Bo Hu, Zheng-Wei Chen*, Yi-Qing Ni [0102]

Session WC5 **15:10 – 16:30** **Room: C**
Session Title: Risk mitigation of coastal infrastructure in extreme meteorological environments III
Chairman: Yi-Qing Ni

Enhancing Meteorological Forecasting in Extreme Climate Conditions with Spatio-temporal Graph Neural Networks and Transformer Deep Learning Technology; Jia-Hao Lu*, Zheng-Wei Chen, Yi-Qing Ni [0051]

Application of air-blowing in mitigating the risk of train overturning; Zheng-Wei Chen*, Zi-Jian Guo, Yi-Qing Ni [0052]

On the anti-rolling performance of a coastal train using vortex generators; Xiaodong Chen*, Bin Xu [0068]

Experimental investigation on the aerodynamic force and pressure on rectangular section with side ratio of 3:2 under accelerating flow; Xiu-Yu CHEN*, Zheng-Wei Chen, Yi-Qing Ni, Zhong-Xu Tan, Le-Dong Zhu [0075]

Nonlinear spatiotemporal characteristics of wind-rain flow around the trains passing through the tunnel entrance during rainstorms; Guo-Zhi Li, Wei-Chao Yang* [0093]

Evolution of flow field around high-speed trains meeting at the tunnel entrance under strong wind-rain environment; Hong He, Wei-Chao Yang* [0105]

Session WE2 **10:10 – 12:00** **Room: E**
Session Title: Recent Advances in Structural Concrete
Chairman: Deuckhang Lee

A Method of Measuring Information Using Image-Based Reinforcement Techniques; Jae-hee Choi, Sanghee Kim, Donghyuk Jung* [0100]

TECHNICAL PROGRAM

Hybrid Energy Dissipation Device Consisting of Steel Slit and Rotational Friction Damping Devices; Dong-Hyeon Shin, Seong-Hun Kang*, Deuckhang (DK) Lee [0267]

Seismic Damage Detections of Nonstructural Components in Building Structure via Shape-Based Vision System; Insub Choi* [0268]

Blast Resistance Performance Evaluation of Reinforced Concrete Columns with Various Structural Details; Jiuk Shin*, Ye-Eun Kim, Kihak Lee [0269]

Application of GPR to Detect Deformed Shape of Reinforcing Bars in Concrete; Tae Min Lee*, Hajin Choi [0274]

Algorithm for Estimating Deflection of Reinforced Concrete Beams Based on Crack Propagation Using DIC and FEA; Didar Meiramov, Hyunjin Ju* [0185] [\[Video\]](#)

Assessing the Influence of Waste Tire Rubber on Concrete Properties; C. Shawn Sun*, Jazib Rahim* [0136] [\[Video\]](#)

Ballistic Testing of Polyurea-Coated Ultra-High Performance Concrete Panels; Luke Murphy, David Nazzal, C. Shawn Sun, Dvin Dergevorkian* [0200] [\[Video\]](#)

Ultra-high Performance Concrete Superstructure for Railroad Overpasses; Cender Osorio, C. Shawn Sun [0205] [\[Video\]](#)

Session WE3 **13:30 – 14:50** **Room: E**
Session Title: Innovative Structural Design, Analysis, and Health Monitoring for Buildings and Infrastructures
Chairman: Hyeon-Jong Hwang

Evaluation of progressive collapse resistance of PC structures with slabs; SungHyun Kim*, Hyeon-Jong Hwang, Beom Moo Lee [0204]

Nonlinear hinge model simulating moment-rotation behavior of slab-column connections; HyeonJin Kim*, Hyeon-Jong Hwang [0207]

Safety Assessment of Slab Construction Loads in Wall-Type Building; JongMin Lee*, Hyeon-Jong Hwang [0211]

Finite Element Analysis of RC Interior Beam-Column Joints with Various Beam Section Details; Son Yubin*, Hyeon-Jong Hwang [0217]

Application of Reinforcement Learning to Composite Beam Design; MinJeong Cho*, Hyeon-Jong Hwang [0221]

Mechanical Characteristics and Working Mechanism of Tram Pile-Plate Composite Subgrade in Deep Soft Soil; Chang-Dan Wang, Kaixiang Chen*, He-Nian Zhang, Pei-Sheng Xi [0278] [\[Video\]](#)

Session HA2 **09:40 - 11:10** **Room: A**
Session Title: Structural Design and Computational Techniques
Chairmen: Thomas Kang, Hyeongyeop Shin

Research on Automatic Picking Algorithm of Ultrasonic Arrival Time for Concrete Structures; Seunghyun Lee*, Hajin Choi, Thomas Kang [0155]

Representation Learning for Classification of Concrete Crack Images; Sang Min Lee*, Hyeon-Sik Choi, Chanho Kim, Thomas Kang [0156]

Effect of Radial Reinforcement on Delamination Behavior in Curved Post-Tensioned Concrete Structure; Suhyun Park*, Thomas Kang [0159]

GPU Accelerated Nonlinear FEA of RC Beams using the ML-based Material Model; Hyunseung Chung, Hyo-Gyoung Kwak [0306]

Finite Element Analysis of Transfer Zone in Pretensioned Concrete Members Using Cohesive Damage Models; Jongwon Hong*, Thomas Kang [0162]

Design Considerations for the Implementation of UHPC to Containment Buildings; Seung Heon Lee*, Thomas Kang [0164]

Tendon Stress Increment in Post-Tensioned Members with GSS Tendons; Hyeongyeop Shin*, Thomas Kang [0168]

TECHNICAL PROGRAM

Spatial Structures of the Inspire Resort in Yeongjong-do; Yeon-Ki Jung*, Seung-Jin Lim, Jong-Ho Kim, Dae-Hwan Kim, Kyung-tae Kim [0308]

Analysis of Load Distribution Characteristics Based on the Geometry of 3-D Asymmetric Structures; SeongHun Kim*, Hyo-Gyoung Kwak [0201] [\[Video\]](#)

Large Amplitude Free Vibration of FG-GPLRC Porous Cylindrical Panels with an Internal Crack; Jin-Rae Cho* [0098] [\[Video\]](#)

Session HB2 **09:40 - 11:10** **Room: B**
Session Title: Failure Investigation of Steel, Concrete and Geo-Composite Structures I
Chairman: Yong-Hoon Byun

Basalt Fiber-Reinforced Controlled Low-Strength Material Under Cyclic Loading; Dong Geon Son*, Jong-Sub Lee, Seungjun Kim, Myeong-Ho Bae, Yong-Hoon Byun [0118]

Parametric Study of Earth Dam Deformations with Material Point Method Under Various Pipe and Hydraulic Conditions; Dong-Ju Kim*, Geunwoo Park, Jong-Sub Lee, Thomas H.K. Kang, Yong-Hoon Byun [0116]

Limited Applicability of Rational Formula in the Presence of Storage Effect; Jinwook Lee, Chulsang Yoo* [0126]

Evaluation of Dynamic Properties Transmission Tower Structures Using Drone Image; Arum Jang, Sanggi Jeong, Donghwi Jung, Yong-Hoon Byun, Young K. Ju* [0146]

Evaluation of Plastic Deformation for Steel Coupons Using Thermography; Arum Jang, Sanggi Jeong, Donghwi Jung, Yong-Hoon Byun and Young K. Ju* [0147]

Anchorage Strength of Headed Round Bar within Exterior Beam-Column Joint; Han Suk Sung*, Thomas Kang [0163]

Session HB3 **11:20 - 13:00** **Room: B**
Session Title: Failure Investigation of Steel, Concrete and Geo-Composite Structures II
Chairman: Seungjun Kim

Residual Seismic Performance of Damaged Reinforced Concrete Shear Walls; Wen-I Liao* [0065]

Mechanical properties variations of expandable foam grout containing various alkali-free accelerator contents; WooJin Han, Dongsoo Lee, Jong-Sub Le, Tae Sup Yun, Jongchan Kim* [0120]

Development of electrically conductive membrane contactor for antifouling in the carbon dioxide stripping process; Seonkyu Lee, Seungkwan Hong* [0129]

Utilizing NeRFs-based Point Clouds for Concrete Crack Analysis; Seung Ho Song, Seokju Shin, Hunhee Cho* [0143]

Experimental investigation of failure modes of transmission towers; Pyounghwa Kim, Whi Seok Han, Jeong Hun Kim, Young Kyu Ju, Young Jong Kang, Seungjun Kim* [0271]

Calculation and Measurement of Material Properties of Laminated Polymer Composite; Eva Kormanikova*, Hugo Sol, Jun Gu, Kamila Kotrasova, Lenka Kabosova, Peter Sabol [0011] [\[Video\]](#)

Numerical investigation on the moment redistribution of continuous concrete beams reinforced with FRP bars; Huangxin Chan, Tiejiong Lou* [0059] [\[Video\]](#)

Second-Order Effects of External Prestressing Tendons on Steel-Concrete Composite Beams; Xiaolong Pang, Huangxin Chan, Tiejiong Lou* [0060] [\[Video\]](#)

Blast analysis of high-performance fiber-reinforced cement composite panels; MinJoo Lee* [0304] [\[Video\]](#)

TECHNICAL PROGRAM

Session HC2 **09:40 - 11:10** **Room: C**

Session Title: Forensics of Steel, Concrete and Geo-Composite Structures I

Chairman: Donghwi Jung

Machine learning models for water distribution systems: Best practices and recommendations; Donghwi Jung*, Sanghoon Jun [0140]

Unsupervised artificial neural network approach for abnormality recognition in large-scale offshore floating structures; Jihun Song, Yunhak Noh, Hunhee Cho, Goangseup Zi, Seungjun Kim* [0124]

Estimation of Alternative Water Supply Volume for Ensuring Water Supply Stability in the Han River Basin, Korea; Chulsang Yoo, Jeong-Hyeok Ma* [0130]

An adaptive water demand forecasting model for different types of district metered area in urban water distribution system; Hyewoon Jang, Donghwi Jung* [0135]

Numerical Analysis of Unbonded Post-tensioned Concrete Slab under Fire Using Spring and Contact Models; Kwanwoo Yi*, Thomas Kang [0154]

Session HC3 **11:20 - 13:00** **Room: C**

Session Title: Forensics of Steel, Concrete and Geo-Composite Structures-II

Chairman: Tae Sup Yun

Numerical study on the propagation of longitudinal waves in GFRP rock bolt; Jung-Doung Yu, Namsun Kim, Hyung-Koo Yoon, Thomas H.K. Kang, Jong-Sub Lee* [0119]

Enhancing Fouling Index Predictions: A Hyperspectral and Deep Learning Approach to HAB Management; Da Yun Kwon*, Do Hyuck Kwon, Jaewon Lee, Jihun Lim, Kyung Hwa Cho, Seungkwon Hong [0128]

Guided Segmentation of Large-Scale Indoor Spaces Using Door Point Clusters; Seung Ho Song, Harim Kim, Changsu Lee, Heejae Ahn, Woobin Kwon, Hunhee Cho* [0139]

Optimization design of OC3-Hywind spar-buoy floater based on rigid motion and hydroelastic response; Chuan Ma, Goangseup Zi* [0170]

Prediction of quadratic fire curve considering the Increase in mass of stock-piles; Eun-Joon Nam, Goang-Seup Zi* [0171]

Carbonation Efficiency of Steel Slag According to Carbonation Conditions; Jeehoon Ma, Tae Sup Yun* [0270]

In-plane and Out-of-plane Behavior of Flat Plate Floor Diaphragm; Manwoo Kim*, Thomas Kang [0161]

Advances in Computational Design (Poster/Video)

Structural design of a reconfigurable and temporary spatial structure according to the Eurocodes; Stefanos Gkatzogiannis*, Marios C. Phocas, Eftychios G. Christoforou [0003]

Algorithm for Estimating Deflection of Reinforced Concrete Beams Based on Crack Propagation Using DIC and FEA; Didar Meiramov, Hyunjin Ju* [0185]

Assessing the Influence of Waste Tire Rubber on Concrete Properties; C. Shawn Sun*, Jazib Rahim* [0136]

Ballistic Testing of Polyurea-Coated Ultra-High Performance Concrete Panels; Luke Murphy, David Nazzal, C. Shawn Sun, Dvin Dergevorkian* [0200]

Ultra-high Performance Concrete Superstructure for Railroad Overpasses; Cender Osorio, C. Shawn Sun [0205]

Mechanical Characteristics and Working Mechanism of Tram Pile-Plate Composite Subgrade in Deep Soft Soil; Chang-Dan Wang, Kaixiang Chen*, He-Nian Zhang, Pei-Sheng Xi [0278]

Analysis of Load Distribution Characteristics Based on the Geometry of 3-D Asymmetric Structures; SeongHun Kim*, Hyo-Gyoung Kwak [0201]

Large Amplitude Free Vibration of FG-GPLRC Porous Cylindrical Panels with an Internal Crack; Jin-Rae Cho* [0098]

TECHNICAL PROGRAM

Calculation and Measurement of Material Properties of Laminated Polymer Composite; Eva Kormanikova*, Hugo Sol, Jun Gu, Kamila Kotrasova, Lenka Kabosova, Peter Sabol [0011]

Numerical investigation on the moment redistribution of continuous concrete beams reinforced with FRP bars; Huangxin Chan, Tiejiong Lou* [0059]

Second-Order Effects of External Prestressing Tendons on Steel-Concrete Composite Beams; Xiaolong Pang, Huangxin Chan, Tiejiong Lou* [0060]

Blast analysis of high-performance fiber-reinforced cement composite panels; MinJoo Lee* [0304]

Aircraft and Spacecraft and Automotive Science

Session TE4 **14:40– 16:10** **Room: E**
Session Title: Advanced Methods in Aerospace and Coupled Systems Mechanics
Chairman: Phill-Seung Lee

Development and testing of nano-filled polymer sensors for aerospace structural health monitoring; Ernesto Monaco*, Massimo Viscardi, Pietro Russo, Fabrizio Ricci [0066]

Estimating debris distribution of adjacent structures to road segments during seismic action; Cris Angelo Fernandez*, Rainier Lawrence Valdez, Lessandro Garciano [0137]

Coupled Systems Mechanics

Session TE4 **14:40– 16:10** **Room: E**
Session Title: Advanced Methods in Aerospace and Coupled Systems Mechanics
Chairman: Phill-Seung Lee

Optimal design of tuned particle damper for vibration control of railway systems; Chih-Shiuan Lin*, Tse-Lin Hsu, Ping-Chan Liu, Hsin-Tzu Hsieh [0081]

Numerical study of guided wave propagation in random elastic structures coupled with fluids; F. Seyfaddini, S. Naili, C. Desceliers, V.-H. Nguyen* [0103]

Ultrasonic assessment of imperfect contact interfaces using convolutional neural network; Y. Kwak, V.-H. Nguyen*, Y. Hériveaux, J. Park, G. Haiat [0104]

Fluid-Structure-Soil Interaction Analysis of Elevated Water Tank: Systematic Review; JYOTI CHOUHAN* [0022]
[\[Video\]](#)