ASEM23 Program at a Glance

**Time is based on KST / GMT+9*

AUGUST 16 WEDNESDAY

<table>
<tr><th>A [Rm 515]</th><th>B [Rm 516]</th><th>C [Rm 519]</th></tr>
<tr><td>09:20 - 09:30 ICTUS Opening
WA0: Opening Remarks (Nag Young Kim)</td><td rowspan="2">09:30 - 10:00 Keynote Lecture Ⅲ
WB1:Seismic Collapse Performance of Reinforced Concrete Buildings by Halil Sezen (USA)
10:00 - 10:10 Break Time</td><td rowspan="2"></td></tr>
<tr><td>09:30 - 10:00 Keynote Lecture Ⅰ
WA1:Resilience and Sustainability in Underground Space – Embracing the United Nations Sustainability Development Goals by Arnold Dix (Australia)</td></tr>
<tr><td>10:00 - 10:30 Keynote Lecture Ⅱ
WA2: Advances in rock fragmentation technologies by Seokwon Jeon (Korea)
10:30 - 10:50 Break Time</td><td rowspan="2">10:10 - 12:00
WB2: NU-CBNU-HKNU Mini Symposium</td><td rowspan="2">10:10 - 12:00
WC1: Seismic Design, Analysis, and Diagnosis of Concrete structures</td></tr>
<tr><td>10:50 - 12:20
WA3: Structural and Hydraulic Interaction in Underground Structures</td></tr>
<tr><td colspan="3">13:00 - 13:10 Opening Ceremony
WB3: Opening Remarks
by Chung Bang Yun (Korea)</td></tr>
<tr><td colspan="3">13:10 - 13:40 Plenary Keynote Speech
WB4: Recent Advances in Topology Optimizations of Structures subjected to Stochastic Dynamic Excitations
by B.F. Spencer, Jr. (USA)</td></tr>
<tr><td>13:20 - 14:50
WA4: Developments in Underground Space Technologies</td><td>13:50 - 14:20 Keynote Lecture Ⅳ
WB5: Suspension Bridges with Railway Crossing: Potentially-Innovative Options by Fabio Casciati (Italy)</td><td></td></tr>
<tr><td>14:50 - 15:00 Break Time</td><td>14:20 - 14:40 Break Time</td><td>14:20 - 14:40 Break Time</td></tr>
</table>

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**Time is based on KST / GMT+9*

15:00 - 16:30 **WA5:** Improvements in Conventional Tunneling & Tunneling and Underground Works in Extreme Conditions	**14:40 - 16:10** **WB6:** Advancements in Nanomaterial Surface Engineering: Techniques and Applications Ⅰ	**14:40 - 16:10** **WC4:** Challenges in Structural Engineering & Mechanics - I
16:30 - 16:40 Break Time	**16:10 - 16:30 Break Time**	**16:10 - 16:30 Break Time**
16:40 - 18:00 **WA6:** Resilience and Sustainability in Underground Space & Innovation in Mechanized Tunneling	**16:30 - 18:00** **WB7:** Advancements in Nanomaterial Surface Engineering: Techniques and Applications Ⅱ	**16:30 - 18:10** **WC5**: Multi-scale Modeling and Machine Learning Applications for Functional Materials Design
Reception 18:30 – 20:00 (B1, Multi Purpose Hall)		

ASEM23 Program at a Glance

**Time is based on KST / GMT+9*

AUGUST 17 THURSDAY

A [Rm 515]	B [Rm 516]	C [Rm 519]
09:00 – 10:00 Registration		
10: 00 - 10:30 Keynote Lecture Ⅴ **TA1:** Performance of the MITC3+ and MITC4+ shell finite elements by Phill-Seung Lee (Korea)	**10: 00 - 10:30 Keynote Lecture** Ⅵ **TB1:** Direct Design of Composite Structures Using Practical Nonlinear Inelastic Analysis by Seung-Eock Kim (Korea)	**10: 00 - 10:30 Keynote Lecture** Ⅶ **TC1:** Behaviour and design of steel-concrete composite walls for tall buildings by Brian Uy (Australia)
10:30 - 10:40 Break Time		
10:40 - 12:10 **TA2:** Challenges in Structural Engineering & Mechanics - II	**10:40 - 12:10** **TB2**: Smart Structures Technologies and Digital Transformation Ⅰ	**10:40 - 12:10** **TC2:** Analysis, Construction and Monitoring Techniques for the Submerged Floating Tunnel System
12:10 – 13:30 Lunch		
13:40 - 15:10 **TA3**: Advances in Computational Mechanics	**13:40 - 15:10** **TB3**: Smart Structures Technologies and Digital Transformation Ⅱ	**13:40 - 15:10** **TC3**: Smart Structures Technologies and Digital Transformation Ⅲ
15:10 - 15:20 Break Time		
15:20 – 17:00 **TA4:** Advanced structural systems	**15:20 – 16:50** **TB4:** Smart Structures Technologies and Digital Transformation Ⅳ	**15:20 – 16:50** **TC4:** Recent advances in steel and composite structures

ASEM23 Program at a Glance

**Time is based on KST / GMT+9*

AUGUST 18 FRIDAY

A [Rm 515]	B [Rm 516]	C [Rm 519]
10: 00 - 11:30 **FA1**: Computational Method and Structural Mechanics [Zoom Only]	**10: 00 - 11:30** **FB1:** Advancements in Structural Engineering [Zoon Only]	**10: 00 - 12:00** **FC1**: Civil, Structural and Forensic Engineering of Concrete and Geo-Hydro System [Zoom Only]
[Poster Session] ID: 891 921 3469 / PW: 000333		

Video/Poster Sessions	
Video Sessions	All pre-recorded video presentations and posters will be available on ASEM23 Proceedings throughout the conference period (8/16-8/18).
Poster Q&A (Zoom)	**8/18 (Fri) 12: 20 - (KST/GMT+9)** Please refer to the Poster Session Schedule for your designated Q&A time slots.

ASEM23 Program at a Glance

*Time is based on KST / GMT+9

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. 0010 (name*)]
3) Presenters will be given the co-host authority during their presentation.

Zoom IDs & Passwords	
Session A (Wed-Fri)	ID: 972 123 8601 PW: 000111
Session B (Wed-Fri)	ID: 814 3792 8689 PW: 000222
Session C (Wed-Fri)	ID: 891 921 3469 PW: 000333

All Poster/Video presentations will be uploaded to the online proceeding of ASEM23.

ASEM23 Online Proceedings: http://www.i-asem.org/asem23_publication.html

TECHNICAL PROGRAM

** All participants may access live sessions through Zoom. Please indicate your name and paper ID to participate.*

REGISTRATION
08:30 – 09:10
GECE Foyer 5th Floor

* *

OPENING CEREMONY **(T0 13:00 – 13:10)** **8/16 Wed**		
Opening Remarks		*Room B #516*
Chung Bang Yun, Co-Chairman, ASEM23		
PLENARY KEYNOTE LECTURE **(WB3 13:10 – 13:40)** **8/16 Wed**		
Recent Advances in Topology Optimizations of Structures subjected to Stochastic Dynamic Excitations; B.F. Spencer, Jr (USA)		
KEYNOTE LECTURES (I - IV) **(WB4 13:10 – 13:40)** **8/16 Wed**		
SESSION WA1	09:30 - 10:00	*Room A, #515*
Chairman: Jun Kyung Park		
Resilience and Sustainability in Underground Space – Embracing the United Nations Sustainability Development Goals; Arnold Dix (Australia)		
SESSION WA2	10:00 - 10:30	*Room A, #515*
Chairman: Hangseok Choi		
Advances in rock fragmentation technologies; Seokwon Jeon (Korea)		
SESSION WB1	09:30 - 10:00	*Room B, #516*
Chairman: DK Lee		
Seismic Collapse Performance of Reinforced Concrete Buildings; Halil Sezen (USA)		
SESSION WB5	13:50 – 14:20	*Room B, #516*
Chairman: B.F Spencer Jr.		
Suspension Bridges with Railway Crossing: Potentially-Innovative Options; Fabio Casciati (Italy)		

TECHNICAL PROGRAM

KEYNOTE LECTURES (Ⅴ - Ⅶ)		8/17 Thr
SESSION TA1	10:00 - 10:30	*Room A, #515*
Chairman:		
Performance of the MITC3+ and MITC4+ shell finite elements; Phill-Seung Lee (Korea)		
SESSION TB1	10:00 - 10:30	*Room B, #516*
Chairman: Hyung Jo Jung		
Direct Design of Composite Structures Using Practical Nonlinear Inelastic Analysis; Seung-Eock Kim (Korea)		
SESSION TC1	10:00 - 10:30	*Room C, #519*
Chairman: Sung-Han Sim		
Behaviour and design of steel-concrete composite walls for tall buildings; Brian Uy (Australia)		

TECHNICAL PROGRAM

Structural Engineering and Mechanics

Session WC4	**14:40-16:10**	**Room C: #519**
Session Title: Challenges in Structural Engineering & Mechanics - I		
Chairman: Phill-Seung Lee		
Zoom ID:	**8/16 Wed**	
Pre-form design for manufacturing CFRP shell structures with optimized fiber-orientation; Masatoshi Shimoda* [0018]		Onsite
Nonlinear static progressive collapse analysis for RC building frames subjected to initial lateral story drift; MengHao Tsai* [0021]		Onsite
The responses of underground cavity disturbed by surface concentrated load; Wen-Shinn Shyu* [0069]		Onsite
Free vibration of Porous FG Shallow Shells Reinforced with Oblique Stiffeners; Kamran Foroutan, Liming Dai* [0090]		Onsite
Effect of partial short cover depth on design life of RC structures under chloride environment; Muhammad Afaq Khalid*[0132]		Onsite
Predicting the Impact of Global Warming on RC. Structures in Zambia and Japan due to Carbonation; Wanzi Zulu* [0140]		Onsite
A simple nonlinear analytical model for unconsolidated geotextile-encased sand columns; Hyeong-Joo Kim, Voltaire Anthony Corsino Jr*, Young-Soung Joung, Jun-Young Park, James Vincent Reyes [0134]		Onsite

Session TA2	**10:40-12:10**	**Room A: #515**
Session Title: Challenges in Structural Engineering & Mechanics - II		
Chairman: Phill-Seung Lee		
Zoom ID:	**8/17 Thr**	
Developing a Compressibility Map using Machine Learning with a case in Eastern Metro Manila, Philippines; Erica Elice S. Uy*, Sean Cavan C. Co, Jerome Martin S. Du, Hans Daniel Faith G. Ong, Mikee Janine T. Uy Ching, Joenel Galupino [0026]		Onsite
A health evaluation system of road pavement in highway by using deep convolutional neural networks; Yuto, KOBAYASHI*, Junji, YOSHIDA [0029]		Onsite
Flutter control of bridges using eccentric wings; Uwe Starossek*, Rudolf Teryong Starossek [0080]		Onsite
Effect of turgor pressure on the deflection in plants; Tohya Kanahama*, Motohiro Sato [0051]		Onsite
Self-healing Performance of Geopolymer Mortar with Polypropylene Fiber and Bacteria; Albert A. Griño Jr*, Jason Maximino C. Ongpeng, Lessandro Estelito O. Garciano, Michael Angelo B. Promentilla, Ernesto J. Guades [0067]		Onsite
Impedance-control technique for physical simulation of traffic vibration effects in monolithic bridge widening; P.L. Ng*, Albert K.H. Kwan, Francis T.K. Au, Darius Bačinskas [0203]		Onsite
3D U-Net based real-time prediction model for radiofrequency ablation induced thermal damage region; Kyungho Yoon*, Minjee Seo [0135]		Onsite

TECHNICAL PROGRAM

Session TA3	**13:40-15:10**	**Room A: #515**
Session Title: Advances in Computational Mechanics		
Chairman: Phill-Seung Lee		
Zoom ID:	**8/17 Thr**	
Fatigue performance and a unified fatigue crack growth model of ASTM A709 grade 50 steel; Wen-Cheng Yeh*, Yung-Ming Wang [0079]		Onsite
Impact behavior of W-shaped carbon fiber thermoplastic composite structures; Shun-Fa Hwang* [0038]		Onsite
Fluoride containing strontium substituted calcium mesoporous bioactive glass nanoparticles; Parichart Naruphontjirakul* [0100]		Onsite
Effect of wollastonite micro-fibers reinforced with cellulose nanofibers on mechanical properties of ultra-high-performance mortar; Steve Supit*, Tomoya Nishiwaki, Faiz Uddin Ahmed Shaikh [0107]		Onsite
Relationship between vascular bundles and flexural rigidity of bamboo; Carol Lee Chalermsin*, Tohya Kanahama, Motohiro Sato [0053]		Onsite
Geotechnical characterization of dolomite byproducts as geomaterial for road embankment; Mary Ann Adajar*, Jackielyn Mae Bacay, Andre Angelo Chu, Daryl Ann Del Rosario [0037]		Onsite
Effects of beam depth on shear strength and seismic behavior of eccentric RC beam-column joint; Ho-Fai Wong*, Ying Liu, Hexin Zhang, Sung-Hei Luk [0155]		Onsite

Session TA4	**15:20-17:20**	**Room A: #515**
Session Title: Advanced structural systems		
Chairman: Phill-Seung Lee		
Zoom ID:	**8/17 Thr**	
Energy dissipation mechanism through Euler's bucking mode transition; Seunggyu Lee*, Phill-Seung Lee [0235]		Onsite
Damage Prediction of Buildings using Machine Learning Algorithms; SUNG HEI LUK* [0133]		Onsite
Performance evaluation of three sensor placement methods; Sungbo Lee*, Yong-Hwa Park, Phill-Seung Lee [0234]		Onsite
Control of plating microstructure and wettability behavior by ultrasonic application to hot dip galvanizing; Manova Raja Singh Selvaraj [0033]		Onsite
Nonlinear analysis of truss structures based on machine learning; Sojin Shin*, Phill-Seung Lee [0237]		Onsite
Improving brace member performance with steel hook dampers; Hsieh-Lung Hsu*, Alfin Suprayugo [0058]		Onsite
Direct calculation of stress RAOs for floating structures; Moonsu Park*, Phill-Seung Lee [0236]		Onsite
Design of seismic energy dissipating cantilever steel beams; Shinichi Takahashi*, Yukihiro Harada [0059]		Onsite

TECHNICAL PROGRAM

Session FB1	**10:00-11:30**	**Zoom Session**
Session Title: Advancements in Structural Engineering		
Chairman:		
Zoom ID:	**8/18 Fri**	
Prediction of bolt clamping forces using MS similarity maps calculated from a reduced-order model based on a CNN approach; Chan-Young Woo*, Kihong Shin, Jeong-Sam Han [0020]		Zoom
Reliability Assessment of Cable Element in Jembatan Merah Putih Cable-Stayed Bridge Using Weigh-In-Motion Vehicle Data; Widi Nugraha*, Indra Djati Sidi, Made Suarjana, Ediansjah Zulkifli4 [0024]		Zoom
Numerical analysis of a bending-active plate for a sun-shading façade system; Charis Sergidis* [0031]		Zoom
Simulation-Based Deep Learning Technique for Diagnosis of Bolt Jointed Plates Using PZT Sensors; Jeong Sam Han*, Soobum Lee [0039]		Zoom
Free vibration characteristics of sandwich beams with a FGM core and FG-CNTRC facesheets; Hyeong Jin Kim*, Jin-Rae Cho [0050]		Zoom
Numerical Investigation of Free Vibration of FG-GPLRC Porous Cylindrical Panels; Jin-Rae Cho*[0103]		Zoom

Structural Engineering and Mechanics

(Pre-recorded session)

Predicting bridge piers backbone curve using fast/slow cyclic tests through an attention-based CNN-bidirectional CuDNNLSTM network; Minwoo Chang* [0145]	Video
Flexural performance of concrete continuous beams reinforced with FRP bars; Sensen Shi*, Tiejiong Lou [0070]	Video
3D finite element modeling of externally prestressed concrete beams; Zhangxiang Li, Sensen Shi*, Tiejiong Lou [0071]	Video
Experimental Study of Sharply Curved Ultra-high Performance Concrete Beams; C. Shawn Sun* [0112]	Video
Analysis of Shallow Ultra-high Performance Concrete Bridges with Critical Clearance; C. Shawn Sun* [0158]	Video
Investigation of Size Effect Phenomenon in Split Tension Testing: An Experimental and Numerical Study; Hemam Amarjit Singh* [0173]	Video
Vibration of conical shell frusta of variable thickness with fluid interaction; .D.Nurul Izyan,K.K.Viswanathan*,D.S.Sankar,A.K.Nor Hafizah [0108]	Video
Numerical analysis of sound radiation characteristics of stiffened functionally graded panels under thermomechanical excitations; Atanu Sahu*, Ashish Kumar Singh, Anwesha Pal, Shashi Kumar, Anuja Roy [0136]	Video

TECHNICAL PROGRAM

Steel and Composite Structures

Session TC4	**15:20-16:50**	**Room C: #519**
Session Title: Recent advances in steel and composite structures (Mini Symposium)		
Chairmen: Mahbub Khan, Yuchen Song		
Zoom ID:	**8/17 Thr**	
A numerical framework of the phenomenological plasticity and fracture model for structural steels under monotonic loading; Qun He*, Michael C.H. Yam, Zhiyang Xie, Xue-Mei Lin, Kwok-Fai Chung [0052]		Onsite
Investigation of structural adequacy for steel-concrete composite walls under fire; Youtian Wang*, Mahbub Khan, Brian Uy, Huu-Tai Thai and Tuan Ngo [0215]		Zoom
Experimental study on micro-structural and mechanical properties of hot-rolled shape memory alloy angles; Min Zhu*, Michael C.H. Yam, Ke Ke, Qingyang Zhao [0032]		Onsite
Development of hybrid H-beam – precast (PC) column joints and PC girder-composite column joint; Mahbub Khan* [0056]		Zoom
Performance investigations on steel-brass friction devices; Ping Zhang*, Michael C.H. Yam, Ke Ke, Yicen Liu, Kwok Fai Chung [0057]		Onsite
A numerical study on local web buckling behaviour of stainless steel coped beams; Mingyuan Zhang*, Yuchen Song, Ke Ke, Michael C.H. Yam [0043]		Onsite
Shaking table tests of a high strength steel frame with curved knee braces under pulse-like earthquakes; Zeyu Zhou*, Yiyi Chen, Michael C.H. Yam, Xiuzhang He, and Ke Ke [0048]		Onsite

Steel and Composite Structures

(Pre-recorded session)

Patch loading resistance prediction of plate girders with multiple longitudinal stiffeners using machine learning; Carlos Graciano*, Ahmet Emin Kurtoglu, Balázs Kövesdi , Euro Casanova [0146]	Video

TECHNICAL PROGRAM

Computational Technologies in Concrete Structures

Session TC2 **10:40-12:10** **Room C: #519**
Session Title: Analysis, Construction and Monitoring Techniques for the Submerged Floating Tunnel System (Mini Symposium)
Chairman: Hyo-Gyoung Kwak
Zoom ID: **8/17 Thr**

An overview on the effects of Si/Al ratios on the properties of alkali-activated cementitious materials in high temperatures; Siew Ying Tay*, Daeik Jang, H. K. Lee [0099]	Onsite
Calculation method for the in-plane carrying capacity of low-rise reinforced concrete walls used in nuclear safety structures; Xin-Bo Li*, Shu-Heng Guo, Xing-Yi Wu, Jin-Xin Gong [0044]	Onsite
Chloride Migration in Recycled Aggregate Concrete; Boksun Kim*, Mahmoud Hussain, Mark Price, Lixuan Mao [0085]	Onsite
Recent studies on the mechanical and thermal properties of calcium aluminate cement blends upon exposure to high temperatures; Ahmad Nawaz*, Inzimam Ul Haq, Joonho Seo, H. K. Lee [0202]	Onsite
Numerical study for the interaction between the submerged floating tunnel and shore connection under dynamic loading condition; Seok-Jun Kang*, Gye-Chun Cho [0137]	Zoom
Baseline-free Absolute Strain Estimation for Submerged Floating Tunnel; Ohjun Kwon, Hoon Sohn [0104]	Video
Application of concrete filled steel tube column for differential axial shortening control; Seonghun Kim*, Hyo-Gyoung Kwak [0210]	Video

Session FC1 **10:00-12:00** **Zoom Session**
Session Title: Civil, Structural and Forensic Engineering of Concrete and Geo-Hydro Systems (Mini Symposium)
Chairmen: Thomas Kang, Donghwi Jung
Zoom ID: **8/18 Fri**

Evaluating Integrity of Concrete Structures Using Electromagnetic Waves: A New Approach; Dongsoo Lee, Jong-Sub Lee, Thomas H.-K. Kang, and Yong-Hoon Byun* [0181]	Zoom
Analytical Study on the Behavior of Prestressed Concrete Panels Subjected to Blast Load; Hyeon Sik Choi*, Seong Ryong Ahn, Thomas Kang [0177]	Zoom
Analyzing Internal Erosion Associated with Conduits in Embankment Dam; Dong-Ju Kim, Samuel Olamide Aregbesola, Jong-Sub Lee, Yong-Hoon Byun* [0180]	Zoom
Review on Numerical Analysis of Fire Performance in RC, PSC, and PT Concrete Structures; Kwanwoo Yi*, Thomas Kang [0176]	Zoom
Suggestion of the ANN-based Reverse Engineering for Estimating Design Information of Power Tunnels; Seongbin Ryu*, Seongi Min, Nakhyun Chun, Donghwi Jung, Seungjun Kim [0183]	Zoom
Detectable Leak Sizes for Varying Water Distribution Network Characteristics; Sanghoon Jun*, Donghwi Jung [0182]	Zoom
Development of Spatio-temporal Deep Learning Model to Predict Outflow in Urban Drainage Systems; Hyunjung Kim*, Joong Hoon Kim, Donghwi Jung [0188]	Zoom
Evaluation of stress-strain path for soils with sequence neural network; Seokyong Lim*, Taesup Yun [0223]	Zoom
Structural evaluation by reverse engineering with building forensic system; Arum Jang*, Sanggi Jeong, Young K. Ju [0228]	Zoom
Numerical anlaysis of grout connections in offshore wind turbine under ultimate load; Seungyeon Lee*, Seunghoon Seo, Seungjun Kim, Goangseup Zi [0231]	Zoom
Possible Risks to a Small Dam with Large Basin Area under Climate Change Condition; Chulsang Yoo* [0230]	Video

TECHNICAL PROGRAM

Computational Technologies in Concrete Structures

(Pre-recorded session)

Research on self-healing of fiber-reinforced lightweight concrete after exposure to 500 °C by biomineralization technology; Chao-Wei Tang* [0016]	Video
Improvement of concrete crack image detection and measurement method using checkerboard pattern; Harim Kim, Taehoon Kim, Hunhee Cho [0229]	Video
Baseline-free Absolute Strain Estimation for Submerged Floating Tunnel; Ohjun Kwon, Hoon Sohn [0104]	Video
Application of concrete filled steel tube column for differential axial shortening control; Seonghun Kim*, Hyo-Gyoung Kwak [0210]	Video

TECHNICAL PROGRAM

Smart Structures and Systems

Session TB2	**10:40-12:10**	**Room B: #516**
Session Title: Smart Structures Technologies and Digital Transformation Ⅰ (Mini Symposium)		
Chairmen: Chia-Ming Chang, Sunjoong Kim		
Zoom ID:	**8/17 Thr**	
Automatic localization of shear connectors using point cloud data reconstructed from UAV-captured images; Gyumin Lee*, Sung-Han Sim, Junhwa Lee [0152]		Onsite
Convolutional Neural Network-Based Image Quality Assessment for UAV-Captured Structural Inspection Images; Gi-Hun Gwon*, Jinhwan Lee, In-Ho Kim, Hyung-Jo Jung [0156]		Onsite
Excessive vibration detection of stay-cables from CCTV images: a near-label-free deep learning approach using image synthesis; Hoon Lee, Sunjoong Kim*[0174]		Onsite
Use of Two-Stage Optimization to Estimate Deformations of Scaled Truss Bridge from Cameras; Chia-Ming Chang*, Jau-Yu Chou [0077]		Onsite
Vision-based Structural Displacement Measurement using KLT Tracker and Deep Learning; Xuan Tinh Nguyen*, Geonyeol Jeon, Hyungchul Yoon [0131]		Onsite
Automated inspection method for building elements of temporary structures based on the 3D shape obtained using a laser profiler; Hong Jonghwa*, Sung-Han Sim [0149]		Onsite

Session TB3	**13:40-15:10**	**Room B: #516**
Session Title: Smart Structures Technologies and Digital Transformation Ⅱ (Mini Symposium)		
Chairmen: Hyungchul Yoon, Ki-Young Koo		
Zoom ID:	**8/17 Thr**	
Interaction of highly nonlinear solitary waves in a granular crystal sensor with cement; Ahmed Alkhaffaf, Sangyoung Yoon, Tae-Yeon Kim*[0076]		Onsite
Time-Frequency Analysis and Deep Learning Application for Damage Localization in Concrete Structures Using Acoustic Emission Sensors; Van Vy*, Hyungchul Yoon [0115]		Onsite
Capsule-like smart aggregate sensor for wireless impedance monitoring of PSC anchorage; Quang-Quang Pham, Quoc-Bao Ta, Ngoc-Lan Pham*, Jeong-Tae Kim [0214]		Onsite
Elasto-magneto-electric (EME) sensors for absolute stress monitoring of steel cables: R&D, Engineering Application, and Product Standard; Yuanfeng Duan, Wei Wei, Ru Zhang [0218]		Zoom
A guided wave-based bolt looseness detection method using magnetostrictive transducer; Xiaodong Sui*, Yuanfeng Duan, Ru Zhang, Chungbang Yun, Zhifeng Tang [0220]		Zoom
1-D CNN deep learning of smart aggregate's impedance signal for concrete stress monitoring; Quoc-Bao Ta*, Quang-Quang Pham, Ngoc-Lan Pham, Jeong-Tae Kim [0213]		Onsite

Session TC3	**13:40-15:10**	**Room C: #519**
Session Title: Smart Structures Technologies and Digital Transformation Ⅲ (Mini Symposium)		
Chairman: Robin EunJu Kim		
Zoom ID:	**8/17 Thr**	
Seismic Fragility Analysis of a Buried Gas Pipeline Subjected to Mainshock-Aftershock Sequences; Woongchan Bang*, Sungsik Yoon, Hyung-Jo Jung [0150]		Onsite
Physics-informed LSTM architecture incorporating time and frequency characteristics for seismic response prediction; SangHoon Song*, Robin EunJu Kim [0151]		Onsite
Performance comparison of yield and SMA damper on pounding vulnerability reduction for adjacent buildings under seismic loading; Kossi Jonas Sama, Sourav Gur* [0049]		Onsite
Train-induced vibration control of railway systems using particle damper; Chih-Shiuan Lin*,Tse-Lin Hsu, Hsin-Tzu Hsieh, Ping-Chan Liu [0083]		Onsite

Experimental investigations on cable vibration mitigation using a VIMD; Shenghao Dong*, Yuanfeng Duan, Chuang Bang Yun [0219]	Zoom
Self-adaptive parallel genetic algorithm for rapid parameter identification of Bouc–Wen model for self-centering shear walls; Fan Hu*, Hongmei Zhang, Yuanfeng Duan [0217]	Zoom

Session TB4	**15:20-16:50**	**Room B: #516**
Session Title: Smart Structures Technologies and Digital Transformation IV (Mini Symposium)		
Chairmen: Young-Joo Lee, Seung-Seop Jin		
Zoom ID:	**8/17 Thr**	
Structural System Reliability-Based Design Optimization Considering Fatigue Limit State; Nophi Ian Biton, Young-Joo Lee [0109]		Onsite
Reduction of Failure Risk using Local Evaluation Accuracy Improvement using GLMM; Atsushi Iwasaki* [0148]		Zoom
Train-induced force variation and fatigue analysis of hangers for a tied-arch bridge based on Vector Form Intrinsic Finite Element method; Sikai Wu*, Yuanfeng Duan, Chung Bang Yun, JongDar Yau [0221]		Zoom
Collaborative Cloud Computing for Structural Health Monitoring using Jupyter Lab; Ki-Young Koo*[0138]		Onsite
Vibration-based Autonomous Cable Monitoring System based on Domain Knowledge; Seung-Seop Jin*, Youngsoo Park, Dong-woo Seo, Seunghoo Jeong, Sung-Han Sim [0094]		Onsite
Real-time Prediction Model of Cable Fundamental Frequency for Intelligent Maintenance of Cable-stayed Bridges; Zhang Yan* [0141]		Onsite
Digital Model of Temperature-induced Deflection of Bridge Driven via Deep Learning; Guo Junxiao* [0142]		Onsite

Smart Structures and Systems

(Pre-recorded session)

High sensitivity three-axis optical vibration sensor for low-frequency measurement; A. Perez-Alonzo*, F. Velazquez-Carreon, G. E Sandoval-Romero [0060]	Video
PDMS-embedded Fiber Grating curvature sensor for displacement measurement applications; Fernando Velázquez-Carreón* Abraham Pérez-Alonzo, G.E. Sandoval-Romero, Celia Sánchez-Pérez [0078]	Video

TECHNICAL PROGRAM

Earthquakes and Structures

Session WB2 **10:10-12:00** **Room B: #516**
Session Title: NU-CBNU-HKNU Mini Symposium
Chairmen: Hyunjin Ju, Jong R Kim, Deuckhang (DK) Lee
Zoom ID: **8/16 Wed**

Self-heating electrically conductive cement composites; Seongwoo Gwon*, Myoungsu Shin [0061]	Onsite
Machine Learning-Based Approach for Identifying Shear Transfer Mechanisms in RC Beams; Wei Zhang*, Deuckhang Lee [0095]	Onsite
Experimental Investigation on Seismic Performance of Unreinforced Masonry Walls Strengthened with Lightweight Engineered Cementitious Composites; Chukwuwike Mike Ogwumeh*, Zhanbolat Artyk, Beybaris Mauthan, Dichuan Zhang, Chang-Seon Shon, Jong Ryeol Kim [0096]	Zoom
Shear Strengthening Effect of Core-filling Concrete in Hollow-Core Slabs Manufactured by Extrusion Method; Sun-Jin Han*, Hyo-Eun Joo, Jae Hyun Kim, Kang Su Kim [0106]	Onsite
Structural Performance of Column-to-Base Connections of Steel Pole-Mounted Structures; Didar Meiramov*, Hyunjin Ju, Yujae Seo [0030]	Onsite
A CRR-based calibration method for pore pressure models; Hyeong-Joo Kim, Peter Rey Dinoy*, Hyeong-Soo Kim, Tae-Woong Park, Kevin Bagas Mawuntu [0130]	Onsite
Evaluation on Shear Capacity of Prestressed Concrete Bridge Girders; Minkook Park, Yuguang Yang, Eva O. L. Lantsoght, Kang Su Kim [0147]	Onsite
Seismic Performance of Precast Concrete Special Moment Frame with Dry Connection Details; Seonhoon Kim*, Deuckhang Lee, Won-Jun Lee, Wei Zhang [0097]	Video
Investigation on Characteristics of Intelligent Compaction Measurement Value (ICMV) Based on Meta-Analysis; Sung-Ha Baek* [0041]	Video

Session WC1 **10:10-12:00** **Room C: #519**
Session Title: Seismic Design, Analysis, and Diagnosis of Concrete Structures (Mini Symposium)
Chairmen: Donghyuk Jung, Hajin Choi, Deuckhang (DK) Lee
Zoom ID: **8/16 Wed**

Comparison of Across and Torsional Wind Response by Spectrum Analysis and FEM Analysis of Square Plan Structures; Sol-Gi Eun *, Thomas Kang [0179]	Onsite
Understanding soil liquefaction case histories using interpretable machine learning; Emerzon Torres* , Jonathan Dungca [0062]	Zoom
Intermediate hazard levels in the seismic analysis of frame structures; Stefano Sorace*, Samantha Lisetto, Gloria Terenzi [0063]	Onsite
Shear strengthening of concrete columns using self-prestressing iron-based shape memory alloy; Donghyuk Jung* [0166]	Onsite
Active Retrofit of Shear Critical RC Components Using Self-Prestresssing Iron-Based Shape Memory Alloys; Miguel González Góez*, Johanna Pinargote-Torres, Trevor D. Hrynyk, Eugene Kim [0054]	Zoom
Verifying ASCE 41 the evaluation model via field tests of masonry infilled RC frames with openings; Tsung-Chih Chiou*, Chun-Ting Huang [0081]	Onsite
Seismic performance of infills and partitions included in a reinforced concrete structure; Gloria Terenzi*, Stefano Sorace, Elena Fuso [0082]	Onsite
Re-examination of ACI 318 Provisions on Shear Strength of Post-Tensioned Slab-Column Connections; Giwan Noh*, Thomas Kang [0178]	Onsite
Development of Electromagnetic Wave-Based Monitoring Technique for Concrete Deterioration; Min Ju Kang*, Tae Min Lee, Hajin Choi [0191]	Onsite
Dynamic response of brick veneer wall reinforced with long-rawlplug screw anchors; Jun Ryeol Park*, Sanghee Kim, Keun-Hyeok Yang, Ju-Hyun Mun [0105]	Video

Monitoring and Evaluation of Crack-Repairing in Concrete Using Air-Coupled Surface-Wave Technique; Eunjong Ahn*, Chanyoung Kim, Hajin Choi, Myoungsu Shin [0175]	Video

Earthquakes and Structures
(Pre-recorded session)

Investigation on Characteristics of Intelligent Compaction Measurement Value (ICMV) Based on Meta-Analysis; Sung-Ha Baek* [0041]	Video
Dynamic response of brick veneer wall reinforced with long-rawlplug screw anchors; Jun Ryeol Park*, Sanghee Kim, Keun-Hyeok Yang, Ju-Hyun Mun [0105]	Video
Monitoring and Evaluation of Crack-Repairing in Concrete Using Air-Coupled Surface-Wave Technique; Eunjong Ahn*, Chanyoung Kim, Hajin Choi, Myoungsu Shin [0175]	Video

TECHNICAL PROGRAM

Tunnels and Underground Spaces

Session WA3	**10:50-12:20**	**Room A: #515**
Session Title: Structural and Hydraulic Interaction in Underground Structures		
Chairman: Ki-Il Song		
Zoom ID:	**8/16 Wed**	
TBM mechanical characteristics for NFGM in mechanized tunnelling; Pill-Bae Hwang*, Beom-Ju Kim, Seok-Won Lee [0226]		Onsite
Experimental study on mechanical properties of diabase fracture-grouting mass; Jun Shen*, Yin Cheng, Dao-Xin Wei, Tian-Jun Yang, Qin-Dong Li [0116]		Onsite
Applicability of an analytical solution for ground settlement induced by circular tunnel; Jun-Beom An*, Gye-Chun Cho [0117]		Onsite
Effect of jet dispersion on the underground excavation in rock using abrasive waterjet; Hyun-Joong Hwang*, Yohan Cha, Joohyun Park, Gye-Chun Cho [0154]		Onsite
Prediction of Group Pile Behavior Due to Adjacent Twin Tunneling Using Machine Learning; Su-Bin Kim*, Dong-Wook Oh, Hyeon-Jun Cho, Yong-Joo Lee [0185]		Onsite
Effect of lower permeability top layer in shallow seabed for CO2 hydrate formation; Doyeon Lee*, Chul-Whan Kang, Seok-Jun Kang, Gye-Chun Cho [0162]		Onsite

Session WA4	**13:20-14:50**	**Room A: #515**
Session Title: Developments in Underground Space Technologies		
Chairman: Chang Won Kwak		
Zoom ID:	**8/16 Wed**	
Factors affecting jacking force of square steel pipe-roof in Tsunashima Tunnel: a case study; Bosong YU*, Hideki SHIMADA, Takashi SASAOKA, Akihiro HAMANAKA [0040]		Onsite
Numerical evaluation of face stability of shallow circular tunnels in cohesionless soils; Aman Sharma*, Riya Bhowmik [0072]		Onsite
Study on the use of unlabeled data in tunnel crack inspection with CycleGAN; Jin Kim*, Seungbo Shim, Gye-Chun Cho [0129]		Onsite
Effect of support systems on behavior of large-diameter circular tunnel through the multi-layered ground; Joohyun Park*, Seok-Jun Kang, Hyun-Joong Hwang, Gye-Chun Cho [0167]		Onsite
Response of Mountain Tunnels subjected to Multiple Earthquakes; Junyoung Lee*, Byungmin Kim, Jae-Kwang Ahn [0064]		Onsite

Session WA5	**15:00-16:30**	**Room A: #515**
Session Title: Improvements in Conventional Tunneling & Tunneling and Underground Works in Extreme Conditions		
Chairman: Tae Young Ko		
Zoom ID:	**8/16 Wed**	
Evaluation of underground structure behavior in liquefiable sand deposit by dynamic model tests; Mintaek Yoo*, Seongwon Hong [0042]		Onsite
Three-dimensional numerical analysis of train-induced vibration in subway tunnel; Changwon Kwak*, Innjoon Park, Mintaek Yoo [0111]		Onsite
Harsh stress level design for accelerated degradation test of concrete structure in HLW repository; Changhee Park*, Hyun-Joong Hwang, Chang-Ho Hong, Sokpheanika Chea, Gye-Chun Cho [0139]		Onsite
Swelling behavior of biopolymer-treated fine soil and possible application; Dong-yeup Park*, Jeong-Uk Bang, Minhyeong Lee, Ilhan Chang, Gye-Chun Cho [0144]		Onsite
Preliminary study of sand-clay mixture strength improvement using crosslinked-induced biopolymer as binder; Jeonguk Bang*, Dong-yeup Park, Minhyeong Lee, Ilhan Chang, Gye-Chun Cho [0153]		Onsite

TECHNICAL PROGRAM

Session WA6	**16:40-18:00**	**Room A: #515**
Session Title: Resilience and Sustainability in Underground Space & Innovation in Mechanized Tunneling		
Chairman: Dohyun Kim		
Zoom ID:	**8/16 Wed**	
Performance of a muck pumping system for EPB TBMs in soft ground condition; Ju-Young Oh*, Seokbue Chang [0045]		Onsite
Horizontal Directional Drilling for Geological Investigation in Ultra-Long and Deep-Buried Mountain Tunnel Construction; Sheng-hao Piao*, Bao-song Ma, Sheng Huang, Qiang Zhao, Shi-ji Chen, Hao Zhou [0047]		Onsite
Urban design strategies for long-term residence in the future underground city; Haneul Lee*, Sojung Noh, Seoyeon Nho, Youngchul Kim [0110]		Onsite
Simulation of EPB Tunneling for Various Grounds in Korea: A Discrete Event Model Approach; Young Jin Shin*, Jae Won Lee, Ju Hui Yim, Han Byul Kang, Jae Hoon Jung, Jun Kyung Park [0128]		Onsite
Influence of Xanthan Gum Treated sandy soil on CO2 Hydrate Formation: An Experimental Study; Sokpheanika Chea*, Chul-Whan Kang, Gye-Chun Cho [0172]		Onsite

Tunnels and Underground Spaces

(Pre-recorded session)

Remediation of underground cavity using membrane grouting; Seung-Hyun Kim*, Young-Hoon Jung, Jong-Ho Shin [0023]	Video
Field Applicability Evaluation of CLSM using Coal ash as Aggregate; Yong-Soo Lee*, Tae-Yeon Kim, Bong-Jik Lee, Seongwon Hong [0036]	Video
Estimation of NTNU/SINTEF Drillability Test Indices using Soft Computing Techniques based on Rock Propertie; Tae Young Ko* [0189]	Video
ML-based predictive model for adfreezing behavior of frozen soil-structure interface; Sangyeong Park*, Chaemin Hwang, Hyeontae Park, Hojong Kim, Hangseok Choi [0198]	Video
Predicting RQD during TBM tunnel construction using machine learning algorithms; Byeonghyun Hwang*, Youngjin Shin, Hangseok Choi, Kibeom Kwon, Minkyu Kang [0199]	Video
Data-driven Model for Predicting Surface Settlement in response to Tunnel Boring Machine Excavation; Kibeom Kwon, Dongku Kim, Sangyeong Park, Hangseok Choi [0200]	Video
Numerical modeling for trapdoor simulation to evaluate loosening earth pressure on tunnel linings; Chaemin Hwang*, Junhyuk Choi, Jee-Hee Jung, Hangseok Choi [0201]	Video
Analysis of disc cutter wear pattern using multiclass classification model; Yun-Hee Kim*, Jae-woo Shin, Bumjoo Kim [0143]	Poster
A hybrid time series model to predict ground conditions ahead of tunnel face using TBM data; Jee-Hee Jung*, Byung-Kyu Kim, Kang-Hyun Lee, In-Mo Lee [0159]	Poster
A study on optimal design of tunnel portal with blasting effects; Jee-Hee Jung*, Kang-Hyun Lee, SangRae Lee, NagYoung Kim, Ji-Ung Lee [0168]	Poster
Fire Damages on Concrete Slabes under RABT and RWS Curves; Nag-young Kim*, Jae-won Shim, Jee-hee Jung, Ji-ung Lee [0171]	Poster
Numerical simulation of electrical resistivity survey at tunnel; Kang-Hyun Lee*, Nag-Young Kim, Myeong-Jong Yi, Ji Ung Lee [0169]	Poster
Prediction of geological condition ahead of tunnel face utilizing Electrical resistivity survey; Kang-Hyun Lee*, Nag-Young Kim, Myeong-Jong Yi, Ji Ung Lee [0170]	Poster
Improved study for recycling the excavated soil and filter cake of slurry shield TBM; Sung-Min Nam*, Jun-Shik Moon [0187]	Poster
Evaluation of disc cutter wear prediction models for shield TBM; Jin-Soo Park, KI-IL Song* [0211]	Poster
Case study on subsidence of the railroad of the existing operation line and countermeasures establishment for non-opencut tunnelling; Jun Kyung Park* [0225]	Poster

Investigation on pile behavior in proximity to excavation damage zone (EDZ) induced by TBM excavation; Dohyun Kim* [0232]	Poster
Numerical assessment of structural stability of circular tunnel during mechanized excavation; Dohyun Kim* [0233]	Poster
Freeze-thawing quantitative evaluation method of mountain tunnel concrete lining in winter season; Jai-Wook An, Joon-Shik Moon, Hong-Kyoon Kim [0238]	Poster

TECHNICAL PROGRAM

Nano Research

Session WB6	14:40 – 16:10	Room B: #516
Session Title: Advancements in Nanomaterial Surface Engineering: Techniques and Applications Ⅰ		
Chairman:		
Zoom ID:	**8/16 Wed**	
Neuroprotective Equivalence Comparison of Erythropoietin-Ferric/Ferrous Nanobots with Erythropoietin; Chang Ho Hwang*[0091]		Onsite
Enhancing the oxidation resistance of copper at high temperature by surface fluorination; Jae-Ho Kim*, Susumu Yonezawa [0114]		Onsite
Cyclic voltammetry determination of antipsychotic drug by a screen-printed electrode modified with a nanocomposite prepared from carbon nanotubes and metals; Arachaporn Khatongkham*, Nongluk Plongthongkum, Kamolchanok ngamkham, Rungtiva P. Poo-Arporn [0118]		Onsite
Surface modification of plastics via direct fluorination to promote the staining with methylene blue; Haruka Kaji*, Jae-Ho Kim, Susumu Yonezawa [0121]		Onsite
Preparation and characterization of TiO 2 - SiO 2 composite films on plastics using aqueous peroxotitanium acid solution; Ayu Minamizawa*, Jae-Ho Kim, Susumu Yonezawa [0122]		Onsite

Session WB7	16:30 - 18:00	Room B: #516
Session Title: Advancements in Nanomaterial Surface Engineering: Techniques and Applications Ⅱ		
Chairman: Phill-Seung Lee		
Zoom ID:	**8/16 Wed**	
The effects of surface fluorination of acetylene black (AB) in the dispersed slurry; Masayuki Kobayashi*, Susumu Yonezawa, Jae-Ho Kim [0123]		Onsite
Surface modification of Polyethylene terephthalate (PET) Substrates via Direct Fluorination to Promote the Ag+ ions Adsorption; Kohei Yamamoto, Jae-Ho Kim, Susumu Yonezawa [0124]		Onsite
Enhanced high temperature oxidation of pure magnesium (Mg) by surface fluorination; WANG YU*, Jae-Ho Kim [0126]		Onsite
Surface modification of cathode active materials for lithium-ion batteries using a new fluorinating agent; Yuki Fujisawa*, Jae-Ho Kim, Susumu Yonezawa [0125]		Onsite
Preparation and characterization of titania-coated glass fibrous filters using aqueous peroxotitanium acid solution; Honoka Ueda*, Jae-Ho Kim, Susumu Yonezawa [0119]		Onsite
Preparation and characterization of calcium fluorosilicate (CaSiF6) as a fluorinating agent; Natsumi Murakami*, Jae-Ho Kim, Susumu Yonezawa [0120]		Onsite

TECHNICAL PROGRAM

Session WC5 **16:30 - 18:10** **Room C: #519**
Session Title: Multi-scale Modeling and Machine Learning Applications for Functional Materials Design
Chairmen: Seunghwa Ryu, Yanming Wang
Zoom ID: **8/16 Wed**

Insights into Fracture and Fatigue from Machine-Learning Force Fields based Atomistic Simulations; Zhiping Xu* [0195]	Onsite
The effect of the atomic hydrogen on the behavior of a single dislocation in bcc tungsten: atomistic study; Keonwook Kang* [0227]	Onsite
An Efficient Ensemble Learning Framework for Crystal Structure Classification in Atomistic Simulations; Yanming Wang* [0208]	Onsite
Atomistic simulations of martensitic phase transformation and deformation behaviors of metallic materials; Won-Seok Ko* [0194]	Onsite
Ensemble catalyst design from a multiscale simulation perspective; Bin Shan* [0222]	Onsite
Origami for designing advanced structures; Jinkyu Yang* [0204]	Onsite
An acceleration scheme for the phase field fatigue fracture simulation with a concurrent temporal homogenization method; Yongxing Shen*, Shuo Yang [0206]	Onsite
Full Field Inference of Stress, Strain, and Displacement with Local Spatial Observations using Physics-Informed Neural Networks: Applications in Solid Mechanics; Jae Hyuk Lim*, Myeong-Seok Go, Hong-Kyun Noh [0196]	Onsite
Optimizing Structure and Process Design through Multi-objective Bayesian Methods; Seunghwa Ryu* [0207]	Onsite
Deep Learning Assisted Design Optimization of Mechanically Efficient Architected Material; Sangryun Lee* [0205]	Onsite