

ASEM17

The 2017 International Conference on  
Tunnels and Underground Spaces

# ICTUS17 PROGRAM

**Aug 28-Sep 1, 2017**

**KINTEX II / 3rd Fl. #308  
Ilсан(Seoul) Korea**

Organized by



**Korean Tunneling and  
Underground Space Association**

Endorsed by



**ASSOCIATION  
INTERNATIONALE DES TUNNELIERS  
ET DE L'ESPACE SOUTERRAIN** **ITA**  
**INTERNATIONAL TUNNELING  
AND UNDERGROUND SPACE  
ASSOCIATION**

## ICTUS17 TECHNICAL PROGRAM

### MONDAY, AUGUST 28, 2017

17:00~20:00	REGISTRATION	KINTEX II, 3rd Fl. Lobby
-------------	--------------	--------------------------

### TUESDAY, AUGUST 29, 2017

08:30~17:00	REGISTRATION	KINTEX II, 3rd Fl. Lobby
-------------	--------------	--------------------------

09:00~09:10	OPENING CEREMONY	<b>Opening Remarks</b> Chang Koon Choi, Chairman, ASEM17	#303 and #304, 3rd Fl.
09:10~09:50	SESSION T1P Chair: H. K. Lee	<b>PLENARY KEYNOTE LECTURE</b> <b>KAIST Reform in the fourth industrial revolution</b> O Ok Park (Korea)	#303 and #304, 3rd Fl.
09:50~10:15	COFFEE BREAK		
KEYNOTE LECTURES I			
10:15~10:50	SESSION T2A Chair: Chung-Bang Yun	<b>Topology optimization of structures subjected to stochastic dynamic loading</b> B. F. Spencer Jr. (USA)	#308, 3rd Fl.
	SESSION T2B Chair: Dennis Lam	<b>Robot technology and the future</b> Jun Ho Oh (Korea)	#307, 3rd Fl.
KEYNOTE LECTURES II			
10:50~11:25	SESSION T2C Chair: Hangseok Choi	<b>Sustainable urbanization through underground development – towards an urban underground future</b> Antonia Cornaro (Switzerland)	#308, 3rd Fl.
	SESSION T2D Chair: C. S. David Chen	<b>Frontier technologies in steel and composite structures</b> Brian Uy (Australia)	#307, 3rd Fl.
KEYNOTE LECTURES III			
11:25~12:00	SESSION T2E Chair: Jun Ho Oh	<b>Bioinspired structural materials: virtual processing and virtual testing</b> C. S. David Chen (Taiwan)	#308, 3rd Fl.
	SESSION T2F Chair: B. F. Spencer Jr.	<b>Recent advances and innovation in steel-concrete composite structures</b> Dennis Lam (USA)	#307, 3rd Fl.
12:00~13:00	LUNCH		

## TUESDAY, AUGUST 29, 2017

13:00~13:15	ICTUS17 OPENING CEREMONY	<b>Opening Remarks</b> Jong-Ho Shin, Chair, ICTUS17 / President of KTA Chungsik Yoo, Co-chair, ICTUS17 / Vice-President of KTA	#308, 3rd Fl.
13:15~14:30	<b>Improvements in Conventional Tunneling</b>		#308, 3rd Fl.
	SESSION T4G Chair: Joon-Sik Moon Co-chair: Ruben Duhme	<p><b>Stress reduction factor characterization for highly stressed jointed rock based on tunneling data from Pakistan</b> Hafeezur Rehman*(Korea), Jung Joo Kim, Han Kyu Yoo</p> <p><b>Case study comparing from Q-system and Terzaghi's rock load classification</b> Fook Kwang Han*(Singapore), Man-Sup Cho</p> <p><b>Evaluation test of applicability of compressed air foam fire extinguishing system in subsea tunnel</b> Byoung-Jik Park*(Korea), Hyun-jun Shin, Yong-Ho Yoo, Jin-Ouk Park, Hwi-Seong Kim</p> <p><b>An experimental study on the shock loss at the junction of double-deck road-tunnel network</b> Jang-Hoon Roh*(Korea), Seung-Jun Lee, Jin Kim</p> <p><b>Proposing feasible borehole spacing in non-vibrational rock splitting method using discrete element modeling</b> Syed Muhammad Turab Haider Jafri*(Korea), Han Kyu Yoo</p>	
14:30~14:50	COFFEE BREAK		KINTEX II, 3rd Fl.
14:50~17:20	<b>Innovation in Mechanized Tunneling</b>		#308, 3rd Fl.
	SESSION T5G Chair: Yong-Joo Lee Co-chair: Seyed Hooman Ghasemi	<p><b>Characteristic of size distribution of rock chip produced by rock cutting with a pickcutter</b> Ho-Young Jeong*(Korea), Seokwon Jeon</p> <p><b>Electrical resistivity tomography survey for prediction of anomaly ahead of tunnel face in mechanized tunneling</b> Kang-Hyun Lee*(Korea), Jin-Ho Park, Jeongjun Park, In-Mo Lee, Seok-Won Lee</p> <p><b>Critical face pressure and backfill pressure in shield TBM tunneling on soft ground</b> Kiseok Kim, Ju-Young Oh, Hyobum Lee*(Korea), Hangeok Choi</p> <p><b>Estimation of the excavation damaged zone around TBM tunnel using large deformation analysis</b> Sangseom Jeong, Dohyun Kim*(Korea)</p> <p><b>Urban tunneling in settlement risk areas</b> Ruben Duhme*(Germany)</p> <p><b>Distributed fibre optic monitoring of the time-dependent behaviour of tunnel segmental linings in London clay</b> Hyungjoon Seo*(China), Matthew John Wilcock, Kenichi Soga, Mohammed Elshafie, Robert James Mair</p> <p><b>Comparative study of TBM performance prediction models</b> Tae Young Ko*(Korea), Seung Mo Son, Taek Kon Kim</p> <p><b>Dynamic response on tunnel with flexible segment</b> Changwon Kwak, Dongin Jang*(Korea), Kwangho You, Innjoon Park</p>	
18:00~20:00	RECEPTION		#403~404 4th Fl.

## WEDNESDAY, AUGUST 30, 2017

KEYNOTE LECTURES IV			
09:00~09:35	SESSION W1A Chair: F. M. Linares	<b>On the reduction methods of structural finite element models</b> Phill-Seung Lee (Korea)	#308, 3rd Fl.
	SESSION W1B Chair: Keh-Chyuan Tsai	<b>Performance based earthquake engineering in a moderate -seismicity region: South Korea</b> Han-Seon Lee (Korea)	#307, 3rd Fl.
KEYNOTE LECTURES V			
09:35~10:10	SESSION W2A Chair: Andrezej Winnicki	<b>Tunnelling on terrace soil deposits: Characterization and experiences on the Bogota-Villavicencio road</b> Julio E. Colmenares (Colombia)	#308, 3rd Fl.
	SESSION W2B Chair: Hyo-Gyung Kwak	<b>A unified practical approach for estimating the effects of rare dynamic loading on structures</b> Nelson Lam (Australia)	#307, 3rd Fl.
10:10~10:30	COFFEE BREAK		KINTEX II, 3rd Fl.
10:30~12:00	<b>Tunneling and Underground Works in Extreme Conditions</b>		#308, 3rd Fl.
	SESSION W3G Chair: Soo-Ho Chang Co-chair: Antonia Cornaro	<p><b>Designing TBMs for subsea tunnels:</b> Ruben Duhme*(Germany)</p> <p><b>Enhancement of slurry treatment efficiency in slurry shield TBM tunneling by optimal application of coagulant agent</b> Ju-Young Oh*(Korea), Hyunku Park, Seokbue Chang, Seungbok Lee</p> <p><b>Hard rock TBM tunneling-technical developments and recent experience</b> Jean-Daniel Brabant*(Singapore), Ruben Duhme</p> <p><b>An experimental study on the physical properties variation of grout materials by the installation of Anti-Agglomeration equipment</b> Sung-Pil Hwang*(Korea), Jae-Hyeung Jeoung, Chang-Yong Kim</p> <p><b>Anchorage mechanism and pullout resistance of rock bolt in water-bearing rocks</b> Ho-Jong Kim*(Korea), Kang-Hyun Kim, Hong-Moon Kim, Jong-Ho Shin</p> <p><b>Case history of excessive groundwater inflow during TBM tunneling and excavating highly permeable ground under high porewater pressure</b> Joon-Shik Moon*(Korea), Jaeyoung Kim, Gychan Jun</p>	
12:00~13:00	LUNCH		
13:00~14:30	<b>Developments in Underground Space Technologies</b>		#308, 3rd Fl.
	SESSION W4G Chair: Hyu Soung Shin Co-chair: Thomas Dickmann	<p><b>Estimation of coal bed length using tunnel electrical resistivity prospecting system (TEPS) in Sim-Gok tunnel, South Korea</b> Chang-Ho Hong*(Korea), Gye-Chun Cho, Hee-Hwan Ryu</p> <p><b>Monitoring of retaining wall at tunnel entrance using three dimensional laser scanning</b> Hyungjoon Seo*(China), Sinan Acikgoz, Yang Zhao</p> <p><b>Pullout resistance of concrete anchor block embedded in cohesionless soil</b> Md. Golammostofa*(Bangladesh), Abdul Jabbar Khan, Rowshon Jadid</p> <p><b>Experimental study on the automatic monitor system for fire suppression in double-deck tunnel</b> Jin-Ouk Park*(Korea), Yong-Ho Yoo, Byoung-Jik Park, Hwi-Seung Kim, Sang-Heon Park</p> <p><b>Prediction of transverse settlement trough considering the combined effects of excavation and groundwater depression</b> Jong Uk Kim, Jung Joo Kim*(Korea), Jae Kook Lee, Han Kyu Yoo</p> <p><b>Rate of penetration (ROP) forecast based on artificial neural network with online learning</b> Melvin B. Diaz*(Korea), Kwang Yeom Kim, Hyu-Soung Shin</p>	
14:30~14:50	COFFEE BREAK		KINTEX II, 3rd Fl.

## WEDNESDAY, AUGUST 30, 2017

	<b>Resilience and Sustainability in Underground Space</b>	#308, 3rd Fl.
14:50~17:20	<p>SESSION W5G Chair: Ju-Young Oh Co-chair: Julio E. Colmenares</p>	<p><b>Look-ahead seismic investigations during tunneling with shield tunnel boring machines</b> Thomas Dickmann*(Switzerland), Jozsef Hecht-Méndez</p> <p><b>Behaviour of vertically and horizontally loaded pile and adjacent ground affected by tunnelling</b> Ho-Yeon Ahn, Dong-Wook Oh*(Korea), Yong-Joo Lee</p> <p><b>Interaction between two asymmetric noncircular tunnels</b> You-Sung La*(Korea), Bumjoo Kim, Yeon-Soo Jang</p> <p><b>Shield TBM risk model based on Bayesian networks applicable in design stage</b> Heeyoung Chung*(Korea), In-Mo Lee, Jeongjun Park</p> <p><b>Load Resistant Factor Calibration for Tunnel</b> Seyed Hooman Ghasemi*(Iran)</p> <p><b>Numerical investigations of the stress distribution and evolution in backfilled stopes and on barricades with cemented paste backfill</b> El Mustapha Jaouhar*(Canada), Li Li</p> <p><b>An analytical solution to assess the stresses in vertical backfilled stopes considering an arc layer element</b> El Mustapha Jaouhar*(Canada), Li Li</p> <p><b>Numerical study of earth pressure coefficient along the vertical centerline of backfilled mine stopes</b> Pengyu Yang*(Canada), Li Li</p>
18:00~19:30	<b>BANQUET</b>	MVL Hotel, 2nd Fl. GRAND BALLROOM

## POSTER SESSION

- **A study of double-deck tunnel depending on types of intermediate slab with beam-spring model**  
Kyung-Nam Kang\*(Korea), Joon-Sang An, Byung-Chan Kim, Chang-Yong Kim, Ki-Il Song
- **Development of face safety monitoring system (FSMS) using x-MR control chart**  
Hyun-Seok Yun\*(Korea), Seong-Woo Moon, Chang-Yong Kim, Yong-Seok Seo
- **A study on the design strength of linear supports**  
Oh-Hyun Kwon\*(Korea), Hyun-Seob Youn, Dong-Hyun Seo
- **Three-arch tunnel behavior–3D numerical investigation**  
Chungsik Yoo\*(Korea), Jung-Hyuck Choi
- **Design of initial support required for excavation of underground cavern and shaft from numerical analysis**  
Joung Oh, Taehyun Moon, Ismet Canbulat, Joon-Shik Moon\*(Korea)
- **A study on the effect of freezing and thawing repetition on the tunnel in cold region**  
Jai-wook An\*(Korea), Joon-shik Moon, Hong-Kyoon Kim, Jeong-Eun Seo
- **Applicability of exponential stress-strain models for carbonate rocks**  
Vyacheslav Palchik\*(Israel)
- **Estimation of the amount of refrigerant in artificial ground freezing for subsea tunnel**  
Younggin Son\*(Korea), Hangseok Choi, Tae Young Ko
- **Clogging theory-based real-time grouting management system for underwater tunnel**  
Young-Sam Kwon\*(Korea), In-Mo Lee, Jinchun Kim
- **Route selection of Donggao tunnel, Suhua highway of provincial highway No.9 improvement project**  
Fu-Hsun Wu\*(Taiwan), How-Jei Shau, Min-Chen Lee
- **Fracture generation technique using discrete fracture network with heterogeneity of fractured bedrocks in Korea**  
Jae-Yeol Cheong\*(Korea), Se-Yeong Hamm

## VENUE INFORMATION

### Conference Venue-KINTEX II (Korea International Exhibition Center II)

KINTEX (Korea International Exhibition Center) is Korea's largest and newest international exhibition and convention venue, located in Ilsan (suburb of Seoul) of Korea. KINTEX is conveniently located from Korea's two major international airports (20 mins from Gimpo Int'l Airport and 45 mins from Incheon Int'l Airport), and connected to the northwestern end of Seoul, only 30-45 minutes away from downtown Seoul by public transportation. It is also close to various tourist attractions and shopping centers, including Lake Park, One Mount, Lafesta, Heiri Art Village and DMZ.



## CHAIRS, ICTUS17



Prof. **Jong-Ho Shin**  
(Konkuk Univ.)  
President of KTA



Prof. **Chungsik Yoo**  
(Sungkyunkwan Univ.)  
Vice-President of KTA



Dr. **Myung Sagong**  
(Korea Railroad Research Institute)

## CHAIR OF LOC

## LOCAL ORGANIZING COMMITTEE

<b>Chair</b>	Dr. Myung Sagong (KRRI)	<b>Publication</b>	Prof. Yong-Joo Lee (Seoul Tech) Dr. Jeongjun Park (KRRI)
<b>General Affairs</b>	Dr. Hongmoon Kim (Pyunghwa Eng.)	<b>Promotion</b>	Prof. Joon-Shik Moon (Kyungpook Nat'l Univ.) Dr. Dong-Gyou Kim (KICT) Dr. Hyu-Soung Shin (KICT) Dr. Ju-Young Oh (Samsung C&T)
<b>Planning</b>	Prof. Hangseok Choi (Korea Univ.) Prof. Ilhan Jang (UNSW)		
<b>Technical</b>	Prof. Bumjoo Kim (Dongguk Univ.) Dr. Kang-Hyun Lee (KEC)		

## INTERNATIONAL SCIENTIFIC COMMITTEE

Prof. Antonio Bobet (USA)  
Prof. Julio E. Colmenares (Colombia)  
Prof. David Chapman (UK)  
Prof. Eunhye Kim (USA)  
Dr. Sean S. Lee (USA)

Prof. Joung Oh (Australia)  
Prof. Krishna Kanta Panthi (Norway)  
Prof. Hyungjoon Seo (China)  
Prof. Jinxiu(Jenny) Yan (China)  
Prof. Louis Wong Ngai Yuen (Hong Kong)

## CONTACT

website: [www.asem17.org](http://www.asem17.org) / E-mail: [ictus17@gmail.com](mailto:ictus17@gmail.com)