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# The 2<sup>nd</sup> ACF Symposium 2017

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## “Innovations for Sustainable Concrete Infrastructures”

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**23-25 November 2017**  
**Kantary Hills, Chiang Mai, Thailand**

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### Organized by

Asian Concrete Federation (ACF)  
Thailand Concrete Association (TCA)  
Construction and Maintenance Technology Research Center (CONTEC),  
Sirindhorn International Institute of Technology (SIIT),  
Thammasat University  
Faculty of Engineering, Chiang Mai University



## **Symposium Proceeding**

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Faculty of Engineering, Chiang Mai University



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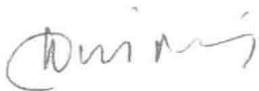
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## Welcome Message

On behalf of the Organizing Committee of the 2<sup>nd</sup> ACF Symposium 2017, I would like to express my warm welcome to all symposium participants and distinguished keynote and invited speakers.

Asian Concrete Federation (ACF) was officially established since 2004 along with the recognition of the growth of the Asian Region. It is certain that a tremendous amount of research and practical information as well as new technologies are now spreading within this region. The Asian Concrete Federation was officially inaugurated at the 1<sup>st</sup> ACF International Conference organized by Thailand Concrete Association in Chiang Mai in October 2004. The ACF International Conferences were held every 2 years since 2004 in various countries of Asia and have been well functioned as the venue for information exchange as well as for many other activities such as technical meetings of related committees and social meetings of participants, etc.. During the 6<sup>th</sup> ACF Conference, held in Seoul, South Korea in 2014, it was decided to organize ACF Symposium in alternate years to the ACF Conference. The 1<sup>st</sup> ACF Symposium on Ultra High Performance Concrete was then held in Kolkata, India in October 2015. This year, the 2<sup>nd</sup> ACF Symposium is held in Chiang Mai, Thailand between 23<sup>rd</sup> to 25<sup>th</sup> November 2017, hosted by the Thailand Concrete Association (TCA) together with the Construction and Maintenance Technology Research Center (CONTEC), Sirindhorn International Institute of Technology (SIIT), Thammasat University and Faculty of Engineering, Chiang Mai University. The main theme of the symposium is "Innovations for Sustainable Concrete Infrastructures". I welcome all of you back to Chiang Mai, Thailand, the place where ACF was firstly officially established and where the 1<sup>st</sup> ACF international conference was held. I hope this Symposium will be another ACF's meaningful event for effective information exchange and networking among all Symposium participants. I also wish you all enjoy your stay in Chiang Mai, another Thailand's beautiful city that you should not miss.

Finally, I would like to thank all the members of the Advisory, Technical and Local Organizing Committee as well as Symposium Secretariat and all assisting staff for their hard works, time and efforts spent to make this symposium successful. I would also like to thank all the sponsors, authors of the papers and all participants for their supports, contributions and participants. Thanks are also due to those who have indirect contribution towards making this symposium a success.



Prof. Somnuk Tangtermsirikul  
Chairman of the 2<sup>nd</sup> ACF Symposium 2017

## Organizing Committees

### Symposium Chairman

Prof. Somnuk Tangtermsirikul, Sirindhorn International Institute of Technology (SIIT),  
Thammasat University, Thailand

### Advisory Committee

Prof. Hiroshi Yokota	Hokkaido University (President of ACF)	Japan
Prof. Caijun Shi	Hunan University	China
Prof. C.S. Poon	The Hong Kong Polytechnic University	Hong Kong
Prof. Subhajit Saraswati	Jadavpur University (Immediate Past President of ICI)	India
Prof. Kyuichi Maruyama	Nagaoka University of Technology (President of JCI) Japan	Japan
Prof. Chang-Sik Choi	Hanyang University (President of KCI)	Korea
Emeritus Prof. Jongsung Sim	Hanyang University (Past President of ACF)	Korea
Prof. Man-Yeop Han	Ajou University (Past President of ACF)	Korea
Mrs. Narantuya Batmunkh	Mongolian University of Science and Technology (Vice president of MCA)	Mongolia
Prof. Yin-Wen Chan	National Taiwan University	Taiwan
Prof. Chai Jaturapitakkul	KMUTT (President of TCA)	Thailand
Dr. Le Trung Thanh	Vietnam Concrete Association	Vietnam

### Scientific Committee

Prof. Baochun Chen	Fuzhou University	China
Prof. Yunsheng Zhang	Southeast University	China
Assoc. Prof. Dr. Jian-Guo DAI	The Hong Kong Polytechnic University	Hong Kong
Prof. M. R. Kalgal	President of ICI	India
Assoc. Prof. Dr. Kohei Nagai	The University of Tokyo	Japan
Prof. Toshinobu Yamaguchi	Kagoshima University	Japan
Prof. Manabu Kanematsu	Tokyo University of Science	Japan
Prof. Jee-Sang Kim	SeoKyeong University	Korea
Prof. Jang-Ho Jay Kim	Yonsei University	Korea
Dr. Thomas Kang	Professor at Seoul National Univ.	Korea
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Assoc. Prof. Dr. Thanakorn Pheeraphan	NKRAFA	Thailand
Asst. Prof. Dr. Raktipong Sahamitrmongkol	KMUTT	Thailand
Asst. Prof. Dr. Pitiwat Wattanachai	Chiang Mai University	Thailand
Dr. Peerapong Jitsangiam	Chiang Mai University	Thailand
Dr. Hoang Minh Duc	Institute for Building Science and Technology	Vietnam

**Local Organizing Committee**

Prof. Somnuk Tangtermsirikul ( <i>Symposium Chairman</i> )	SIIT, Thammasat University
Dr. Pakawat Sancharoen	CONTEC, SIIT, Thammasat University
Dr. Ganchai Tanapornraweekit	CONTEC, SIIT, Thammasat University
Dr. Krittiya Kaewmanee	CONTEC, SIIT, Thammasat University
Assoc. Prof. Dr. Chayanon Hansapinyo	Chiang Mai University
Dr. Teewara Suwan	Chiang Mai University
Asst. Prof. Dr. Nattapong Makaratat	KMUTNB
Asst. Prof. Dr. Warangkana Saengsoy ( <i>Symposium Secretariat</i> )	CONTEC, SIIT, Thammasat University

## General Information

### Language

The symposium and all its activities will be conducted in English.

### Symposium Venue

The symposium venue is located at the conference rooms in the site of Kantary Hills, Chiang Mai, Thailand.

Kantary Hills, Chiang Mai  
44, 44/1-2 Nimmanhaemin Road, Soi 12, Suthep,  
Muang, Chiang Mai 50200, Thailand.  
Tel: +66 53 22 2111, +66 53 40 0877

### Registration Desk

The registration desk will be opened in DOI NUA (1F), Kantary Hills Hotel

#### *Operation Hours:*

Thursday	November 23 <sup>rd</sup> , 2017	14:00 - 17:00
Friday	November 24 <sup>th</sup> , 2017	07:30 - 17:00
Saturday	November 25 <sup>th</sup> , 2017	07:30 - 16:30

### Lunch

The symposium lunch buffet will be served at the Nimman Bar and Grill (1F), Kantary Hills Hotel on November 24<sup>th</sup> and 25<sup>th</sup>, 2017. The symposium name tag is required for access to the restaurant.

### Welcome Reception

The symposium welcome reception (Cocktail) will be held at the conference rooms (2F), Kantary Hills Hotel on November 23<sup>rd</sup>, 2017 starting from 18:00. The symposium name tag is required for access to the event. Dress code is casual.

### Banquet

The symposium banquet will be held at Khum Khantoke (Authentic Lanna Dining & Shows) on November 24<sup>th</sup>, 2017 starting from 18:30. All participants should gather at the lobby of the Kantary Hills Hotel at 17:30 for taking vans to the Khum Khantoke. The Khum Khantoke is located about 10 km from the Kantary Hills Hotel. The symposium name tag is required for access to the event.

### Technical Support Desk

A technical support team will be available during the symposium for any technical assistance for the presentations. The Technical Support Desk is located at DOI KHAM (1F), Kantary Hills Hotel.

## Instruction for Speakers

### General

- A notebook (Window OS) computer and a LCD projector will be provided in the session room. Please use the symposium notebook rather than your personal notebook.
- The total time allotted to each speaker is 15 minutes. Keynote & Invited speakers have 30 minutes. Both allotted times include the Q&A session.
- Presenters should check their presentation file in the speaker preview room (DOI KHAM, 1F)
- All presenters are requested to submit their final presentation file at least 1 hour before the start of the session.
- Presenters should arrive at the parallel session room 15 minutes before the start of the session to meet the Session Chair and to re-confirm the presentation file.

### Presentation Materials

- Presentation materials must be in Microsoft PowerPoint (2003 and later versions).
- Use the basic fonts which are supported by Microsoft PowerPoint.
- Please prepare a backup copy in a USB. All presentation materials are suggested to be placed in a folder in the USB.

### Speaker Preview Room:

DOI KHAM (1F), Kantary Hills Hotel

#### *Operation Hours:*

Thursday	November 23 <sup>rd</sup> , 2017	14:00 - 17:00
Friday	November 24 <sup>th</sup> , 2017	07:30 - 17:00
Saturday	November 25 <sup>th</sup> , 2017	07:30 - 16:30

## Keynote Lectures

No.	Name	Title
1.	<b>Prof. Koji Sakai</b> (Emeritus Prof. of Kagawa University - Chairman of the ACF Sustainability Forum, Japan)	Sustainability Design for Innovations of Concrete Technologies
2.	<b>Prof. Yozo Fujino</b> (Distinguished Professor of Yokohama National University - Chairman of the SIP Project, Japan)	Cross-ministerial Strategic Innovation Promotion Program (SIP) - Comprehensive Research on Development of Road Infrastructure Management Cycle and Its Application in Japan and Abroad
3.	<b>Prof. Caijun Shi</b> (Hunan University, China)	Use of Ultra High Performance Concrete For Sustainable Construction
4.	<b>Prof. Viktor Mechtcherine</b> (Technology University of Dresden, Germany)	High-Performance Fiber-Reinforced Cement-Based Composites for the Strengthening and Repair of Concrete Structures
5.	<b>Prof. M. R. Kalgal</b> (President of Indian Concrete Institute, India)	Fine Aggregates for Sustainable Concretes – Indian Experience
6.	<b>Prof. Jang-Ho Jay Kim</b> (Yonsei University, Korea)	Performance Based Design in Korea for Concrete
7.	<b>Prof. Yin-Wen Chan</b> (National Taiwan University - President of Taiwan Construction Research Institute, Taiwan)	Study on Durability and Cover Thickness of Concrete in Coastal Region
8.	<b>Dr. Phirun Saiyasitpanich</b> (Director, Climate Change Management and Coordination Division, Office of Natural Resources and Environmental Policy and Planning, Thailand)	Sustainability for Concrete Construction in Thailand
	<b>Prof. Somnuk Tangtermsirikul</b> (Sirindhorn International Institute of Technology, Thammasat University, Thailand)	

## Invited Speakers

No.	Name	Title
1.	<b>Prof. Karen Scrivener</b> (EPFL, Switzerland)	Limestone Calcined Clay Cements (LC <sup>3</sup> )
2.	<b>Assoc. Prof. Dr. Jian-guo Dai</b> (The Hong Kong Polytechnic University, Hong Kong)	Stress-strain Behavior of Steel Rebars Embedded in FRP-Confined Concrete Including Buckling
3.	<b>Prof. Pennung Warnitchai</b> (Asian Institute of Technology, Thailand)	Safety Evaluation of a Deteriorated Concrete Highway Structure in Thailand--a Case Study
4.	<b>Prof. Zhang Yamei</b> (Southeast University, China)	Hydration Products and Properties of Alkali Activated Ferronickel Slag
5.	<b>Prof. Xiao Jianzhuang</b> (Tongji University, China)	Research and Application of Recycled Aggregate Concrete in Shanghai
6.	<b>Dr. Hoang Minh Duc</b> (Institute for Building Science and Technology, Vietnam)	Effect of Fine Sand of Hong River on Properties of Fresh and Hardened Concrete

## Program at a Glance

### DAY 1: 23 November 2017

Time	Program
14:00 ~	Registration
18:00 ~ 20:00	<b>Welcome Reception (Cocktail)</b>

### DAY 2: 24 November 2017

Time	<b>Opening Ceremony &amp; Keynote Lectures (DOI LUANG &amp; DOI NANG, 2F)</b>		
7:30 - 8:30	Registration		
8:30 - 9:00	<b>Opening Ceremony</b>		
	Welcome Speech by Prof. Somnuk Tangtermsirikul, Chairman of the 2 <sup>nd</sup> ACF Symposium 2017		
	Welcome Speech by Dean of Faculty of Engineering, Chiang Mai University		
	Welcome Speech by Prof. Chai Jaturapitakkul, President of TCA		
	Opening Speech by Prof. Hiroshi Yokota, President of ACF		
9:00 - 14:30	<b>Keynote Lectures</b>		
9:00 - 9:30	Keynote Lecture 1: Prof. Koji Sakai (Emeritus Prof. of Kagawa University - Chairman of the ACF Sustainability Forum, Japan)		
9:30 - 10:00	Keynote Lecture 2: Prof. Yozo Fujino (Distinguished Professor of Yokohama National University - Chairman of the SIP Project, Japan)		
10:00 - 10:20	<b>Coffee break</b>		
10:20 - 10:50	Keynote Lecture 3: Prof. Caijun Shi (Hunan University, China)		
10:50 - 11:20	Keynote Lecture 4: Prof. Viktor Mechtcherine (Technology University of Dresden, Germany)		
11:20 - 11:50	Keynote Lecture 5: Prof. M. R. Kalgil (President of Indian Concrete Institute, India)		
11:50 - 13:00	<b>Lunch</b>		
13:00 - 13:30	Keynote Lecture 6: Prof. Jang-Ho Jay Kim (Yonsei University, Korea)		
13:30 - 14:00	Keynote Lecture 7: Prof. Yin-Wen Chan (National Taiwan University - President of Taiwan Construction Research Institute, Taiwan)		
14:00 - 14:30	Keynote Lecture 8: Dr. Phirun Saiyasitpanich (ONEP) and Prof. Somnuk Tangtermsirikul (SIIT), Thailand		
14:30 - 14:50	<b>Coffee break</b>		
14:50 - 17:00	<b>Parallel Sessions</b>		
14:50 - 17:05	Special Session: Limestone Calcined Clay Cement	Repair and Maintenance / Fiber Reinforced Concrete	Reinforced Concrete Structure
18:30 - 21:00	<b>Banquet @ Khum Khantoke</b>		

**DAY 3: 25 November 2017**

<b>Time</b>	<b>Parallel Sessions</b>		
8:30 - 10:15	Special Session: SIP - Towards for the Life-cycle Management of Concrete Structures (I)	Geopolymer / By products and Wastes	Admixture / Special Concrete
10:15 - 10:30	<b>Coffee break</b>		
10:30 - 12:00	Special Session: SIP - Towards for the Life-cycle Management of Concrete Structures (II)	Fly Ash	Special Cement
12:00 - 13:00	<b>Lunch</b>		
13:00 - 14:30	Recycled Aggregate Concrete	Thermal Effect and Cracking	Chloride Penetration
14:30 - 14:45	<b>Coffee break</b>		
14:45 - 16:15	Aggregates / Others	Durability	UHPC
16:15 - 16:30	<b>Closing Ceremony</b>		