

**2018 Asia-Pacific-Euro
Summer School
on Smart Structures Technology**

**Sponsor: Harbin Institute of Technology
Co-sponsors: Qingdao University of Technology and
Asia-Pacific Network of Centers for Research in
Smart Structures Technology**

**Qingdao & Harbin, China
July 16 – August 5, 2018**

Website: <http://www.7wcscm.com/Data/List/APESS2018>



APESS Welcome message

It is our pleasure to invite you to attend the 2018 Asia-Pacific-Euro Summer School on Smart Structures Technology (APESS). The summer school is organized under auspices of the Asian-Pacific Network of Centers for Research in Smart Structures Technology (ANCRiSST). The summer school will be divided into two stages. From July 16th (one week before 7th World Conference on Structural Control and Monitoring, 7WCSCM) to July 27th, it will be held at Qingdao University of Technology; and from July 28th to August 5th 2018 it will be held at Harbin Institute of Technology.

Participants of the APESS will attend three-week lectures given by experts in civil engineering, structural dynamics and control, smart structures technology, and structural health monitoring. They will also participate in technical visits and laboratory projects, where they will learn about the fundamental and practical use of sensing technologies for infrastructure monitoring and control.

The APESS program aims at providing participants with an international oriented program that recognizes both the achievements in smart structures technology of participating nations, as well as a common desire to pioneer a structured educational framework. Through this program, participants will be exposed to leaders in the field, both domestic and international, and will include a capstone competition, allowing students to reinforce the knowledge gained during the summer school.

We would like to acknowledge the support from Asian-Pacific Network of Centers for Research in Smart Structures Technology (ANCRiSST), Harbin Institute of Technology, and Qingdao University of Technology.

Welcome to Qingdao and Harbin. We are delighted to have you as the participant and wish you to have a good and fruitful time at the 2018 APESS.



Hui Li

Chair of APESS, 2018

Changjiang Scholarship Professor

Professor of School of Civil Engineering

Harbin Institute of Technology, China

Smart Structure Technologies and the Role of APESS

Advanced sensor technology improves the accuracy of measurements and provides opportunities for more detail structural evaluation; application in the modern world is increasingly widespread. Structures instrumented with sensors can communicate their current condition to a data acquisition system in the form of accelerations, displacements, strains, etc., depending on the sensor type. This information can be used in real-time to control and evaluate structure performance during severe earthquake or wind loads or assess the health of a structure after such events. In the long term, sensors can be used to evaluate structure degradation and to plan maintenance or retrofit strategies. Instrumentation of full-scale structures is a daunting task, giving rise to a push for improved technology and understanding in areas of structural dynamics, control systems, circuit technology, wireless technology, informatics, etc. In summary, smart structure technologies offer new opportunities and challenges to the way civil infrastructure systems are monitored, controlled, and maintained.

Conventional civil engineering curricula only exposes students to a limited range of the contributing disciplines to smart structures technology. The APESS program aims at bridging the gap that divides these disciplines through a student oriented international summer program. Graduate students and young researchers from Japan, China, Korea, the USA, Europe, and other countries will participate in three weeks of focused activities related to smart structures technology. The curriculum will be oriented to address gaps in education background which are necessary for the advancement of the field.

The 2018 APESS will be the 11th time that the summer school has been held; the first summer school was held in 2008 in KAIST South Korea and last year it was held at Yokohama National University in Japan. Other previous hosts of the APESS include the Univ. of Illinois at Urbana-Champaign (USA), Univ. of Tokyo (Japan), Tongji University (China), Indian Institute of Science (India), the National Taiwan University (China), and the Cambridge University (UK).

Time & Venue

- July 16th (one week before 7WCSCM) ~ July 27th, 2018: Qingdao University of Technology, Qingdao, China.
- July 28th: From Qingdao to Harbin by high-speed train.
- July 29th ~ August 5th, 2018: Harbin Institute of Technology, Harbin, China.

The Program

Advanced Structural Engineering and Dynamics

- Advanced Structural Dynamics
- Research and Development in Long-span Bridges
- Research and Practice in Steel Structure
- Hybrid Simulation Testing
- Finite Element Model Updating, Validation and Verification.
- Wind Engineering and Earthquake Engineering

Structural Control and Applications

- Structural Control Theory
- System Identification Theory and Application
- Application of Control Technologies to Buildings and Bridges

Smart Structures Technology, Sensing and Materials

- Data Acquisition for Structural Monitoring
- Wireless Sensors and Fiber-Optic Sensors
- Development of Smart Sensing Technologies and Materials for NDT
- Application of Robots, UAV, Video and Images, VR/AR Technology

Structural Health Monitoring, Assessments and Artificial Intelligence

- Structural Damage Detection
- Applied System Identification for Structural Assessment
- Data Analysis, Machine Learning, Deep Learning, Computer Vision, Artificial Intelligence
- Sparsity and Environment Issues in SHM
- Experiences and Practices of SHM for Buildings and Bridges
- Serviceability and Lifetime Assessment of Structures

In addition to the lectures, students will participate in:

- Laboratory Projects on the Use of Sensing Principles and Technologies for Monitoring Infrastructure
- Complimentary Attendance of 7WCSCM Conference (22-25 July in Qingdao City)
- Technical Visit to Structures with Monitoring/Control Applications and New Construction
- Exciting Cultural Activities around Qingdao and Harbin
- Experiencing High-speed Train in China
- Capstone Competition

The Costs

Registration: \$660 for per person, including:

- Lectures
- Technical visit
- Laboratory projects
- APSS Banquet
- Transportation from Qingdao to Harbin

Accommodation

- Qingdao: The Xueyuan Hotel is located in the campus of Qingdao University of Technology, 57 USD (about 360 RMB) per day for standard room (two beds, sharing a room by two people is encouraged). For more information of the hotel, please see the information below or visit at the website (<http://hotel.qut.edu.cn/index/>).
- Harbin: A hotel near the campus of Harbin Institute of Technology will be reserved, and the accommodation fee will be approximately 40 USD (about 260 RMB) per day for a standard room (two beds, sharing a room by two people is encouraged). The specific hotel will be determined in June.

Attend 7WCSCM

- Participants in 2018 APSS will receive a complimentary registration to attend the 7WCSCM; however, this registration does not include the lunches and banquet (100 USD per person for lunch covering all days in conference, and additional USD 50 for the banquet).

The Hosts

Harbin Institute of Technology (HIT)

- Founded in 1920, Top University in China, Top Ranked Engineering College
- 20 schools and departments
- 2,948 faculty members, 16,199 undergraduate, 7,999 M.S. students, and 5,197 Ph.D. students

For further information, please visit: <http://en.hit.edu.cn/>

Qingdao University of Technology

- Founded in 1952, one of key universities of Shandong Province
- 19 schools and departments
- 1,497 faculty members, 29,733 undergraduate, 1,700 M.S. and Ph. D. students

For further information, please visit: <http://english.qtech.edu.cn/>

The City

Qingdao

Qingdao is honored as the “Chinese Brand Capital” and “World Beer City”. It is also one of the second group of national low-carbon pilot cities; its four satellite cities, Jimo, Jiaozhou, Pingdu and Laixi, all hit the Top 100 Chinese Counties. 2005 saw Qingdao winning the first prize of “the most desirable Chinese cities in public opinion” and Chinese National Geography selected Badaguan Scenic Area near Qingdao as one of China’s five most beautiful urban areas. In 2007, Qingdao became the only Chinese city chosen for “The Most Beautiful Bay of the World”. One year later, Qingdao was crowned the “World’s Sailing Capital”, and successfully organized the Sailing Competition of the 29th Olympic Games in 2008. On January 7th of 2011, the State Council approved planning of the Marine Economic Zone of Shandong Peninsula, for which Qingdao is the core. In 2012, Qingdao ranked 9th on the list of Chinese competitive cities. Some more nationwide rankings and titles from the same year include “Best Leisure City”, “Top 10 Tourist City”, and “Happiest City”. As for the future, the World Leisure Games will be held in Qingdao in 2015.

For further information, please visit: <http://english.qingdao.gov.cn/n4248/index.html>

Harbin

Harbin, located in the center of Northeast Asia, is called the bright pearl on the Bridge of Eurasia Land, and is one of the most important hubs of the Eurasia Land Bridge and air corridor. The special history and geographical position has contributed to the development of Harbin, the beautiful city with an exotic tone, which not only brings together the historical culture of northern ethnic minorities, but also combines western and eastern culture. It is a famous historical and tourist city in China, with many beautiful names such as “the City of Culture”, “the City of Music”, “Ice City”, “A Pearl under the Neck of the Swan”, “Eastern Moscow”, and “Eastern Little Paris”.

For further information, please visit: <http://www.harbin.gov.cn/english.htm>

Important Dates and Contacts Information

The registration time is from Jan. 31st to Apr. 30th 2018.

The registration URL is <http://cn.mikecrm.com/710QZFt>

Contact mailbox is APESS2018@163.com

Qingdao Xueyuan Hotel

The Qingdao Xueyuan Hotel has a three-star hotel run by Qingdao Technological University, integrating catering, accommodations, and recreation. The area around the Xueyuan Hotel is bustling, with institutions such as Qingdao Technological University, the North China Sea Branch of the State Oceanic Administration, the Sifang Zone Government, as well as the Liqun Shopping Mall, the Vegetable Market of Fushun Road, and the Carrefour Supermarket.

Room information

Standard single/double room, RMB 358 per night (40 rooms available).

The hotel is equipped with air conditioning and WiFi, and 24-hour management services.



