



International Joint Graduate Program in Resilience and Safety Studies



**SyDE**

WISE Program for  
Sustainability in the  
Dynamic Earth

変動地球共生学卓越大学院プログラム

# **The 8<sup>th</sup> International Symposium on Water Environment Systems ---with Perspective of Global Safety (November 13<sup>th</sup> – 14<sup>th</sup>, 2020)**

**Department of Civil and Environmental Engineering  
Graduate School of Engineering  
Tohoku University**



**TOHOKU  
UNIVERSITY**

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**Department of Civil and Environmental  
Engineering, Graduate School of Engineering,  
Tohoku University**  
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## ORGANIZERS

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## PARTICIPANTS

### TOHOKU University

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Jiayuan JI	P.D.
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PhD

**Kasetsart University****Thailand**

Thapthai CHAITHONG

Professor

**Pati Regency Government Indonesia****Indonesia**

Erwan Wahyu WIBOWO

# Schedule (GMT+9)

13 Nov (FRI)

8:50~8:55

**Opening ceremony**

8:55~9:00

**Group photo**

9:00~9:40

**Plenary lecture I**

Electroactive Membranes for Resource Recovery from Wastewater,  
Prof. Z. Jason REN, Princeton University

9:40~10:20

**Plenary lecture II**

Mediating methane fermentation and retarding membrane fouling in  
AnMBRs by carbon-based materials: efficiency and mechanism  
Prof. Rong CHEN, Xi'an University of Architecture and Technology

10:20~10:30

**Coffee break**

10:30~12:00

**Poster exhibition (Room A&B)**

## *Topic 1: Anaerobic membrane bioreactor*

Performance of an AnMBR treating real sewage at low temperature,  
Jiayuan JI, TOHOKU University

Efficient treatment of municipal wastewater and biogas production by a  
pilot-scale submerged anaerobic membrane bioreactor,  
Tianjie WANG, TOHOKU University

High solid mono-digestion and co-digestion performance of food waste  
and sewage sludge by a thermophilic anaerobic membrane bioreactor,  
Shitong ZHOU, TOHOKU University

Methane fermentation of rich lipid food waste by a hollow fiber  
anaerobic membrane bioreactor (HF-AnMBR),  
Ziang HE, TOHOKU University

## *Topic 2: Anammox*

Startup of a pilot-scale anammox reactor for municipal wastewater  
treatment and biofilm formation,  
Zibin LUO, TOHOKU University

Biofilm characterization and operation performance in a single stage  
partial nitrification/anammox process with a function carrier,  
Yunzhi QIAN, TOHOKU University

### ***Topic 3: Environmental microorganism***

Microbial diversity of small bacteria in activated sludge,  
Shuka KAGEMASA, TOHOKU University

Application of hemin for the detection of environmental  
microorganisms, Kampachiro URASAKI, TOHOKU University

Effects of altering process parameters for controlling nutrient  
concentration in treated water on microbial community structure and  
amoA gene in activated sludge,  
Hiroyuki OHNO, TOHOKU University

### **10:30~12:00 Poster exhibition (Room C&D)**

#### ***Topic : Hydrological ecology***

A cross comparison of hydrological similarity and geological similarity  
for the sub-catchments within Natori river basin,  
Qing CHANG, Tohoku University

Crop yield sensitivity to drought events: a global-scale analysis of major  
crops,  
Vempi Satriya Adi HENDRAWAN, Tohoku University

Snow cover analysis for dam inflow prediction in Thailand,  
Tomoyuki HINO, Kyoto University

The Selection of Temporal Scale for Drought Analysis using Satellite-  
Based Precipitation Data,  
Amalia Nafisah Rahmani IRAWAN, Tohoku University

Relationship between local and spatial probabilities of precipitation in  
the Yoneshiro River catchment,  
Hajiem YANAGISAWA, Tohoku University

Estimation of the risk of inland flood based on distribution of extreme  
precipitation in Japan,  
Hayata YANAGIHARA, Tohoku University

Evaluating the effect of dryness on wildfire in Tohoku region using  
KBDI and PDSI,  
Chenling SUN, Tohoku University

Evaluate the effect of fuel moisture content on the heat required for  
ignition in the Tohoku Region of Japan,  
Qin HUANG, Tohoku University

<b>12:00~13:00</b>	<b>Lunch break</b>
<b>13:00~15:30</b>	<b>Oral session I</b>
	<b><i>Topic 1: Advanced wastewater treatment</i></b>
<b>13:00~13:15</b>	High loading capacity of EGSB reactor with anammox-HAP sludge at extremely low temperature of 7°C, Ying SONG, TOHOKU University
<b>13:15~13:30</b>	Development of an energy saving type municipal wastewater treatment system by combining AnMBR and Anammox processes: pilot-scale plant study and system evaluation, Chao RONG, TOHOKU University
<b>13:30~13:45</b>	Treatment of municipal wastewater by anaerobic membrane bio-reactor: process performance and mass balance, Runda DU, TOHOKU University
<b>13:45~13:50</b>	<b>Coffee break</b>
	<b><i>Topic 2: Membrane technology</i></b>
<b>13:50~14:05</b>	Virus removal by membrane bioreactors: mechanisms and modeling efforts, Yifan ZHU, TOHOKU University
<b>14:05~14:20</b>	Mechanisms of MS2 bacteriophage removal in an anaerobic membrane bioreactor, Jinfan ZHANG, Xi'an University of Architecture and Technology
<b>14:20~14:35</b>	High rate anaerobic digestion of food wastewater in an anaerobic membrane bioreactor, Mengmeng JIANG, China Agricultural University
<b>14:35~14:40</b>	<b>Coffee break</b>
	<b><i>Topic 3: Bioenergy production</i></b>
<b>14:40~14:55</b>	Using an expended granular sludge bed reactor for advanced anaerobic digestion of food waste pretreated with enzyme, Jinghuan LUO, Shanghai University
<b>14:55~15:10</b>	Biochar sustained high-efficient anaerobic co-digestion by enhancing direct interspecies electron transfer and alleviating thermodynamic restriction, Yaqian LIU, Xi'an University of Architecture and Technology
<b>15:10~15:25</b>	Effect of thermal pretreatment on anaerobic digestion of sewage sludge by anaerobic membrane bioreactor, Guangze GUO, TOHOKU University

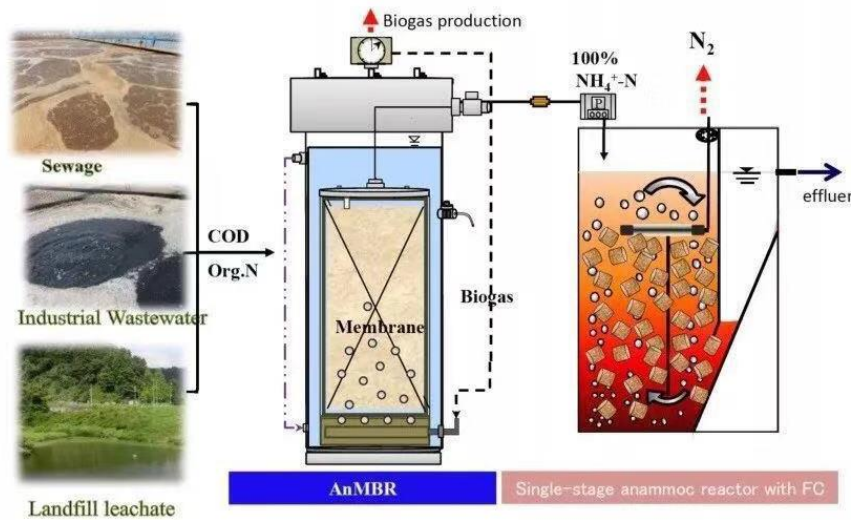
<b>15:25~15:30</b>	<b>Coffee break</b>
<b>15:30~18:00</b>	<b>Oral session II</b>
	<i>Topic: Hydrological ecology</i>
<b>15:30~15:55</b>	Assessment of the secondary salinization impact to the water resources in the Uzbekistan, Temur KHUJANAZAROV, Kyoto University
<b>15:55~16:20</b>	Simulating soil water recession coefficients using satellite-based data for antecedent precipitation index, Thapthai HAITHONG, Kasetsart University
<b>16:20~16:40</b>	Understanding Seasonality and Evapotranspiration of Soil Water under Tree and Grass Cover Using Natural Isotopes, Danila PODOBED, Tohoku University
<b>16:40~16:50</b>	<b>Coffee break</b>
<b>16:50~17:10</b>	Spatiotemporal analysis of drought indicated by scPDSI over Japan, Ke SHI, Tohoku University
<b>17:10~17:30</b>	The effect of wealth level and community-based environmental activities participation on environmental awareness, Erwan Wahyu WIBOWO, Pati Regency Government Indonesia
<b>17:30~17:50</b>	Hydrological assessment of precipitation products over high mountain regions: case study of Issyk-Kul Lake, Sanjar SADYROV, Kyoto University
<b>17:50~18:10</b>	Application of simple paddy field dam model for typhoon event at basin scale, Chai YIKAI, Tohoku University
<b>18:10~18:20</b>	<b>Closing speech</b>

## **14 Nov (Sat)**

<b>10:00~12:00</b>	Online fieldwork <i>Topic: AnMBR&amp;Anammox pilot-scale plant</i>
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## Online fieldwork- AnMBR&Anammox pilot-scale plant



- New concept of organic wastewater treatment



- Pilot plant of AnMBR and One-stage Anammox in Senen sewage treatment plant

AnMBR and One-stage Anammox is a new technology to develop an energy-positive innovative sewage treatment system integrating an anaerobic membrane bioreactor (AnMBR) and anaerobic ammonium oxidation (Anammox) process. The pilot plant in Senen sewage treatment plant has a working volumes of 5 m<sup>3</sup> for the AnMBR and 1.67 m<sup>3</sup> for One-stage Anammox reactor and completed with a capacity of 20 m<sup>3</sup>/d after a 500-day operation.