

Report of Japan Chapter Activity 2021-2022



Japan
Chapter

Ryozo Ooka
President of Japan Chapter

BOG, Officer & Chair 2021 - 2022



Ryozo Ooka
President/Delegate



Susumu Horikawa
President-elect/Alternate



Junta Nakano
Treasurer



Masayuki Ichinose
Secretary



Kyosuke Hiyama
MP Chair



Kosuke Sato
CTTC Chair



Norihiro Inoue
RP Chair



Kitaro Mizuide
GGA Chair



Hideki Kikumoto
SA Chair



Sayana Tsushima
YEA Chair



Masayuki Ogata
CC Chair/Webmaster



Shinsuke Kato
Historian



Shin-ichi Tanabe
BOG



Tamio Itoh
BOG



Motoi Yamaha
BOG



Kazuhide Ito
BOG



Masanari Ukai
BOG



Akio Miyara
BOG



Takashi Akimoto
BOG

Activities in 2021 - 2022

2021

- January 27: BOG meeting @Zoom
- February 9 - 11: ASHRAE Virtual Winter Conference
- April 13: BOG meeting @Zoom
- April 29: Ex meeting @GoTo Meeting
- May 10: BOG meeting @Zoom
- June 5, 12 : RPM-2 @GoTo Meeting
- Jul. 20 : General meeting @Zoom
- August 7, 14, 20, 21, 28, September 4: Region XIII CRC, RPM-1, etc. @Zoom
- September 16: BOG meeting @Zoom
- October 15: BOG meeting @Zoom
- December 1: BOG meeting @Zoom
- December 8: 28: ASHRAE Japan Chapter Seminar @Zoom

2022

- January 28 – 3 February: ASHRAE Winter Conference
- February 8: BOG meeting @Zoom
- March 9: BOG meeting @Zoom
- April 21: BOG meeting @Zoom
- May 13: BOG meeting @Zoom
- June 9: BOG meeting @Zoom
- June 11, 12 : RPM-2 @Zoom
- Jul. 19 : General meeting @Zoom

BOG meeting @Zoom



General Assembly@Zoom

July 20, 2021



Lecture on 2020 Technology Award



- **Kyoto Station Building**

Tomoaki Ushio

Harunori Yoshida

Shigemi Mori

Category I – Commercial Buildings – Existing



2021 ASHRAE Japan Chapter Technology Award

DaiyaGate Ikebukuro, Tokyo



2021 ASHRAE Japan Chapter Technology Award

2021
ASHRAE Japan Chapter Technology Award

Mikihisa Yamauchi

Seibu Properties Inc.
Tokyo, Japan

Winner of Category
Commercial Buildings – New
DaiyaGate Ikebukuro
Tokyo, Japan

In recognition of outstanding achievement in the design
and operation of energy efficient buildings



Chapter President
July 20, 2021

2021
ASHRAE Japan Chapter Technology Award

Shiro Tsukami

NIKKEN SEKKEI, Ltd.
Tokyo, Japan

Winner of Category
Commercial Buildings – New
DaiyaGate Ikebukuro
Tokyo, Japan

In recognition of outstanding achievement in the design
and operation of energy efficient buildings



Chapter President
July 20, 2021

ASHRAE Japan Chapter Seminar

Date: 8th December, 2021

Place: ZOOM

Lecturer: Prof. Kazuhide Ito (Kyushu Univ.)

Title: Simulation technology for risk assessment of infection by droplets and nuclei



Numerical Models required for Airborne Transmission Analysis

(1) Modeling of generation and exhalation mechanism of virus-laden droplet (VLD)

(2) Transport dynamics of VLD that reach the epithelial tissue in respiratory tract via indoor air

Euler-Lagrange Analysis of virus laden droplet
+ Particle Deposition Analysis (Hot-Spot in Airway) + Mucus Transport

(4) Implementation of Indoor Environmental Design

(3) Development of Bio-regulation model that describe Host Cell Dynamics associated with Infection

Target Cells $\frac{dT}{dt} = -\beta_T T I - \phi F T + \psi R \frac{dR}{dt}$

Infected Cells $\frac{dI}{dt} = \beta_T T I - \kappa_I I F - \kappa_I I C - \delta_I I$

Infected Cells $\frac{dI}{dt} = \beta_I I V - \kappa_I I F - \kappa_I I C - \delta_I I$

(Virus) $\frac{dV}{dt} = \beta_I I V - \kappa_I I F - \kappa_I I C - \delta_I I$

In Silico human for Inhalation Exposure and Airborne Airway Infection

[1] Chemical Compounds

PBPK/TK (Physiologically Based Pharmacokinetics) for Inhalation Exposure

(Mucosa + Epithelium)

$$\frac{\partial C_t}{\partial t} = -\frac{(V_{max} I C)}{K_{m1} + C_t} - K_f C_t - K_b C_t + D_t \nabla^2 C_t$$

(Sub-mucosa)

$$\frac{\partial C_b}{\partial t} = -K_f C_b - K_b C_b - (Q_b/V_b) C_b + D_b \nabla^2 C_b$$

[2] Virus/Bacteria

HCD (Host Cell Dynamics) for Airborne Airway Infection

(Target Cells) $\frac{dT(t)}{dt} = -\beta T(t)V(t)$

(Infected Cells) $\frac{dI(t)}{dt} = \beta T(t)V(t) - \delta I(t)$

(Virus) $\frac{dV(t)}{dt} = p I(t) - c V(t)$

2022 ASHRAE Japan Chapter Technology Award

2022
ASHRAE Japan Chapter Technology Award

Daisuke Hatori
Mitsubishi Jisho Design Inc.
Tokyo, Japan

Winner of Category
Commercial Buildings – New
Shinryo Shinjo Building
Tokyo, Japan

In recognition of outstanding achievement in the design
and operation of energy efficient buildings



Chapter President
July 19, 2022

2022
ASHRAE Japan Chapter Technology Award

Katsuhiko Yakita
Shinryo corporation
Tokyo, Japan

Winner of Category
Commercial Buildings – New
Shinryo Shinjo Building
Tokyo, Japan

In recognition of outstanding achievement in the design
and operation of energy efficient buildings



Chapter President
July 19, 2022