Program of Asian Symposium on Contamination Control 2023

		9:00	9:30	9:45	10:05	10:45	11:05	11:25	12:05	12:40	13:20	14:20	14:40	15:00	Cleanroom (A4	17:00	17:30
Day 1 ASCC Wed.. Sep.20	Meeting Room A	Opening Ceremony		Invited Lecture(1) Akihiko Tanioka (Japan)		Break	ISO (A1-A3)		Lunch		Invited Lecture(2) Taesung Kim (Korea)	Break		Filtration (2) (A4-A9)			Banquet
	Chair			Yoshio Otani			Koos Aglicola				Yoshihide Suwa			Norikazu Namiki			
	Meeting Room B						Filtration (1) (B1-B3)							Cleanroom (B4-B10)			
	Chair						Myong-Hwa Lee							Frans Saurwalt			
Day 2 ASCC Thu. Sep.21	Meeting Room A	Invited Lecture(3) Da Qian Wang (China)		Break	Surface Contamination (A10-A13)		Lunch		Airflow (A14-A19)			Break		Air cleaning (A20-A25)			Closing Ceremony
	Chair	Takafumi Seto			Taesung Kim				Hoong Wai Hoo					Naoya Nishimura			
	Meeting Room B				Measurement (B11-B14)				Indoor and Atmospheric environment (B15-B20)					Medical facility (B21-B26)			
	Chair				Hiroo Tarumi				Myoung-Souk Yeo					U Yanagi			
Day 3 Fri. Sep.22	ASCC	Technical Tour			Shimiz Corporation Hokuriku Branch		Lunch and dissolution				Cambridge Filter Corporation Kanazawa Factory						
	ICCCS	Committee Meetings 9:00-13:00							Lunch		COD MEETING 14:00-18:00						Dinner 19:00-21:00
Day 4 Sat.. Sep.23	ICCCS	COD MEETING 9:00-13:00							Lunch		COD MEETING 14:00-18:00						

Presentation time of each ASCC is 20 minutes, 15 minutes for presentation and 5 minutes for Q&A.

Asian Symposium on Contamination Control 2023

Program

――――――――――――――Day 1 (Wed.Sep.20)――――――――――――――

Room A

9:30～ 9:45	**Opening Ceremony** The Chairperson of Organizing Committee (Yoshihide Suwa) JACA President (Shuji Fujii)
9:45～10:45	**Invited Lecture 1** **「Recent Progress of Polymeric Nanofiber and the Application to Fine Particle Removal」** **Akihiko TANIOKA** **(Professor Emeritus, Tokyo Institute of Technology)**
10:45～11:05	**Coffee break**
11:05～12:05	**ISO** Chairperson　Koos Agricola A－1 **New ISO 14644-4 Design, construction and start-up** ir. F.W. Saurwalt Kropman Contamination Control A－2 **Basics and beyond; How to Prepare Proper Contamination Control Strategy Document** Hasim Solmaz Lighthouse Worldwide Solutions, EMEA Operations A－3 **No.59　Stuart White**
12:05～13:20	**Lunch**
13:20～14:20	**Invited Lecture 2** **「Exploring the Advancement of Korea's R&I Ecosystem and the Position of Cleanroom Technology」** **Taesung Kim** **(Sungkyunkwan University School of Mechanical Engineering)**
14:20～14:40	**Coffee break**

Day 1 (Wed.Sep.20)

14:40～17:00	**Filtration 2** Chairperson Norikazu Namiki

A－4 **Evaluation of Filtration Efficiency for a PAO-Compatible Expanded Polytetrafluoroethylene (ePTFE) HEPA Filter**

Shih-Cheng Hu[1], Tee Lin[1], Omid Ali Zargar[1], Graham Leggett[2]

[1]Department of Energy and Refrigerating Air-conditioning Engineering, National Taipei University of Technology, [2]LI-COR Biosciences, Lincoln

A－5 **Collection mechanisms of electret filter by dust loading**

Min-Song Kim, Min-Seon Kwon and Myong-Hwa Lee

Department of Integrated Particulate Matter Management, Kangwon National University

A－6 **Contribution of individual filtering layer in a multi-layered filter to the filtration performance during dust loading**

Min-Seon Kwon and Myong-Hwa Lee

Department of Integrated Particulate Matter Management, Kangwon National University

A－7 **Development of Advanced Hybrid Rotary Filter System**

Muhammad Aiman Mohd Nor, Sota Morishita, Bamu Suzuki and Yoshihide Suwa

Department of Mechanical Engineering, Shibaura Institute of Technology

A－8 **Development of PFAS-free air filter media**

Masashi Sato[1] and Nozomi Tashiro[2]

[1]Central Research Laboratory, Hokuetsu Corporation,

[2]Production Technology Div., Hokuetsu Corporation

A－9 **Discussion on Test Method of Air Filters for General Ventilation in ISO 16890**

TU You[1], TU Guangbei[2] and TU Minghui[3]

[1]School of Architecture, Tianjin Renai College, [2]School of Environmental Science & Engineering , [3]KTH Royal Institute of Technology

17:30～	**Banquet**

——————————Day 1 (Wed.Sep.20)——————————

Room B

11:05～12:05	**Filtration 1** Chairperson Myong-Hwa Lee **B－1 Particle collection performance of porous membrane filter** Jae-Hyun Park, Myong-Hwa Lee Department of Integrated Particulate Matter Management, Kangwon National University **B－2 Characterization of particle collection by high-efficiency air filter media made of fiber layers with different layer structures at the simultaneous loading of solid particles and droplets** Akira Sato[1], Zen Maeno[1], Norikazu Namiki[1] and Li Bao[2] [1]Kogakuin University,[2]Nippon Muki Co.，Ltd. **B－3 Development of a dischargeless-type electrostatic precipitation device using dielectric air filter media** Norikazu Namiki[1],Takumi Ogasawara[1] Zen Maeno[1],Yasuhiro Nakamura[2] and Seiro Yuge[2] [1]Department of Environmental Chemistry & Chemical Engineering, Kogakuin University, [2]Advanced Technology R&D Center, Mitsubishi Electric Corporation
12:05～14:20	**Lunch**
14:20～14:40	**Coffee break**
14:40～17:00	**Cleanroom** Chairperson Frans Saurwalt, **B－4 Numerical and Experimental Investigation of Moisture Contamination Control in an Open-Door Front Opening Unified Pod (FOUP)** Shih-Cheng Hu[1], Tee Lin[1], Omid Ali Zargar[1], Graham Leggett[2] [1]Department of Energy and Refrigerating Air-conditioning Engineering, National Taipei University of Technology, [2]LI-COR Biosciences, Lincoln **B－5 Development of Innovative Cleanroom Construction Methods and Establishment of Eco-Friendly Manufacturing Facilities** Dong Kwon Kim, Seong Cheon Kim Clean Environmental R&D Center, Shinsung E&G **B－6 Development and operational performance of an environmental sensor-based control system for fan filter units** Kosuke Kondo[1], Hisashi Hasebe[1], Takayuki Someya[2] and Masayuki Komatsubara[2] [1]Institute of Technology, Shimizu Corporation, [2]Building Construction Headquarters, Shimizu Corporation

――――――――――――――――Day 1 (Wed.Sep.20)――――――――――――――――

	B－7 Cleanroom design by equations on source strength ir. F.W. Saurwalt Kropman Contamination Control, Nijmegen, the Netherlands **B－8 The impact of human behaviour in cleanrooms** Koos Agricola Brookhuis Applied Data Intelligence **B－9 Nuumerical Modeling on Operator Movement and Contamination Emission on the Contamination Distribution in Cleanroom** Chengxi Yao[1], Seunjae Lee[1] and Taesung Kim[1, 2] [1]School of Mechanical Engineering, Sungkyunkwan University [2]SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University **B－10 Study on Particle Generation and Three-dimensional Motion Analysis During Operation in Clean Room** Shota Endo, Masanori Sasaki Sanki Engineering Co.,Ltd.,
17:30～	**Banquet (Room A)**

――――――――――――――――Day 2 (Thu.Sep.21)――――――――――――――――

Room A

9:00～10:00	**Invited Lecture 3** **「Application of ISO Standards」** **Da Qian Wang (Executive vice Secretary-General of CCCS)**
10:00～10:05	**break**
10:05～11:25	**Surface contamination** Chairperson　Taesung Kim **A－10 Detection of particle contamination on semiconductor chip surfaces using an automated inspection system in a mass-production process** Joonsub Park[1] , Jeonghoon Lee[1,2] [1]Department of Mechanical Engineering, Graduate School of Korea University of Technology and Education, [2]School of Mechanical Engineering, Korea University of Technology and Education

A－11 **A study on plasma cleaning of nanoparticles using standard wafer contaminated by particle deposition system**

Seungjae Lee[1], Kubra Aydin[2] and Taesung Kim[1,2]

[1]Mechanical Engineering, Sungkyunkwan University,

[2]SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University

A－12 **Study on Cleaning Technology of Neodymium Doped Amplifier Slabs for High-power Laser System**

Yilan Jiang, Haibing Lv, Xinxiang Miao

Research Center of Laser Fusion, China Academy of Engineering Physics

A－13 **Mechanism of particle pollution and influence on laser induced damage threshold of optics owing to Fresnel diffraction**

Miao Xinxiang, Zhu Qihua, Zhou Guorui, Lv Haibin , Yuan Xiaodong, Jiang Xiaodong, Yao Caizhen, Jiang Yilan

Research Center of Laser Fusion, China Academy of Engineering Physics

11:25～12:40 **Lunch**

12:40～14:40 **Airflow**

Chairperson Hoong Wai Hoo

A－14 **Air Flow Simulation and Testing Analysis for Energy Saving of ISO Class 1 Air Cleanliness Cleanroom**

Xiaoquan Wu, Ersong Chen

Nanjing TICA Climate Solutions Co., Ltd.

A－15 **Large Scale PIV to Investigate the Effects of Air-guiding Skirt Length on the Flow Recirculation in an Operating Room**

Shih-Cheng Hu[1], Tee Lin[1], Omid Ali Zargar[1], Graham Leggett[2]

[1]Department of Energy and Refrigerating Air-conditioning Engineering, National Taipei University of Technology, [2] LI-COR Biosciences

A－16 **Qualitative Analysis on the Complex Jet-like Flow Fields in a Non-axisymmetric Enclosed Stack Corotating System**

Ibrahim Abubakar Masud, Katsuaki Shirai and Yoshihide Suwa

Thermal Fluid Science and Engineering Laboratory, Graduate School of Mechanical Engineering, Shibaura Institute of Technology

A－17 **Derivation of 3D Flow Field Data in Multiple Cross-sections**

Muhammad Aiman Mohd Nor[1], Ryoto Nakai[1], Yoshihide Suwa[1],

Jun Machii[2] , Kenichi Nakamura[2] and Masashi Yasuki[2]

[1]Department of Mechanical Engineering, Shibaura Institute of Technology,

[2]Seika Digital Image Corp.

A－18 **Advanced opening channel for natural ventilation systems to prevent wind gusts**

Tomohiro Yoshida[1] , Yoshihide Suwa[1] and Kiyokazu Hosokawa[2] and Ueno Hiroyuki[3]
Iga Daisaku[3] , Fukiko Obara[3] , Fuyo Sakamaki[3] , Kenichi Iriuchijima[3]
[1]Department of Mechanical Engineering, Shibaura Institute of Technology,
[2]IDEC, [3]Oiles-eco.co

A－19 **Application of the Coanda effect to controlling indoor air environment**

Yoshihide Suwa, Muhammad Aiman bin Mohd Nor, and Kouya Araida
Department of Mechanical Engineering, Shibaura Institute of Technology

14:40～15:00 **Coffee break**

15:00～17:00 **Air cleaning**

Chairperson Naoya Nishimura

A－20 **Application of Regenerable Cation Exchange Fiber in Semiconductor Clean Room for Ammonia Removal and Its Performance After Regeneration**

Foong Wai Hoo , Zhu Lei1 and Chen Lin
MayAir Technology (China) Co., Ltd.

A－21 **Adsorption Deodorizer with Electric Heater for Outdoor Wastewater Storage Tank**

Yoshinori Mizuno[1, 2], Eizo Murakami [1], Abubakar Hamza Sadiq[2] and Kazuo Shimizu [2, 3]
[1]Research and Development Center, Asahikogyosha Co. Ltd.,
[2]Graduate School of Science and Technology, Shizuoka University
[3]Organization for Innovation and Social Collaboration, Shizuoka University

A－22 **Performance evaluation of Inactivating Bacterial Aerosol using Microwave Ablation in Environmental-Controlled Chamber**

Shinhao Yang[1] and Chi-Yu Chuang[2]
[1]Environmental Sustainability Lab, Center for General Education, CTBC Business School,
[2]Department of Occupational Safety and Health, Chang Jung Christian University

A－23 **Aggregation of PM2.5 by high-power airborne ultrasonic**

Kenta Kuwayama[1], Tatsuya Zushi[1], Takuya Asami[2], and Hikaru Miura[2]
[1]R&D Section, Industrial Machinery Dept., Yamamoto Industries, Ltd.
[2]College of Science and Technology, Nihon University

――――――――――――――Day 2 (Thu.Sep.21)――――――――――――――

	A－24 Verification of purification performance of thin air purifier with HEPA filter and energy saving effect of automatic control system by cleanliness monitor Masahiro Sato[1] and Mamoru Okamoto[2] [1]Design Department, AIRTECH JAPAN, LTD., [2]Resarch & Development, AIRTECH JAPAN, LTD. **A－25 R3 Nordic Guideline for Hospital Ventilation** Kim Hagstrom[1], Kari Solem Aune[2] [1]Halton OY, 2COWI AS
17:00～	**Closing Ceremony** **& Presentation for ISCC2024　Sergio Mauri, ASCCA chair**

――――――――――――――Day 2 (Thu.Sep.21)――――――――――――――

Room B

10:05～11:25	**Measurement** Chairperson Hiroo Tarumi **B－11 Development of New Optical Particle Counter for High-Concentration Aerosols without Sheath Air** Yoshio Otani[1], Masato Mizuno[2], Adam Giandomenico[2], David Pariseau[2], Perapong Tekasakul[3], Tawatchai Charinpanitkul[4] [1]Bangkok Office, Japan Society for the Promotion of Science, [2]Particle Plus Ltd., [3]Prince of Songkla University, [4]Chulalongkorn University **B－12 Calibration of the counting efficiency of bio-fluorescent airborne particle counter with respect to viable counts** Kenjiro Iida[1], Takashi Minakami[2] and Taku Ikeda[3] [1]National Institute of Advanced Industrial Science and Technology (AIST), [2]RION, Co., Ltd., [3]Nitta Corporation **B－13 Estimation of Formaldehyde Emissions in Pathology Laboratories: Measurement During Actual Work and Verification by CFD** Torahiko Saeki[1],, Norikazu Kobayashi[1],, Toshihiro Anai[1], Huaipeng Tang[1] and Naoki Kagi[2] [1]Shinryo Corporation, [2]School of Environment and Society, Tokyo Institute of Technology

B－14 **Research on Cleanliness Control Technologies for High Power Laser Facility**

Xiaodong YUAN, Xinxiang MIAO, Haibing LV, Yilan JIANG, Caizhen YAO, Guorui ZHOU, Yayun YE, and Longfei NIU

Laser Fusion Research Center, China Academy of Engineering Physics

11:25～12:40 **Lunch**

12:40～14:40 **Indoor and Atmospheric environment**

Chairperson Myoung-Souk Yeo

B－15 **Natural Ventilation Performance by Opening Devices Installed on Exterior Walls of High-Rise Buildings**

Muhammad Aiman bin Mohd Nor[1], Wan Shahrul Nizam bin Wan Mansol[1], Yoshihide Suwa[1], Kiyokazu Hosokawa[2], Ueno Hiroyuki[3], Iga Daisaku[3], Fukiko Obara[3], Fuyo Sakamaki[3]

[1]Department of Mechanical Engineering, Shibaura Institute of Technology

[2]IDEC Tokyo, [3]Oiles-eco.Corporation

B－16 **Survey of Thermal Sensation of Workers in Summer Thermal Environment in an NZEB Office Equipped with a TABS Underfloor HVAC System**

Sonoka SHINMURA[1], Hiroo TARUMI[1], Yasuyoshi AMADA[2], Yasushi MIYAMURA[2], Hisashi HASEBE[2] and Miguel YAMAMOTO[2]

[1]Dept. of Arch., Kanazawa Institute of Technology, [2]Shimizu Corp.

B－17 **Behavior of cooking-emitted particles in residential houses with different kitchen types**

Jing Zeng, Naoki Kagi , Wataru Umishio and Yiyao Shen

Department of Architecture and Building Engineering, Tokyo Institute of Technology

B－18 **VOC Concentrations in Houses in Japan: Correlations with Housing Characteristics and Types of Ventilation**

Sangin Park[1], Naoki Kagi[1], Wataru Umishio[1], Kenichi Hasegawa[2], Jo Tamura[2] and Teruaki Mitamura[3]

[1]Department of Architecture and Building Engineering, School of Environment and Society, Tokyo Institute of Technology,

[2]Department of Architecture and Environment Systems, Akita Prefectural University,

[3]Faculty of Engineering Department of Architecture, Maebashi Institute of Technology

B－19 **Factor analysis of cases of elevated aerosol concentrations in mountainous areas of Japan**

Makiko Nakata[1], Sano Itaru[2], Sonoyo Mukai[3], Brent N. Holben[4] and NASA/AERONET group

[1]Faculty of applied sociology, Kindai University,[2]Faculty of informatics, Kindai University, Higashiosaka, [3]The Kyoto College of Graduate Studies for Informatics,

[4]Goddard space flight center, NASA, MD

B－20 **Monitoring of atmospheric particles from space and model simulations**

Sonoyo Mukai[1], Makiko Nakata[2] and Souichiro Hioki[3]

[1]The Kyoto college of graduate studies for informatics, [2]Kindai U. [3]NRS, LOA, Lille U.

14:40～15:00 **Coffee break**

15:00～17:00 **Medical facility**

Chairperson U Yanagi

B－21 **Evaluating Exposure Risk to Airborne Infectious Particlesbased on an Experimental Study in an Emergency Departmen**t

Shinhye Lee[1] , Hyeonmin Kim[1] , Hangman Zo[1] , Myoungsouk Yeo1,[2] , Sungwan Kim[3] , Sang Do Shin[4]

[1]Department of Architecture and Architectural Engineering, College of Engineering, Seoul National University,

[2]Institute of Construction and Environmental Engineering, Seoul National University,

[3]Department of Biomedical Engineering, Seoul National University Hospital,

[4]Department of Emergency Medicine, Seoul National University Hospital

B－22 **Research on Safe Nebulizer Inhalation Therapy Using Clean Booth during COVID-19 Pandemic**

Yuka Uchida[1], Haruhiko Ogawa[1], Isao Ninomiya [2], Masato Mizuno[2], Bao Li[3], Yoshio Otani[4]

[1]Kanazawa Kasuga Clinic, [2]Particles Plus, Ltd., Japan, [3]Nippon Muki Co., Ltd., Yuki,

[4]JSPS Bangkok office

B－23 **Performance of air purifier and down flow system for eliminating airborne**

Saiki Muroya[1] , MasatoYasuura[2] , Takashi Fukuda[2] , Ken Yamamoto[3] , Kazuhiro Taniguchi[3] , and Takafumi Seto[1]

[1]Department of Frontier Engineering, Kanazawa University, [2]National Institute of Advanced Industrial Science and Technology, [3]Electric Works Company, Panasonic Corporation

	B－24 Design considerations for ATMP facilities ir. F.W. Saurwalt Kropman Contamination Control, Nijmegen, the Netherlands **B－25 Analysis of Indoor Environment and Performance in Temporary Negative Pressure Isolation Wards that use Portable HEPA Filter Units** Sejin Lee[1] , Wonseok Lee[1] , Jooyeon Roh[1] , Myoung Souk Yeo[2] , Soonjung Kwon[3] , Dong Il Park[4] and Minki Sung[5] [1]Department of Architecture and Architectural Engineering, Graduate School, Seoul National University, [2]Department of Architecture and Architectural Engineering, College of Engineering, Institute of Construction and Environmental Engineering, Seoul National University, [3]Department of Architecture, College of Engineering, Ajou University, [4]R&D Center, Hana G&C, [5]Department of Architectural Engineering, College of Engineering, Sejong University **B－26 Identifying the Potential Risks of Infection in Temporary Negative Pressure Isolation Rooms Operated with Portable HEPA Filter Units** Jooyeon Roh[1] , Sejin Lee[1] , Wonseok Lee[1] Myoung Souk Yeo[2] , Soonjung Kwon[3] , Dong Il Park[4] and Minki Sung[5] [1]Department of Architecture and Architectural Engineering, Graduate School, Seoul National University, [2]Department of Architecture and Architectural Engineering, College of Engineering, Institute of Construction and Envir onmental Engineering, Seoul National University, [3]Department of Architecture, College of Engineering, Ajou University, [4]R&D Center, Hana G&C, [5]Department of Architectural Engineering, College of Engineering, Sejong University
17:00～	**Closing Ceremony (Room A)**