TAIWAN ASSOCIATION
FOR AEROSOL RESEARCH

# 台灣氣膠研究學會

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# Calendar of Events

## Date
**27 July–1 August, 2025**

## Conferences
**2025 Asia Oceania Geosciences Society (AOGS) 22nd Annual Meeting**

## Location
**Singapore**

## Website
**https://www.asiaoceania.org/aogs2025/public.asp?page=home.asp**

## Date
**3–5 August, 2025**

## Conferences
**11th 2025 Theory and Technique International Aerosol Conference (11th 2025 T&T IAC)**

## Location
**Selangor, Malaysia**

## Website
**https://ttaerosol.com/**

# Calendar of Events

## Date
**24–29 August, 2025**

## Conferences
**22nd International Conference on Nucleation and Atmospheric Aerosols (ICNAA)**

## Location
**Vienna, Austria**

## Website
**https://icnaa2025.univie.ac.at/home/**

## Date
**31 August–5 September, 2025**

## Conferences
**2025 European Aerosol Conference (EAC 2025)**

## Location
**Lecce, Italy**

## Website
**https://eac2025.iasaerosol.it/**

## Date
**19–20 September, 2025**

## Conferences
**2025 International Conference on Aerosol Science and Technology-Aerosol Research and Twin AI (2025 ICAST-TWIN AI)**

## Location
**Tainan, Taiwan**

## Website
**https://2025-icast.taar.org.tw/**

# Calendar of Events

## Date
**13–17 October, 2025**

## Conferences
**American Association for Aerosol Research (AAAR) 43rd Annual Conference**

## Location
**Buffalo, New York**

## Website
**https://web.cvent.com/event/a1cd83f0-8f31-4f7c-8bb0-74f7bc802b12/summary**

## Date
**1–4 December, 2025**

## Conferences
**14th Asian Aerosol Conference (AAC 2025)**

## Location
**Mumbai, India**

## Website
**https://aacindia2025.in/**

## Date
**30 August–5 September, 2026**

## Conferences
**12th International Aerosol Conference (IAC 2026)**

## Location
**Xi'an, China**

## Website
**https://iac2026.csp.org.cn/?sid=3742&mid=954&v=100**

# Calendar of Events

# The 2025 Distinguished Aerosol Scholars Lecture Series

## Dr. Judith C. Chow

**Nazir and Mary Ansari Chair in Entrepreneurialism and Science and Research Professor**

**Division of Atmospheric Sciences, Desert Research Institute (DRI), Nevada System of Higher Education**

### Topic

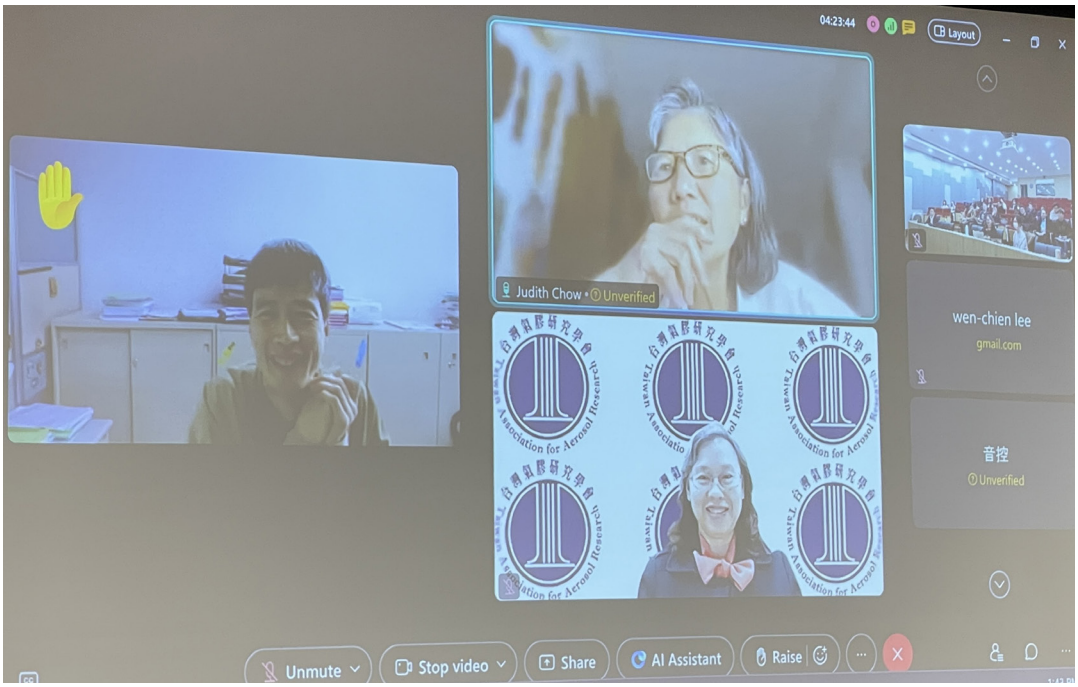
**Developing Atmospheric Science Career Paths and Research Area**

The aerosol scholar's learning and thinking journey speech honored Dr. Judith C. Chow, a research professor at the Desert Research Institute (DRI). She shared her personal and professional journey, from her roots in Taiwan to becoming an environmental scientist in the United States. Judith received her Bachelor's degree in Biology from Fu Jen Catholic University before pursuing a Ph. D. degree in Environmental Health Sciences at Harvard University, which reflected her continued dedication and passion for the environmental field.

Judith discussed her role in establishing the Environmental Analysis Laboratory at DRI in Nevada, where she has hosted over 50 major air quality studies and actively promoted international collaboration. She emphasized the significance of long-term data collection and the use of emerging technologies, such as persistent environmental monitoring through photoionization time-of-flight mass spectrometry (PI-TOFMS) analysis. She noted that air quality research necessitates cross-disciplinary collaboration, bringing together experts in fields like atmospheric science, toxicology, and biostatistics to jointly investigate the impact of solutions on public health.

Judith also addressed the challenges faced by female scientists and offered practical suggestions for overcoming them. Her advice included focusing on networking, proposal writing, scientific communication, and planning for career flexibility. She encouraged young scholars to uphold their self-determination and assured them that through hard work and effective collaboration, they can overcome challenges and achieve remarkable careers in science.

# The 2025 Distinguished Aerosol Scholars Lecture Series



# Novice Scholars Profile

## Chang-Feng Ou-Yang


### Current Position

**Assistant Professor**
**Department of Chemistry, National Central University, Taiwan**

### Qualification

**Ph.D., Department of Chemistry, National Central University, Taiwan**

### E-MAIL

**cfouyang@ncu.edu.tw**


### Recent Research Topics

Prof. Chang-Feng Ou-Yang is currently affiliated with the Department of Chemistry at National Central University, Taiwan. His research focuses on the analysis of trace constituents and their chemical mechanisms in the atmosphere. This includes studying the variations and trends of background air pollutants such as greenhouse gases, as well as investigating the relationship between atmospheric dynamics and these trace components. In addition, he develops sampling and analytical methods for trace gases—for example, continuous monitoring techniques for volatile organic compounds (VOCs)—and studies their characteristics. In recent years, his research interests have extended to developing gas chromatography (GC) techniques to identify the composition of organic substances in aerosols.

His recent research topics include:

1. Long-term trends and variation characteristics of trace gases in high mountains and remote islands of East Asia
2. Characterization and analytical method development for VOCs
3. Development of GC methods for identifying organic compounds in aerosols

Future research goals will continue focusing on characterizing and developing analytical methods for trace gases in the atmosphere. To date, Dr. Ou-Yang has published a total of 55 articles in international SCI journals, including 18 as first author or corresponding author. His publications appear in top journals such as *JGR-Atmospheres*, *Chemosphere*, *Atmospheric Environment*, *Science of the Total Environment*, and *Environmental Research Letters*.

## 1. Long-term trends and variation characteristics of trace gases in high mountains and remote islands of East Asia

Changes in air pollutant concentrations are closely tied to their baseline levels in the background atmosphere, making it essential to understand the characteristics and long-term trends of these background conditions. For example, during Taiwan's northeast monsoon season, Asian continent outflow frequently leads to regional increases in ozone levels. In Dr. Ou-Yang's earlier work conducted under the 7-SEAS Project, he observed that these outflows significantly elevated regional ozone and carbon monoxide even in remote maritime areas such as Dongsha Island. If such elevated background levels coincide with local emissions or accumulation of air pollutants, the deterioration of air quality can further be pronounced.

In addition, subsiding air masses from higher altitudes can bring dry and ozone-rich air downward to the surface, temporarily degrading the air quality. This phenomenon, known as a stratospheric intrusion, is particularly common in mountainous regions. Dr. Ou-Yang has investigated the atmospheric dynamic mechanisms and impacts of this process through the observations at Mt. Lulin. Both studies have been published in *Atmospheric Environment*.

Greenhouse gases absorb longwave radiation emitted from the Earth's surface, and their continued rise in concentration contributes to ongoing atmospheric warming. Since 2006 and 2010, Mt. Lulin and Dongsha Island have served as key monitoring stations for major greenhouse gases such as carbon dioxide and methane, providing over 15 years of continuous observational data. These two background sites hold distinct geographical importance—Mt. Lulin represents the free troposphere over East Asia, while Dongsha Island reflects near-surface marine background conditions in the western Pacific. In his recent research, Dr. Ou-Yang not only examined the long-term trends of greenhouse gases at both sites but also highlighted how seasonal variations differ due to the influence of distinct air masses at each altitude. His study further assessed the impact of Southeast Asian biomass burning on greenhouse gas levels over the region. These findings have been published in *Environmental Research Letters*, with additional results featured in a newly accepted paper in *JGR-Atmospheres*.

## 2. Characterization and analytical method development for VOCs

Volatile organic compounds (VOCs) are critical precursors in the formation of tropospheric ozone. Due to their varying chemical reactivities, different VOCs contribute differently to ozone production. By examining changes in the concentration ratios among these compounds, researchers can not only identify potential emission sources but also use VOC pair ratios as tracers to indicate the photochemical characteristics of air masses and evaluate the relative air mass ages. In recent years, Dr. Ou-Yang has analyzed long-term VOC monitoring data from the Photochemical Assessment Monitoring Station in Taipei, including assessment of trends across various VOC groups—such as alkanes, alkenes, and aromatic hydrocarbons—and applying photochemical indicators to examine changes in the influence of long-range transport versus local emissions in northern Taiwan.

In parallel, Dr. Ou-Yang has been actively developing on-line monitoring techniques for VOCs. This includes designing automated preconcentration systems, investigating the adsorption and desorption behaviors of different sorbents, testing novel sorbent materials, and implementing trigger-based sampling methods to capture VOC variations during specific pollution episodes. These advancements enhance the ability to identify and characterize emission sources. His research has been featured in leading scientific journals, including *JGR-Atmospheres*, *Atmospheric Environment*, *Journal of Chromatography A*, *Journal of Separation Science*, and *Chemosphere*.

## 3. Development of GC methods for identifying organic compounds in aerosols

Aerosol composition is both complex and diverse, making the identification of organic compounds within aerosols a persistent challenge—yet essential for understanding their origins and formation mechanisms. Dr. Ou-Yang conducted an in-depth analysis of aerosol samples collected during springtime biomass burning events at Mt. Lulin. Using a two-dimensional gas chromatography system—featuring a valve-based modulator and a combination of columns with differing properties—paired with time-of-flight mass spectrometry, Dr. Ou-Yang achieved a comprehensive characterization of the aerosol's organic content. In this study, more than forty organic compounds were qualitatively identified, including several plasticizers and flame retardants, such as phthalates and triphenyl phosphate, respectively. These substances were likely brought to Mt. Lulin via long-range transport of polluted air masses from Southeast Asia and Southern China. The findings were published in the journal *Chemosphere* in 2024. Looking ahead, Dr. Ou-Yang works to continue advancing chromatographic and mass spectrometric techniques for the analysis of diverse atmospheric samples

# Expert Profile

## Dr. Li-Te Chang


### Affiliation

**Associate Professor, Department of Environmental Engineering and Science, Feng Chia University**

### Education

**Sc.D., Department of Environmental Health, Harvard University**

### E-MAIL

**LTECHANG@FCU.EDU.TW**

### Website

**https://ees.fcu.edu.tw/teachers-detail/?id=T91140&unit_id=CS02**


### Recent Research Topics

Dr. Li-Te Chang is an Associate Professor at the Department of Environmental Engineering and Science at Feng Chia University, Taiwan. His work is driven by a passion for environmental health science, with a strong focus on air quality and its impact on public health. Over the years, Dr. Chang has built a remarkable research portfolio, contributing to numerous prestigious journals and advancing our understanding of how pollutants affect human health.

Dr. Chang's research revolves around the critical relationship between environmental pollutants and health outcomes. He has dedicated his career to investigating how airborne contaminants—like particulate matter (PM), ozone ($O_3$), and volatile organic compounds (VOCs)—impact various health outcomes, including respiratory and cardiovascular effects. By employing observational and experimental methodologies, Dr. Chang aims to elucidate how environmental exposures influence human health, informing policy and intervention strategies.

During the past years, Dr. Chang’s work can be grouped into three primary themes: indoor air quality (IAQ) and health impacts, cardiovascular effects of air pollution, and health risk assessment studies. Below is an overview of his key findings within these themes.

## 1. Indoor Air Quality and Health Impacts

One of Dr. Chang's notable studies examined changes in IAQ in public facilities before and after the implementation of Taiwan's Indoor Air Quality Management Act. The results showed that, despite gradual outdoor improvements, maintaining strong IAQ standards is still crucial—particularly in hospitals and libraries. Continuous IAQ management should be maintained, especially in primary schools, to prevent and control acute and chronic diseases, particularly considering biological and chemical pollution.

Another study explored the link between indoor pollutant levels, houseplants, and respiratory health among healthy adults in Taipei. Dr. Chang and colleagues discovered that indoor $PM_{2.5}$ and $O_3$ exposures could reduce predicted peak expiratory flow rates (PEFR). Interestingly, the presence of houseplants appeared to mitigate some of these effects by improving indoor air quality.

In a long-term study of indoor exposure to fine particles in northern Taiwan, Dr. Chang found that prolonged exposure to $PM_{2.5}$ was linked to negative pulmonary effects, such as decreased PEFR and elevated biomarker (carcinoembryonic antigen, CEA) levels. Notably, no adverse effects were observed among individuals exposed to lower levels of $PM_{2.5}$ over a decade (10-year mean level < 10 $\mu g/m^3$), highlighting the importance of maintaining IAQ within safe limits.

## 2. Cardiovascular Effects of Air Pollution

Dr. Chang has also focused on how air pollution affects cardiovascular health. One of his studies examined how exposures to micro- and nano-particulate matter, black carbon (BC), particle-bound polycyclic aromatic hydrocarbons (p-PAHs), and carbon monoxide (CO) impact heart rate variability (HRV) in healthy older adults. The findings indicated that increased exposure to these pollutants could disrupt cardiac autonomic function, with older adults being particularly vulnerable compared to younger populations.

Another study examined how in-cabin exposure to different-sized PM and CO affected the HRV of public transit commuters. The results revealed that particles with different sizes cause different variations of the HRV indices. Among them, $PM_{2.5–10}$ results in much variation of the HRV parameters, suggesting exposure to $PM_{2.5–10}$ has a non-negligible effect on the autonomic nervous system of the heart of healthy adults.

In a related study on the combined impact of noise, fine particulate matter, and nitrogen oxides on ambulatory blood pressure in healthy young participants, Dr. Chang demonstrated that these environmental stressors could independently elevate blood pressure, increasing cardiovascular risk in adults.

## 3. Health Risk Assessment Studies

Dr. Chang has also conducted groundbreaking research on health risk assessment related to environmental exposures. One study examined the distribution of fine particles at various residential heights in urban Taiwan. Health risk analysis for $PM_{2.5}$ concentrations showed a decrease in lung cancer mortality rate and an extended lifespan for residents living at the height of 27 m. Overall, as the distributions of PM and the constituents varied at different residential heights, exposure and risk assessment of particle concentrations with multiple sizes and various components at broader vertical heights should be further investigated.

In another investigation, Dr. Chang assessed microenvironmental exposures to p-PAHs among elementary school children in Taipei. The study found that high-ring species dominated children's exposure levels, with traffic pollution, incense burning, and cooking emissions identified as key contributors. The findings underscored the need for targeted interventions to protect vulnerable populations.

Dr. Chang also explored VOCs exposure among workers in the integrated circuit assembly and testing industry. His research highlighted a clear relationship between VOCs levels and workers' perceived health risks, emphasizing the need for improved workplace safety measures.

Through his unwavering dedication to environmental engineering and public health, Dr. Chang has made impacts in the field of environmental health science. His methodical and innovative research continues to inform public policies and inspire practical solutions to minimize the health impacts of environmental pollutants. By bridging scientific understanding with practical interventions, Dr. Chang's work continues to serve as a vital resource for shaping healthier communities in Taiwan and beyond.

# Industry Experts Profile

## Jim Yang


### Affiliation

**Founder and President**
**JNC TECHNOLOGY CO., LTD.**

### Professional activities

**Vice president, Taiwan Air Quality Health & Safety Association**
**Executive Board of Directors, Taiwan Society of Indoor Environmental Quality**

### Education

**Rutherford EMBA**

### E-MAIL

**jim_y168@yahoo.com.tw / jim_y168@jnc-tec.com.tw**

### Website

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### Recent Research Topics

Mr. Jim Yang, founder and President of JNC Technology Co., was raised in the rural areas of Changhua, Taiwan, where he developed a strong work ethic and down-to-earth attitude from an early age. Early in his career, he joined a company specializing in the import and distribution of foreign instrumentation, which marked the beginning of his long-term engagement with sensor technologies and laid the foundation for his entrepreneurial journey. During his tenure, Mr. Yang evolved from an entry-level employee into a technically proficient and uniquely skilled professional in business development. He was actively involved in operating various instruments and participating in on-site installation and commissioning processes, through which he gained a deep understanding of equipment performance and built solid expertise across disciplines such as chemical engineering, environmental engineering, gas detection, water quality monitoring, and sensor technologies.

While working in the instrumentation distribution sector, Mr. Yang recognized a critical limitation in after-sales services: equipment failures often required international returns to original manufacturers, with repair times extending up to six months, imposing significant inconvenience and operational delays for users. This realization motivated him to pursue independent research and development, leading to the establishment of JNC Technology Co. The company is one of the few domestic teams in Taiwan focused on the localized development and manufacturing of Internet of Things (IoT) sensors and AI-based IoT controllers. JNC's R&D philosophy centers on breaking away from traditional industry frameworks by emphasizing modular design in IoT sensor and controller systems, enabling users to swiftly construct customized management systems and reclaim operational autonomy. By integrating big data analytics and cloud-based applications within the IoT architecture, the company facilitates remote monitoring and intelligent management, transcending spatial and temporal limitations.

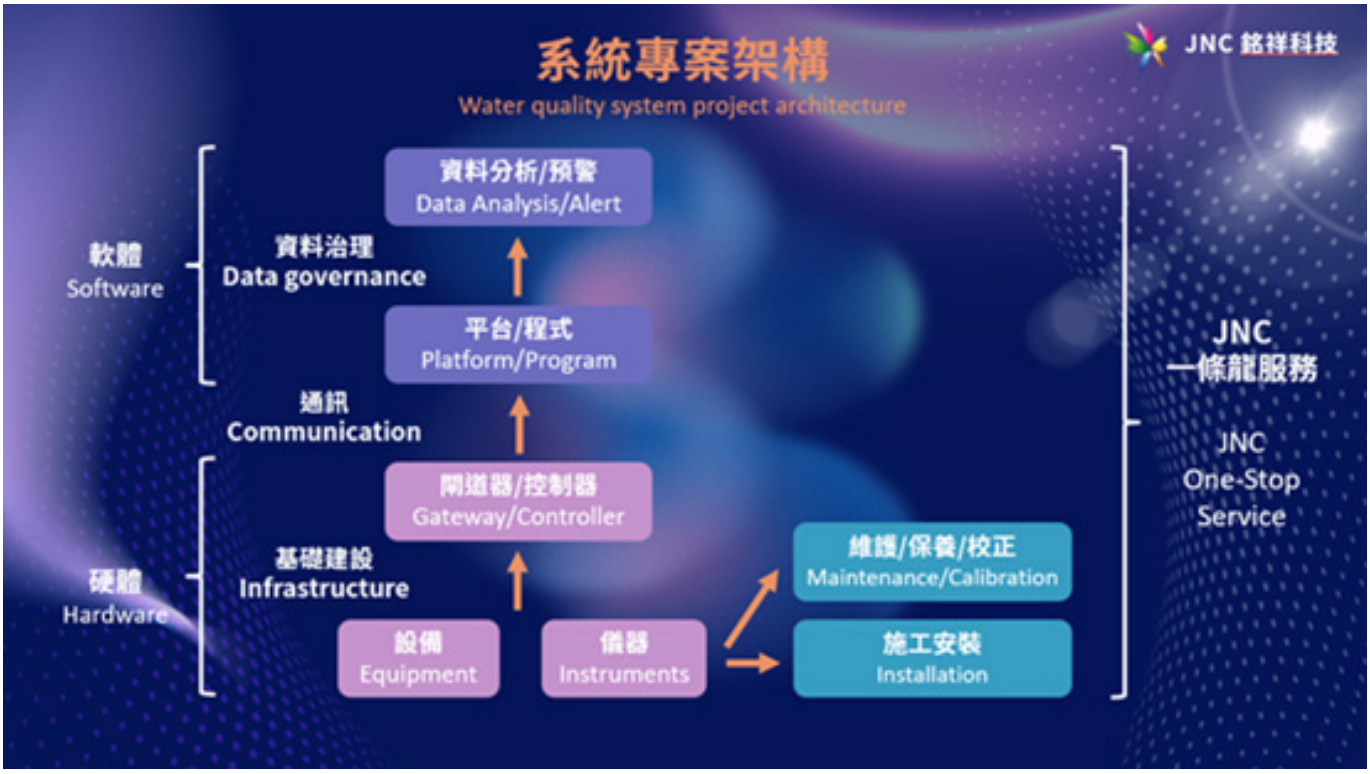
With growing environmental awareness and rapid technological advancement, IoT has assumed an increasingly pivotal role in air quality monitoring. Under Mr. Yang's leadership, the team has integrated sensors, controllers, big data analytics, cloud computing, and wireless communication technologies to develop real-time air pollution monitoring and forecasting systems. These systems provide valuable environmental data for government agencies, enterprises, and individuals to support air quality assessment and trend prediction. The team has successfully developed a wide range of fundamental air quality sensors capable of monitoring parameters such as $PM_{2.5}$, $PM_{10}$, carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), ozone ($O_3$), volatile organic compounds (VOCs), temperature, humidity, wind speed, and wind direction.

Currently, the sensor technologies developed by Mr. Yang's team possess mature capabilities for real-time and online monitoring and have been widely deployed across diverse application settings, including urban air quality surveillance, corporate environmental management, residential health protection, industrial zone supervision, perimeter monitoring, and agricultural/aqua-cultural operations. The technologies employed include laser scattering (for $PM_{2.5}$), electrochemical detection (for CO, $NO_2$, $SO_2$, HCHO), infrared sensing (for $CO_2$), capacitive sensing (for humidity), resistive sensing (for temperature), and semiconductor-based sensing (for TVOCs and $O_3$). The modular design enhances flexibility and expandability, allowing sensor units to be configured into 3-in-1, 5-in-1, 7-in-1, or 9-in-1 formats. All modules support the RS-485 interface and Modbus communication protocol, facilitating compact size and on-demand field integration.

In addition, the team has independently developed a web-based intelligent data logging and transmission unit featuring an MCU-based architecture. This unit offers advantages such as compact form factor, low power consumption, and high cost-efficiency. It supports data uploading to the cloud via Ethernet, Wi-Fi, or 4G modules, meeting the diverse requirements of embedded applications.

On the data application front, the team has further developed a cloud-based IoT platform that enables data visualization and real-time access via mobile interfaces, enhancing system usability and management efficiency. Key platform features include:

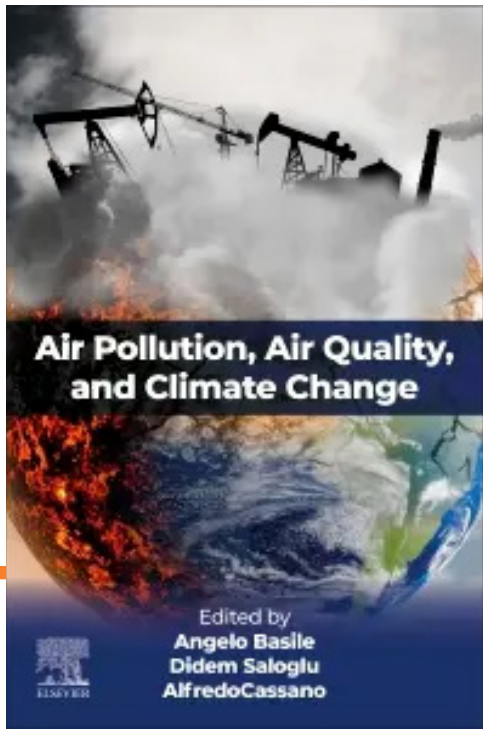
- Big data analytics: Aggregating air quality data across multiple environments to support trend analysis and anomaly detection.
- Early warning mechanisms: Employing algorithms and Statistical Process Control (SPC) principles to trigger alerts for rapid changes, prolonged stagnation, or values exceeding three standard deviations, with optional integration to smart air purification systems for automatic response.
- Information security and access control: Implementing account-based user hierarchy and permission management to safeguard data security and user privacy.




From sensor design and data transmission units to field installation and cloud platform development, Mr. Yang and his team have established a comprehensive IoT application ecosystem. Through real-time data acquisition, intelligent data management, and automated control systems, they provide integrated solutions for environmental monitoring and health protection. Looking ahead, the team remains committed to advancing technological innovation and contributing to the development of smart cities and sustainable practices.

# New Book on Aerosols

## Air Pollution, Air Quality, and Climate Change




**Publisher :** Elsevier; 1st edition
**Publication date :** December 11, 2024
**Language :** English
**Print length :** 300 pages
**ISBN-10 :** 0443238162
**ISBN-13 :** 978-0443238161

**by Angelo Basile (Editor), Didem Saloglu (Editor), Alfredo Cassano (Editor)**

This book offers a review of the latest advances and developments in the study of air pollution and air quality in the face of continuing climate change. The editors begin with a detailed review of air pollution and its sources, effects, and impacts. In-depth chapters follow on atmospheric chemistry, air pollution meteorology, and take a look at indoor and urban air quality. The editors then explore the connection between air quality and climate change, the effects of CO2 on air quality, and use of carbon capture and storage. Finally, the book closes with a discussion of environmental policy making as well as future considerations for air pollution, air quality, and climate change.

Advantages:

- Helps readers understand atmospheric pollutants, exposure assessment, and material damage
- Explores the role of carbon dioxide in air pollution and its effect on air quality
- Provides innovative approaches, new technologies, and strategies to reduce air pollution and improve air quality

This book is a timely and valuable reference for anyone to deepen his/her understanding of the links between air pollution, air quality, and climate change.

# Announcements

The second joint meeting of the 17th Board of Directors and Supervisors has been held on March 08, 2025. During this meeting, there were approved 5 applications for membership, including 5 life-time memberships. Welcome to join Taiwan Association for Aerosol Research!

## Permanent Individual Member

**Yu-Jung Liu**

**Assistant Professor**

**School of Public Health, Taipei Medical University**

**Yuan-Chien Lin**

**Professor**

**Department of Civil Engineering, National Central University**

**Wen-Ta Yang**

**Assistant Professor**

**Department of Environmental Engineering, National Ilan University**

**Pei-Ying Hsieh**

**CSO and CEO**

**Resilience Energy Friendly Consultants Inc.**

**Miao-Ching Chi**

**Associate Professor**

**Department of Respiratory Care, Chang Gung University of Science and Technology**

# EMPLOYMENT ANNOUNCEMENT

## Researcher Position in Air Quality Research Center
## Research Center for Environmental Changes
## Academia Sinica
## TAIPEI, TAIWAN

The "Air Quality Research Center" of the Research Center for Environmental Changes, Academia Sinica, is seeking to recruit one full-time tenure track researcher at the rank of Assistant Research Fellow, Associate Research Fellow, or Research Fellow (equivalent to Assistant Professor, Associate Professor, or Professor in universities). This position starts as early as January 1, 2026.

Recognizing the impact of air pollution on public health and the environment, our center established the "Air Quality Research Center" in 2021 to advance research on the physicochemical mechanisms leading to air pollution. We are dedicated to improving the precision measurement, characterization, and numerical modeling of key air pollutants to address current challenges in air pollution mitigation.

$PM_{2.5}$ and $O_3$ are among the most critical air pollutants affecting urban environments. Their formation and transport involve both macroscopic meteorology and microscopic molecular chemistry. To strengthen our research capacity, we seek a researcher specializing in atmospheric photochemistry or heterogeneous chemistry, with experience in laboratory studies, field studies, or theoretical modeling of reaction mechanisms. The researcher will join our team projects and conduct research on the chemical reaction mechanisms of air pollutants, collaborate with national and international research institutions to develop innovative atmospheric pollution models, and engage in governmental and academic projects and provide scientific recommendations.

Applicants are required to have a doctoral degree; those with an excellent record of independent research are preferred. Application materials shall be submitted on-line through the Academic Jobs Online (https://academicjobsonline.org/ajo/jobs/29176) by including (1) curriculum vitae with a full publication list, (2) a research plan, (3) 1-3 representative papers, and (4) contact information of at least three reference peers. For more information, please visit our webpage (https://rcec.sinica.edu.tw/index_en.php?action=researchGroup&cid=2) or contact Ms. Nellie Chang at nellie@gate.sinica.edu.tw. The application deadline is June 30, 2025.