# The KONA Award 2023

The KONA Award has been presented to the researchers who have greatly contributed to research and development as well as education in the field of Powder and Particle Science and Technology since 1990. Originally given by the Hosokawa Micron Corporation, it is now presented annually to researchers worldwide by the Hosokawa Powder Technology Foundation. The application for this award requires a specified recommendation form written in English to be submitted to the President of the Hosokawa Foundation. The award candidates are reviewed by the KONA Award Committee members, and the results are reported to the Selection Committee of the Foundation for nominating the awardee. It needs to be finally approved at the Board of Directors' meeting of the Foundation. The KONA Award is presented at a ceremony in or outside Japan with a plaque and a prize of one million yen. The KONA Award 2023 has been presented to Emeritus Prof. Wiwut Tanthapanichakoon from Thailand. The KONA Award plaque was presented to the awardee at the 56th Symposium on Powder Technology on September 3, 2024.

Dr. Wiwut Tanthapanichakoon (WT) has made great contributions to powder/particle and aerosol technology as well as chemical engineering from the viewpoints of not only academic research but also the promotion of collaboration in these fields, especially between Thailand and Japan, for nearly half a century. After studying chemical engineering at Kyoto University and obtaining his PhD degree at the University of Texas, he joined Chulalongkorn University (CU) in late 1978 and became a full professor in 1993, and an Emeritus Professor in 2004, and then took the post of the first Executive Director, National Nanotechnology Center (NANOTEC) in Thailand. After completing his term at NANOTEC, he became a TITech professor and in 2015 was appointed the first Thai Emeritus Professor in its century-long history.

During his long career, WT was a short-term JSPS visiting scientist for a total of 8 times at Kanazawa University (KZU), Kyoto Univ., and TITech. To initiate close research collaborations, WT went to KZU first as a 3-month JSPS visiting scientist in 1980. Starting from scratch, he could successfully manage to develop, create, and validate an innovative computer code that efficiently simulates the 3D convective diffusional deposition and dendritic growth of submicron aerosol particles on a single fiber using the Monte–Carlo method. In the 1980s, the filter performance and life expectancy of an entire HEPA and ULPA (fibrous air) filters, which are indispensable to clean rooms had to be determined experimentally because their theoretical investigations and simulations were impractical for submicron and nanosized particles that move by Brownian motion.

WT and KZU collaborators not only experimentally validated the methodology but also extended the simulation to the more realistic case of polydisperse particles and then used it to predict their performance and the filter life. They could quadruple the service life of a high-efficiency electret filter by gradually varying the packing density from lowest at the inlet to highest at the outlet, compared to the conventional case of equal, uniform packing density. WT has co-authored 21 papers on this important area since 1981.

In the area of nanoparticle synthesis (NPS), WT and his collaborators pioneered and extended the simple method of arc discharge in water to a variety of liquids (alcohols, alkanes, aromatics, etc.) and produced carbon and metal nanoparticles (NP) with higher yields and diverse morphologies (nanoballs, nanotubes, nano-onions, nano-whiskers, nano-horns, etc.) and novel characteristics. They further found that monoolein surfactant had an enhancing effect on carbon NP synthesis and the use of a metal-graphite electrode pair yielded metal-embedded CNP. They also investigated the synthesis of ZnS NP in microemulsion and of hydroxyapatite NP in an emulsion liquid membrane system as well as the effect of zinc precursors on the thermal and light emission properties of ZnO NP embedded in polyimide films. WT co-authored 24 papers on NPS since 2004.

While pursuing these opportunities, he introduced and established powder/particle technology as an integrated/comprehensive discipline in Thailand starting from the late 1980s with strong cooperation and support from Japan. WT was Deputy Dean for Research Affairs & Director of Engineering Institute for Research and Development (EIRD), and Chairman, ChE Dept. He played a key role in the initiation and establishment of the Thai Powder Technology Center (TPTC) in 1992 with strong support from APPIE (TPTCCC) and SPTJ, serving as Director. In 1996, he set up the Particle Technology and Material Processing Lab in the ChE Dept. He also set up and served as Director, Center of Excellence in Particle Technology (CEPT) with strong support from CU.


At the KONA Award presentation ceremony,
President Hosokawa (Right) and 2023 KONA Awardee Emeritus Prof. Wiwut Tanthapanichakoon (Chulalongkorn Univ., Thailand).