The 24th KONA Award

Prof. Adschiri graduated from The University of Tokyo in 1981, and received his Doctorate in Engineering from the same institution in 1986. He worked as a Special Research Fellow at JSPS (Japan Society for the Promotion of Science), following which he was appointed as an Assistant Professor in The University of Tokyo in 1987. As a visiting scholar, he has had the opportunity to carry out research work at the University of Waterloo (1991, Canada), University of Hawaii (1996, US), and University of Delaware (1997, US).

Prior to joining Tohoku University, the primary focus of his research was on coal conversion technology. In 1989, he moved to Tohoku University and began studying reactions in supercritical fluids for biomass conversion, chemical recycling of wastes, new organic reactions, and materials synthesis. He is the inventor of the "supercritical hydrothermal synthesis" method for nanoparticles (NPs). This method enables the in-situ organic modification of the surface of NPs, as well as the direct synthesis of NPs. He led a major national project (30 million USD) in Japan entitled "Super Hybrid Nanomaterials" for fabricating new composite materials of surface-controlled NPs and polymers that simultaneously show properties of ceramics and polymers, based on his supercritical fluid method. This method enables the control of the morphology of NPs, and allows for the exposure of the most reactive surface for use as a nano-catalyst. The impact of his research is not just constrained to academia; it also has significant application potential in industry. Some of his proposed processes have been commercialized in Japan and elsewhere. In particular, the first chemical recycling process of waste polymers and the synthesis of supercritical NPs have attracted significant industrial attention.

He has published more than 250 papers, with more than 9000 citations, and has an h-index of over 50. He has been invited more than forty times to major international conferences in a variety of research fields as a plenary/keynote/invited lecture. For his research excellence, he has been awarded many prizes, including awards from the Chemical Society Japan (Science Award), Society of Chemical Engineering of Japan (Best Research Award, and SCEJ Society Award), Japan Energy Society (Progress Award), etc. In addition to academic societies, he is the recipient of the honorable Japan Invention Award from the Japanese government and three-time winner of the Minister's awards of MEXT (Ministry of Education, Culture, Sports, Science and Technology) as well. Ten years ago, the Japanese government selected five (now nine) distinguished research teams as part of the World Premier Research Center Initiative (WPI), and he had the honor to be selected as a principal researcher for the Advanced Institute of Materials Research (WPI-AIMR) in Tohoku University.

Currently, Prof. Adschiri serves as the Vice President of ISHA (International Solvothermal Hydrothermal Association), Vice President of IASCF (International Society for Advancement of Supercritical Fluids), Chairman of the Asian Society of Supercritical Fluids, and Vice President of the Society of Chemical Engineers, Japan. In 2014 he was assigned as a member of Science Council of Japan (six-year appointment followed by a conjunction membership for an additional twelve years). In 2016, he became a member of the Engineering Academy of Japan (life time).