

Markku Kulmala

Academician of Science Markku Kulmala is a pioneer in the physics and chemistry of atmospheric nanoparticles and one of the leading experts in the field worldwide. Kulmala's research focuses particularly on atmospheric phenomena, interactions between the atmosphere and the Earth's surface, as well as climate change and air pollutants. His scientific work has significantly enhanced our understanding of the mechanisms affecting the climate. In recognition of his scientific career, the Finnish Academy of Science and Letters awarded him the Academy Award. The award sum is 30 000 euros.

"I started working in the forest as a young boy, planting tree seedlings and doing other forest-related work. That was the beginning of a lifelong interest," Kulmala explains.

Kulmala, originally a physicist, obtained his Ph.D. in physics in 1988. His career as an atmospheric scientist was set on course during his master's thesis, which addressed the risks associated with new and renewa-

ble energy sources: "I noticed that nothing was known about the risks coming through the atmosphere to human health and nature. That's what I started to investigate."

"The Chernobyl nuclear accident in 1986 had a significant impact on my career. It made us understand how radioactive material travels through the atmosphere to forests, plants, and soil, and how substances move in the environment. A few years after the nuclear accident, we set up the first SMEAR measuring station to observe the interaction between the atmosphere and forests."

Kulmala's research group currently operates four SMEAR stations in Finland (Station for Measuring Earth Surface - Atmospheric Relations). The SMEAR II station in Hyytiälä, Southern Finland continuously measures over 1200 variables related to the local atmosphere, soil, and vegetation.

Markku Kulmala serves as a professor of aerosol and environmental physics at the

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University of Helsinki. He also leads the University's Institute for Atmospheric and Earth System Research (INAR), conducting research at both the molecular and global levels. The research is multidisciplinary, based on physics, chemistry, meteorology, forestry, environmental sciences, and social sciences.

Currently, Kulmala also serves as the director of the Finnish Academy's flagship program Atmosphere and Climate Competence Center (ACCC), a project spanning eight years (2020–2028). The center develops solutions to improve climate and air quality worldwide. Its goal is to increase understanding of climate change and air pollution, provide research data to achieve climate goals, and support decision-makers.

In global atmospheric research, Markku Kulmala plays a key role, particularly as a

developer of international research infrastructures. He has been involved in several international research projects and has published numerous scientific articles in top journals throughout his career.

"My dream for the future is that research stations will continue operating in Finland for the next hundred years. We have the world's longest and most comprehensive series of measurements of atmospheric aerosols, greenhouse gases, and energy flows, and we are the best in the world in this regard unless we stop our activities ourselves."

"Another dream, of course, is that there would be measurement stations not only in Finland but all around the world. They are significant so that we can respond to global challenges in the future, such as climate change, air quality, and the sufficiency of water and food."