



THE 2026
NUKIYAMA MEMORIAL AWARD

Presented to

MASAHIRO NOMURA

at the 18th International Heat Transfer Conference

August 3, 2026

by the Heat Transfer Society of Japan



Masahiro Nomura

Dr. Masahiro Nomura was born in Tokyo, Japan in 1977. He obtained his BE, ME, and Ph.D. degrees from The University of Tokyo in 2000, 2002, and 2005, respectively. After serving as a JSPS postdoctoral fellow, he joined the Institute of Industrial Science at The University of Tokyo, where he served as Project Research Associate (2005-2010) and Associate Professor (2010-2022), and currently serves as Professor (2022-present). He served as Deputy Director of the institute (2023-2024) and currently serves as Advisor to the President of The University of Tokyo (2024-present).

Since 2010, Dr. Nomura has founded and led the Integrated Quantum Electronics Lab, pursuing interdisciplinary quantum transport physics and device applications including phonon/heat transfer phenomena at nano- and microscales, thermoelectric energy harvesting, and semiconductor chip cooling. Making a bold transition from quantum electronics to thermal engineering, he has established himself as a world-leading scholar in phonon engineering within 15 years. He serves as Director of the LIMMS/CNRS-IIS International Research Laboratory and leads the Phonon Engineering Research Community of The Japan Society of Applied Physics with over 300 members. He serves as councilor of Thermoelectrics Society of Japan and holds editorial positions at Applied Physics Express, Japanese Journal of Applied Physics, and ThermoX.

His contributions span fundamental physics to practical applications. By introducing his original concept "From photonics to phononics," he has created new paradigms in thermal science. His work includes establishing Ray Phononics, demonstrating directional heat flow control through ballistic phonon transport, realizing phonon hydrodynamic behavior in graphite leading to the thermal Tesla valve, and achieving enhanced thermal transport via surface phonon-polaritons. These achievements have redefined understanding of heat transfer

at nano- to microscales. He has published over 180 refereed journal papers with more than 6,000 citations and an h-index of 40 (Web of Science), authored 10 books, and delivered over 100 plenary and invited talks at international conferences. His research excellence is recognized through 18 prestigious awards, including the 16th JSPS Prize (2019) recognizing him among the top 25 Japanese researchers under 45, the German Innovation Award Gottfried Wagener Prize (2018), and the Docomo Mobile Science Award (2024).

Through visionary leadership in integrating photonics, electronics, fluid dynamics, and mathematics into thermal engineering, Dr. Nomura has advanced fundamental understanding while developing transformative technologies. His work bridges quantum phenomena and macroscopic applications, establishing new frontiers that will contribute to shaping the future of thermal science and engineering.

The Nukiyama Memorial Award

The Nukiyama Memorial Award has been established in 2011 by the Heat Transfer Society of Japan to commemorate outstanding contributions by Shiro Nukiyama as an excellent heat transfer scientist. Nukiyama addressed the challenges of the boiling phenomena and published a pioneering paper which clarified these phenomena in the form of the Nukiyama curve (boiling curve). This epoch-making work was done in 1930s, when heat transfer research was in an early stage and Nukiyama himself was young, under forty years old. The Nukiyama Memorial Award shall be bestowed to a scientist under/ about fifty years of age, once every two years in the field of Thermal Science and Engineering.

Past Recipients

2012 Peter Stephan
2014 Gang Chen
2016 Mamoru Tanahashi
2018 Ruzhu Wang
2020 Ronggui Yang
2022 Junichiro Shiomi
2024 Zuankai Wang

Board of the 2026 Nukiyama Memorial Award

T. Ohara (Chair)	G. Chen
M. Tanahashi (Vice Chair)	K. Sefiane
C. Y. Zhao	R. Shirakashi
S. Kenjereš	

Shiro Nukiyama 拔山 四郎 (1896–1983)

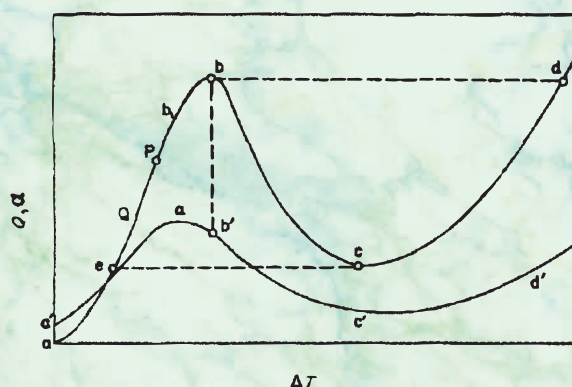
Shiro Nukiyama was born in 1896 in Tokyo, Japan. He graduated from Tokyo Imperial University, and immediately started his professional career as a Lecturer of Tohoku Imperial University (currently Tohoku University). He was appointed Associate Professor in 1921. He visited England, Germany, Switzerland and the United States in 1922–1924. He was appointed Professor in 1926. In subsequent years he actively conducted boiling heat transfer research.

In 1934, Nukiyama published a pioneering paper*) which was entitled “The Maximum and Minimum Values of the Heat Q Transmitted from Metal to Boiling Water under Atmospheric Pressure”. This paper clarified and provided an overview of the boiling phenomena in the form of the Nukiyama Curve (boiling curve).

In this work, Nukiyama made an excellent experiment using a metallic wire or a metal wire, in which temperature and heat flux were evaluated accurately, and found that the relation between degree of superheating and heat flux is not monotonous, and that a maximum heat flux point appears in the nucleate boiling region and a minimum heat flux point appears in the film boiling region. He also found the hysteresis behavior that occurs in the transition region between the nucleate boiling and film boiling. Furthermore, he suggested that the boiling curve can be drawn even in the transition region if the state of the boiling water can be changed quasi-statically.

This was an epoch-making work which clarified the physics of boiling phenomena first. It has been highly appreciated in the international academic world of heat transfer. Also, it has become a guideline to heat transfer engineering for the design and control of combustion boilers and/or steam generators, and as such it has laid the foundation of modern energy technology. The Nukiyama Curve appears in every textbook of heat transfer today. Nukiyama is a leading figure in the international academic world of heat transfer.

In 1956 Nukiyama retired from Tohoku University, and was granted the title of Professor Emeritus. He served as the President of the Heat Transfer Society of Japan in 1963–1964. He received the Max Jacob Memorial Award in 1968. In 1983, he passed away in Sendai, Japan.



*) : *Journal of the Japan Society of Mechanical Engineers*, vol. 37, no. 206, pp. 367-374, June 1934. The English translation was published twice in *International Journal of Heat and Mass Transfer*, in vol. 9, pp. 1419-1433, 1966 and in vol. 27, pp. 959-970, 1984.