

Personal Report
Professor Masaru Hirata



Masaru Hirata was born on 13 August 1931 in Tokyo and celebrated his 70th birthday three years ago.

Professor Hirata attended the University of Tokyo, where he received his B.S. degree in Mechanical Engineering in 1954. He proceeded to the Graduate School of Engineering, the University of Tokyo, and received the Doctor of Engineering Degree for his thesis work on liquid droplet combustion in 1959. Through these years, his supervisor was Professor Niichi Nishiwaki, the Founder of Japan's heat transfer research. Immediately after graduation, he was appointed to Assistant Professor, and then to Associate Professor in 1960. From 1962 to 1963, as a visiting research fellow, he worked on two-phase boundary layers in the Heat Transfer Laboratory at the University of Minnesota. In 1970, he was named Full Professor of the University of Tokyo at the age of 39. His research and educational activities covered broad areas such as thermodynamics, energy conversion, gas turbines, nuclear power, cogeneration, convective and phase change heat transfer, and turbulence. After devoting himself to the research and education at the University of Tokyo over 30 years, he retired and was nominated Professor Emeritus in 1992. Then, he moved as Professor to Shibaura Institute of Technology and has been actively working there over the last decade.

Professor Hirata has authored or co-authored over 470 journal and conference papers in the areas of heat transfer, combustion, boiling, turbulence, and energy conversion systems. His work is well known especially in the areas of turbulent boundary layer with mass injection (full coverage film cooling), impinging jet heat transfer, thermally driven flows (stratified flows and plumes), large eddy structures in turbulent shear flows, subcooled boiling heat transfer, supercritical fluid heat transfer, cogeneration, and various flow visualization techniques (liquid crystals and particle tracking velocimetry). He wrote and edited 11 books on heat engines, thermodynamics, heat transfer, energy saving, and flow measurement.

Beside these distinguished academic achievements, Professor Hirata has contributed to social enlightenment of the energy problem in Japan and Asian countries. He has always emphasized the importance of cogeneration systems for energy saving and patiently guided the government to approve the related bills and laws. He repeated on every occasion, "Once we fire fuel, we must immediately drive a heat engine until the released heat reaches the environmental temperature," and this phrase has been well accepted by various sectors of the society. In recent years, he claims that the 21st century should be the era of natural gas and eventually hydrogen, and he is actively promoting the magnificent project on

“Northeast Asian Gas Pipeline Network” in the region of Russia, Mongolia, China, Korea, North-Korea and Japan.

During his career at the University of Tokyo and the Shibaura Institute of Technology, Professor Hirata has supervised numerous theses of BS, ME, and Dr. Eng. students. Over 200 students have graduated from his laboratory, and he has supervised over 40 doctor theses. His basis of education is to develop individual talents of the students. This is reflected in the list of his students, who are actively playing important roles in the academia and industries: e.g., M. Kumada (Gifu University), T. Igarashi (National Defense Academy), K. Kudo, A. Kuroda (Hokkaido University), T. Obata (Teikyo University), Y. Kukita (Nagoya University), N. Kasagi, S. Nishio, Y. Suzuki (The University of Tokyo), K. Kitamura (Toyohashi University of Technology), G. Miyake (Yamaguchi National College of Technology), S. Isshiki (Ashikaga Institute of Technology), M. Ito (Hitachi), T. Nakatogawa, A. Tsuge, Y. Iritani (Mitsubishi Heavy Industries), H. Nakagome, S. Yokobori (Toshiba), and Y. Fukuyama (National Aerospace Laboratory).

Professor Hirata has been a very active member of the Japan Society of Mechanical Engineers (JSME), the Heat Transfer Society of Japan (HTSJ), the Gas Turbine Society of Japan (GTSJ), the Marine Engineering Society of Japan (MESJ) and so forth. He has worked as President of the JSME, the HTSJ and the MESJ, and is now Member of the Science Council of Japan. He has also made continuous effort in establishing and promoting the Cogeneration Center of Japan (CGCJ) and the National Pipeline Research Society of Japan (NPRSJ). He is currently President of the CGCJ, Vice President of the Asian Pipeline Research Society, and General Secretary of Northeast Asian Gas & Pipeline Forum (NAGPF). He has devoted himself for promoting the international exchange and technology transfer by organizing meetings and conferences, e.g., as Member of the Assembly of International Heat Transfer Conferences.

His outstanding contributions to the fields of heat transfer, energy utilization and environmental impact mitigation have not gone unnoticed. He was awarded by

the JSME three Best Paper Awards in 1976, 1987, and 1990; Thermal Engineering Division Award for the Time-honored Outstanding Leadership in 1997; and Power & Energy Systems Division Award for the Outstanding Contribution in 1999. He also received Best Paper Award from the GTSJ in 1988, Toshio Dokoh Memorial Award for the Outstanding Contribution to the Environmental Protection from Exhaust Gases of Marine Diesel Engines from the MESJ in 2001, and Award for the Outstanding Contribution for the International Activities in Thermal Sciences from the French Society of Thermodynamics in 2002. He was elected to JSME Honorary Member in 1997 and Honorary Member of Russian Academy of Sciences, Siberian Branch, in 2002.

Professor Hirata’s long-time devotion and services to industry and government have also been widely recognized through commendation as distinguished scientist by Tokyo Metropolis in 1990, the Ministry of Science and Technology in 1992, the Ministry of the Environment in 1998, and the Ministry of Land, Infrastructure and Transport in 2001.

Professor Hirata has always had dreams for human beings, and has devoted himself entirely to make them come true. He is a person of master mind. He is and has been also a devoted husband. His wife, Hiroko, and he celebrated their 42nd anniversary last November. He has been an avid sportsman, enjoying swimming and baseball, and served as Director of the Baseball Club of the University of Tokyo during 1982–1991.

On behalf of Professor Hirata’s students, his colleagues, and his friends all over the world, we would like to wish him many happy returns and respectfully dedicate this Festschrift in his honor.

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