HIRAKU-Global Special Seminar

JULY 2ND, 2026 | 4:00-5:00PM | HYBRID

HIROSHIMA UNIVERSITY (HIGASHI HIROSHIMA CAMPUS)

MIRAI CREA 1F MULTIPURPOSE SPACE

ZOOM LINK: https://us02web.zoom.us/j/9142901480?pwd=eBzacWPtfpWxaH0l1fSERNbrmXtGhE.1&omn=88363415219

"From Molecular Devices to Natural Intelligence"

SPEAKER: **Prof. Dr. Masahiko Hara**

Tokyo Tech / Science Tokyo / JSPS London

ABSTRACT: Around 1985, when I joined RIKEN, it was widely believed that molecular devices and nanotechnology would eventually surpass conventional semiconductor systems. However, after several years of research, it became clear that realizing these ideas would be extremely difficult, and their fundamental limitations also became apparent.

We then began experiments on slime mold computing systems that actively exploited fluctuations, noise, instability, and ambiguity. When applied to mathematical problems such as the Traveling Salesman Problem, these systems were able to produce solutions that, while not always optimal, were better than average without leading to combinatorial or computational explosion.

Around the same time, I also encountered artists who were using slime molds in similar ways to explore themes such as crowd psychology and group dynamics. From that period onward—well before the term "artificial intelligence (AI)" became widely used—we began discussing the existence and potential applications of what we called "natural intelligence (NI)." Over the past 5–10 years, we have continued exploring the possibilities of NI and physical and/or embodied AI, and have launched new experimental Science-Art Installation projects.

In this seminar, I also plan to give a brief introduction to JSPS London and to international collaborative research initiatives between Japan and the UK, as well as between Japan and Europe.

BIO: Prof. Dr. Masahiko Hara was born in Tokyo, Japan. He received his Doctor of Engineering degree from the Tokyo Institute of Technology (Tokyo Tech) in 1988. From 1981 to 1982, he studied in the Department of Physics at the University of Manchester, UK, as an exchange student supported by the Japanese Ministry of Education.

In April 1985, he joined RIKEN as a Research Scientist, where he contributed to the establishment of the Frontier Research System, and served as principal investigator for several international projects, including as Director of the RIKEN-HYU Collaboration Research Center in Seoul, Korea. In 2003, he was appointed Professor at Tokyo Tech and has been affiliated with the Earth-Life Science Institute (ELSI) since 2013. He has also served as Scientist in Residence at Central Saint Martins, University of the Arts London, UK; Senior Fellow at RWTH Aachen University, Germany; Specially Appointed Professor at Hanyang University and Jeonju University, Korea; and Fellow of the Chinese Academy of Sciences, China.

He is currently Professor Emeritus at the Institute of Science Tokyo, and has served as Director of the Japan Society for the Promotion of Science (JSPS) London Office since 2025. His research interests include Nanotechnology and Nanoscience, Scanning Probe Microscopy, Self-Assembly Processes, Nano-Bio-Interfaces, Spatio-Temporal and Emergent Functions, Flucto-Order (Fluctonomous) Functions, Bio-Computing, Biological Information Processing, Chemical Evolution, the Chemical Origins of Life, Natural Intelligence, and Science-Art Installations.

Background Credit: Masahiko Hara