

Hitachi Fellow: Dr. KOIZUMI Hideaki

Field: Optical Topography

Appointment: April 2004

Dr. Koizumi is recognized worldwide as an early proponent and major advocate of the new transdisciplinary field of Mind-Brain Science. His research contributions include the development of functional MRI and Optical Topography for the real-time observation of brain functions.



Address: Hitachi Advanced Research Laboratory
2520 Akanuma,
Hatoyama-machi, Hiki-gun, Saitama 350-0395, JAPAN

E-mail: hideaki@koizumi

Facsimile: +81-(0)49-296-6005

Telephone: +81-(0)49-296-6111

Research Interests:

- Mind-Brain Science and Education
- Measurement of the Brain and Mental Activity
- Measurement of Chemicals in the Environment
- Systemization of Integrated Science

Dr. KOIZUMI Hideaki
Fellow, Hitachi, Ltd.
Director, Brain-Science & Society Division, RISTEX
Auditor, National Institute of Environmental Studies

c/o Hitachi Advanced Research Laboratory
2520 Akanuma,
Hatoyama-machi, Hiki-gun, Saitama 350-0395, JAPAN



Tel: +81-(0)49-296-6111 Fax: +81-(0)49-296-6005
E-mail: hideaki.koizumi (please add ".kd@hitachi.com" to complete the address)

Hideaki KOIZUMI is currently a Fellow of Hitachi, Ltd. He also holds several official positions within the Research Institute of Science and Technology for Society (RISTEX) of the Japan Science and Technology Agency (JST); Director of the Brain-Science & Society Division, Director of the Japan Children's Study (JCS) under the joint auspices of the Ministry of Education, Sports, Culture, Science and Technology (MEXT), and Supervisor of Brain-Science and Education Program (I) & (II). Other public positions include, Auditor of the National Institute of Environmental Studies, member of the Curriculum Committee of the MEXT Central Council for Education, adviser of "Elucidation of a Learning Mechanism Based on the Knowledge of the Development of Brain Functions," of CREST-JST, committee member of the MEXT Super Science High School Program, committee member of the MEXT Council for Brain-Science & Education Research Initiatives, member of the JST Science and Technology for Society Forum, and a member of the Specialist Committee of the Atomic Energy Commission (Japan). Internationally, he is a member of the Advisory Group to the OECD-CERI Learning Sciences and Brain Research project, and a founding board member of the International Mind, Brain and Education Society.

Koizumi received his B.Sc. from the Department of Pure and Applied Sciences in the College of Arts and Sciences of the University of Tokyo in June 1971, and subsequently joined the Department of Optical Instruments at Naka Works of Hitachi, Ltd. In 1976, he received a doctoral degree in physics from the University of Tokyo for his work on the development of the polarized Zeeman atomic absorption (PZAA) spectrometry, which was also nominated as one of the 50 most significant patents at the centennial of the foundation of the Japanese patent system in 1985. This technology was commercialized by Naka Works, and over 9,000 systems based on this principle have been shipped to 25 countries since 1976. In 1976, as a Guest Staff member at the National Bureau of Standards, U.S. Department of Commerce, he worked on the certification of standard reference materials (SRMs) using the PZAA method. From 1977-78, as a Guest Research Physicist (faculty) at the Lawrence Berkeley Laboratory of the University of California, he worked on the development of a new method called "tunable atomic line molecular spectrometry" (TALMS). After returning to Japan, he was appointed leader of Hitachi's MRI (Magnetic Resonance Imager) development project, which developed super-conducting magnets (SCM) generating field strengths from 0.5-2 T, shipped Japan's first SCM-MRI product and also successfully filed an application on one of the basic patents for MRA (magnetic resonance angiography) principle in 1986. After establishing the fundamentals of the MRI business in the Hitachi Group, he was appointed a Chief Scientist of the Medical Electronics

Research Department of the Central Research Laboratory, Hitachi, Ltd. ('HCRL') in August 1992, where he led a research team on higher-order brain function imaging, which published many papers, including Japan's first paper on functional MRI (fMRI) in 1992, and the world's first paper on near-infrared spectroscopic imaging (NIRSI, a.k.a. Optical Topography) in 1995. From 1999-2001, he served as the General Manager of the Advanced Research Laboratory of Hitachi, Ltd. before returning to head research on brain function imaging as Senior Chief Scientist. In 2003, he was appointed Senior Chief Scientist - Corporate Technology, Hitachi, Ltd., and in April 2004, to his current position of Hitachi Fellow.

Aside from his work at Hitachi and government/semi-government organizations, Koizumi also holds positions within committees of professional societies and associations: including, Director of the Global Association for the Welfare of Children, 2006 President-Elect of the Japan Society for Analytical Chemistry, Board Director of the Japan Neuroscience Society, a Director of The Institute for Seizon and Life Sciences, member of the Committee on Science & Technology for the Future Society of the Institute of Policy Sciences, Chairman of the Preschool Education Program for Children of the Sony Foundation for Education, member of the Governing Committee of Aprica Kassai, Inc., member of the Board of Directors of the Sony Foundation for Education, Board Director of the Working Group on Learning Therapy of the Kumon Institute of Education Co., Ltd., member of the Selection Committee of the Yamazaki Teiichi Foundation of the Promotion of Material Science and Technology of Japan, member of the Brain Century Promotion Conference, member of the Awards Committee of the Nakayama Science Promotion Foundation, member of the Board of Trustees of The Takemi Memorial Foundation for Seizon and Life Sciences, and founding Vice-President of the Japanese Society of Baby Science.

He is recognized worldwide as an early proponent and major advocate of the new transdisciplinary field of Mind-Brain Science, proposing such novel concepts as "Brain-Science and Education," "Trans-disciplinarity (TD)," "Material's History." His work has been recognized through many honors including an audience with the late Pope John Paul II in 2003 following an invited presentation at the 400th Anniversary of the Pontifical Academy of Sciences (PAS) at the Vatican; the (Japanese) National Commendation for Invention - Patent Promotion for the 21st Century Prize, Nikkei BP Technology Awards - Grand Prize; the 50th Okochi Memorial Grand Technology Prize in 2004; the R&D 100 Award in 2002; the Okochi Memorial Technology Prize in 2000 and 1997; The National Invention Awards - Prize

of the Minister of State for Science & Technology in 1983; IR-100 Award in 1978, and a Commendation by the Minister of State for Science & Technology - Person of scientific and technological research merit in 1976.

Koizumi is also a visiting professor of the Research Center for Advanced Technology of the University of Tokyo, and a visiting researcher of the Tokyo Metropolitan Institute for Neuroscience. He has lectured at many Japanese universities, including the School of Medicine and the Research Institute for Electronic Science of Hokkaido University, Ochanomizu University, Osaka University School of Engineering, and several faculties of the University of Tokyo, as a visiting professor or lecturer. Overseas, he has given invited lectures at Harvard University, Massachusetts Institute of Technology, University of California, University of Pennsylvania, Mayo Medical School, Texas A&M University, University of British Columbia, University of Western Ontario, University of Cambridge, University of London, Paris University, Humboldt-Universität zu Berlin, Lund University, Swedish Royal Academy, University of Copenhagen, Warsaw University and Silesian University of Technology.

Koizumi's work has contributed to over 413 patent applications of which to date, 163 have resulted in patents (74 in Japan and 89 overseas). He has published over 150 papers, and has authored/co-authored/edited over 20 books.

(last updated 23rd March 2006 by H. Koizumi)