



FIRST INTERNATIONAL NANOTECHNOLOGY CONFERENCE ON COMMUNICATION AND COOPERATION

Speaker's Bio

Hiroshi Yokoyama



Hiroshi Yokoyama is the director of Nanotechnology Research Institute(NRI), National Institute of Advanced Industrial Science and Technology(AIST), one of the biggest government founded research organizations in Japan with over 2500 higher level technical staff. As a research unit of AIST, Nanotechnology Research Institute is primarily responsible for strategic planning and implementation of research programs over the whole spectrum of nanotechnology. Under his directorship, NRI has made significant contributions to the field such as super-inkjet technology, nanostructured liquid crystals, active targeting drug delivery systems, spintronics materials and devices, controlled-production of carbon nanotubes and their applications, to name but a few. NRI is also responsible for

operating the AIST, NanoProcessing Facility (NPF), a nanotech infrastructure consisting of some 50 state-of-the-art micro- and nano-fabrication and characterization equipments. NPF is one of the core members of the Nanotechnology Support Program, providing nanotech community with free access to cutting edge tools and expertise.

Hiroshi Yokoyama was born in Tokyo in 1954. He earned Master of Engineering from Tokyo Institute of Technology in 1979 in Physical Electronics. Later in 1987, he received Doctorate. He joined in 1979 the Electrotechnical Laboratory, which was reorganized into AIST in 2001. He started his research career in the field of liquid crystal physics with focus on the surface properties, and made several contributions that made him known as a world expert. He spent a year as a visiting scientist at AT&T Bell Labs in 1987-1988, where he started his research on organic monolayers. In early 1990s, he started his scanning probe microscopy research and invented scanning Maxwell-stress microscopy, and got interested in scanning probe-based nanofabrication. He was appointed the director, Yokoyama Nanostructured Liquid Crystal Project, ERATO, JST in 1999, which is a multi-million dollar 5-year project and came to an end in 2004. The ERATO project was succeeded by a follow-up 5-year project, entitled "Liquid Crystal Nanosystem project, also funded by JST.

He has been active in academia and served several terms as associate editor and Editor-in-Chief, Japanese Journal of Applied Physics. He is also a member of editorial advisory board of Molecular Crystals and Liquid Crystals, and is now serving as Regional Editor for Asia, Nanotechnology, IOPP. For over 25 years of his scientific career in surface physics of liquid crystals, complex organic thin films, and scanning probe microscopy for functional imaging, he published over 200 refereed papers, co-authored several books and filed over 100 patents.

In 2004, he established his own startup company "NanoSystem Solutions Inc.", with a view to commercializing his mask-free lithography technology and its applied products in the biochip area.

Professional Career

- 1979 Graduated from Tokyo Institute of Technology, M. Eng. in Physical Electronics
- 1979 Researcher, Electrotechnical Laboratory, Agency of Industrial Science and Technology, MITI
- 1987-1988 Visiting Scientist, AT&T Bell Labs.
- 1992-2001 Chief, Molecular Physics Section, Electrotechnical Lab., AIST
- 1996- Professor, Science University of Tokyo
- 1999-2004 Director, Yokoyama Nanostructured Liquid Crystal Project, ERATO, JST
- 2001- Director, Nanotechnology Research Institute, National Institute of Advanced Industrial Science and Technology (AIST)
- 2004- Director, Liquid Crystal NanoSystem Project, SORST, JST
- 2005- Executive Director, NanoSystem Solutions Inc.

Major R&D Experience (Presently Active)

- 1999- Project Director, Liquid Crystal NanoSystem Project, SORST, Japan Science and Technology Corporation (<http://www.nanolc.jst.go.jp/>)
- 2001- Project Leader, Synthetic Nano-Function Materials Project (SYNAF), NEDO – METI
- 2002- Project Leader, NanoProcessing Partnership Program (NPPP), Nanotechnology Support Project, MEXT, <http://www.nanoworld.jp/nppp/>

Academic Activity

Served chair and member of numerous committees of academic societies and journals. Chair, Scientific Committee, International Liquid Crystal Conference, 2000. Editor-in-Chief, *Japanese Journal of Applied Physics* Regional Editor for Asia, *Nanotechnology*, IOPP Editorial Board Member, *Molecular Crystals and Liquid Crystals*, Taylor and Francis

Award

- 2003 Best Paper Award, Japanese Liquid Crystal Society
- 2002 Highest Achievement Medal, Japanese Liquid Crystal Society
- 2000 Highest Achievement Prize, Minister, Ministry of International Trade and Industry, Japan
- 1998 Highest Medal of Performance, Science and Technology Agency, Japan
- 1996 Ichimura Science Prize,

Research Interest

Liquid crystal: Surface physics and related applications, Complex organic thin films: liquid crystal phases in Langmuir films, Scanning probe microscopy, Nanofabrication

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