



Workshop on Molecular Architectonics – Toward Realization of Neuromorphic Computing by Nanomaterials

June 29-30, 2017

Interdisciplinary Research Building, Osaka University Toyonaka Campus

Thursday, June 29, 2017

10:30-10:40 Opening remarks Hirokazu Tada (Osaka Univ.)

Invited Lecture (ORDL Seminar Series 9)

O-1 10:40-12:00 Wilfred G. van der Wiel (Univ. of Twente, The Netherlands)
“Evolving functionality in nanomaterial networks“

12:00-13:00 ----- Lunch -----

Discussion on Particle-based Architectonics

O-2 13:00-13:40 Saurabh Bose (Univ of Canterbury, New Zealand) (Invited)
“Complex dynamics and promise for neuromorphic computation in self-assembled atomic-switch networks”

O-3 13:40-14:20 Tsuyoshi Hasegawa (Waseda Univ., Japan)
“Learning ability of molecular-gap atomic switch”

O-4 14:20-15:00 Carolin Lutz (Waseda Univ., Japan)
“Tug of War devices for interconnection of artificial synapses”

O-5 15:00-15:20 ----- Coffee break -----

Discussion on Fluctuation-derived Functions

O-6 15:20-16:00 Seiya Kasai (Hokkaido Univ., Japan)
“Amoeba-inspired electronic computing system: Fluctuation and solution searching capability”

O-7 16:00-16:40 Hirofumi Tanaka (Kyusyu Institute of Technology, Japan)
“Neuron-like Pulse generation device by SWNT/POM complex“

16:40-18:00 Poster session

18:00- Dinner and Networking

Friday, June 30, 2017

Discussion on Molecular Networks and Layers

- O-8 9:00-9:40 Florian Lebon (CEA, Univ. Paris-Saclay, France) (Invited)
“Influence of the electrografting parameters on the growth of organic thin layers on patterned gold electrodes”
- O-9 9:40-10:20 Yuki Usami (Osaka Univ., Japan)
“Conjugated electrical properties of Au nanoparticles-polyaniline network”
- 10:20-10:40 ----- Coffee break -----
- O-10 10:40-11:20 Megumi Akai (Osaka Univ. Japan)
“On the Growing Polymer Neural Networks”
- O-11 11:20-12:00 Gideon Issac Livshits (Osaka Univ., Japan)
“Conductivity of DNA towards field-assisted programmable DNA networks”
- 12:00 Closing Remarks Takuya Matsumoto (Osaka Univ.)

Poster presentations

"All Posters are intended for *Young Researcher Award*"

Poster size H2100mm × W900

- P-1 Kenta Saitoh (Hokkaido Univ.)
"Impact of External Fluctuation on Solution Search in Amoeba-inspired Electronic Computing System"
- P-2 Carolin Lutz (Waseda Univ.)
"Tug of War devices for interconnection of artificial synapses"
- P-3 Yuki Shigeoka (Waseda Univ.)
"Rate limiting process of Cu/Ta₂O₅/Pt atomic switch"
- P-4 Naoya Tanabashi (Waseda Univ.)
"Atmosphere dependence of Ag/Ta₂O₅/Pt atomic switch"
- P-5 Ayana Suzuki (Waseda Univ.)
"STM-LTM-based learning of molecular-gap atomic switch"
- P-6 Ai Kasai (Waseda Univ.)
"Synaptic operation of molecular-gap atomic switch"
- P-7 Yuki Usami (Osaka Univ.)
"Conjugated electrical properties of Au nanoparticles-polyaniline network"
- P-8 Satoshi Nishijima (Osaka Univ.)
"Non-linear I-V characteristics of Ru complex layers with a double junction nanogap electrode"
- P-9 Masaya Yamada (Osaka Univ.)
"Probing electronic alignment between organic dye molecule and gold film interface by Kelvin probe force microscopy"
- P-10 Kento Araki (Osaka Univ.)
"Micro-second Time-resolved Electrostatic Force Microscopy"
- P-11 Faisal Budiman (Kyushu Institute of Technology)
"Size Dependent Magnetic Properties of La₂CuO₄ and La_{2-x}Sr_xCuO₄ Nanoparticles Fabricated by Sol-Gel Method"

- P-12 Hadiya Warman (Kyushu Institute of Technology)
“Ag-Ag₂S core-shell nanoparticles synthesis and random network fabrication for reservoir computing
- P-13 Hideaki Furuki (Kyushu Institute of Technology)
“Fabrication of graphene nanoribbon by unzipping single-walled carbon nanotubes and investigating the suitable condition by Design of Experiments
- P-14 Minoru Fukumori (Osaka University)
“Unzip of Single- and Double-walled Carbon Nanotubes to Synthesize Single-Layer Graphene Nanoribbon Using Radical Initiator
- P-15 Detiza Goldianto (Kyushu Institute of Technology)
“Molecular Electronic Devices of Random Single-Walled Carbon Nanotubes Network Adsorbed with SV2W10O40[H4t-BuTPP]”
- P-16 Yurina Hidaka (Kyushu Institute of Technology)
“Fabrication of Ag/Ag₂S structure and measurement of electrical property”
- P-17 Florian Lebon (CEA, Univ. Paris-Saclay,)
“Influence of the electrografting parameters on the growth of organic thin layers on patterned gold electrodes”
- P-18 Agung Setiadi (Osaka Univ.)
“Random Telegraph Signal in Molecule-functionalized Carbon Nanotube Electronic Devices”
- P-19 Agung Setiadi (Osaka Univ.)
“Single walled carbon nanotube-based stochastic resonance device with molecular self-noise source”
- P-20 Masahiro Takayama (Osaka Univ.)
“A Tip-enhanced Raman Spectroscopy Study of Self-assembled 2,13-bis(aldehyde)[7]-thiaheterohelicene Molecules”
- P-21 W.Hikita (Osaka Univ.)
“Polymer based auto encoder system for pattern recognition”

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Access

Public transportations

- Train (access to Ishibashi Gate)
25' east on foot from Ishibashi, Hankyu Takarazuka Line.
- Monorail (access to Main Gate)
10' west on foot from Shibahara.



- From Shin-Osaka Station
Subway Midosuji Line to Senri-Chuo, → Monorail, exit at Shibahara. (1 hr.)

- From Osaka Airport
Monorail to Shibahara. (30')

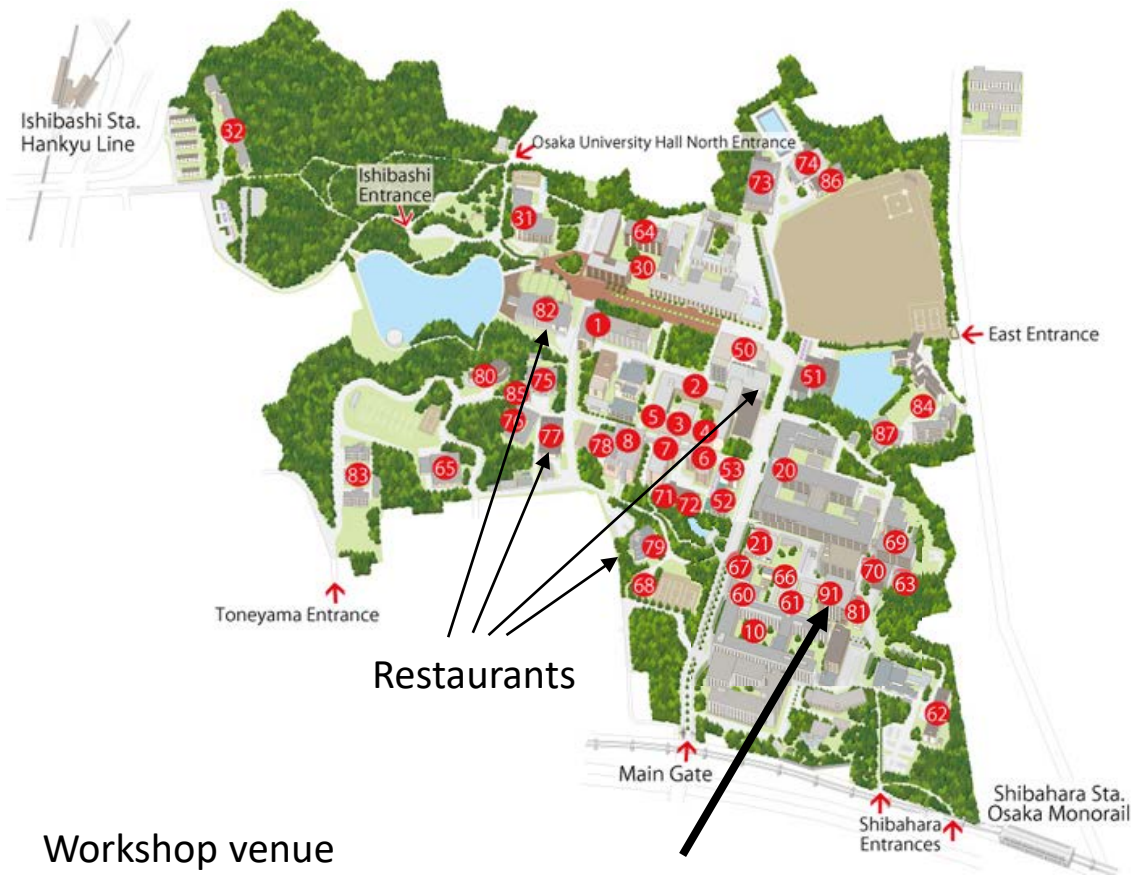
- From Kansai International Airport (3 choices)

- (1) JR line to Osaka, → subway Midosuji Line, exit at Senri-Chuo,
→ Monorail, exit at Shibahara. (2 hr.)

- (2) Nankai Line to Namba, → Midosuji Line subway, exit at Senri-Chuo,
→ Monorail to Shibahara. (2 hr.)

- (3) Airport Bus to Osaka Airport, → Monorail, exit at Shibahara. (2 hr., 30')

Osaka University Toyonaka Campus Map



Workshop venue

91. Interdisciplinary Research Building
7 th floor, Seminar Room