

ITP 2011 国際会議  
EPFL-ETHZ-Tokyo Tech Joint Symposium  
Chemistry, Bioscience & Biomaterials  
for Bio-Eco & Bio-Med Technology  
June 9 - 10  
LAUSANNE 2011

報告書

スイスの ITP 連携大学であるスイス連邦工科大学チューリッヒ校 (ETHZ) とスイス連邦工科大学ローザンヌ校 (EPFL) と東京工業大学の表記のシンポジウムを平成 23 年 6 月 9 日-10 日、EPFL にて開催した。

1. 参加者

約 80 名 (講演者・ポスター発表者+EPFL 側教員・学生の一般参加者約 30 名含む)

発表者：講演 16 件、ポスター発表 32 件

東京工業大学生命理工学研究科 教員 (講演者) 5 名、学生 (ポスター発表) 7 名

ETHZ 教員 (講演者) 5 名、学生 (ポスター発表) 8 名

EPFL 教員 (講演者) 6 名、学生 (ポスター発表) 17 名

東京工業大学大学院生命理工学研究科教員

岡畑恵雄教授、湯浅英哉教授、三原久和教授、林宜宏准教授、相澤康則 講師

2. シンポジウム概要

プログラム：添付書類の通り (所属学科・専攻等も参照)

6 月 9 日 (木) の午前中に図書館などを含む学生用施設であるローレックス学習センターを約 1 時間見学したのち、6 月 9 日午後~10 日 12 時 40 分 (実際は 13 時 30 分) にわたり、標記シンポジウムを開催した。

ローレックス学習センターはキャンパス航空写真の中央にある、ユニークな形状をした図書館やカフェ、自習スペース、会議室などを含む学生の自由学習空間である。日本人の設計により約 100 億円の建築費を費やしている。

1 日目、3 大学からの教員 8 件の講演ののち、3 大学学生代表による、大学と専攻等の紹介を行った。また、32 件の学生によるポスター発表により、3 大学の学生 (教員) 交流を実施した。

2 日目、8 件の講演を実施した。講演会終了後、教員よび学生がグループにわかれ EPFL の Chemistry, Life Science, Biophysics などいくつかの研究室を訪問し、交流を深めた。

本シンポジウムの講演・ポスター発表は、化学、材料、生命科学、生命工学の科学技術を基盤とし、生命環境や生命医学の発展を目指すものであり、活発な討論のもと、3 大学の高度な研究内容の相互理解と活発な交流につながった。



シンポジウム風景

EPFL 側代表 K. Johnsson 教授



ローレックス学習センター見学

国際担当副学長挨拶

講演風景



講演風景

学生による大学紹介

ポスター会場での学生同士の活発な議論



交流会前の歓談

教員どうし

# EPFL-ETHZ-Tokyo Tech Joint Symposium Chemistry, Bioscience & Biomaterials for Bio-Eco & Bio-Med Technology



**École Polytechnique Fédérale de Lausanne**

**June 9 - 10  
LAUSANNE 2011**

*Sponsored by International Training Program,  
Japan Society for the Promotion of Science (JSPS)*



**EPFL-ETHZ-Tokyo Tech Joint Symposium  
Chemistry, Bioscience & Biomaterials  
for Bio-Eco & Bio-Med Technology**

**École Polytechnique Fédérale de Lausanne**

**June 9 – 10, 2011**

***Organized by***

Kai Johnsson (EPFL), Horst Vogel (EPFL)  
Peter Walde (ETHZ), Donald Hilvert (ETHZ)  
Hisakazu Mihara (TIT), Susumu Kajiwaru (TIT)

International Relations Office, EPFL  
International Institutional Affairs, ETHZ  
International Office, Tokyo Tech

***Supported by***

École Polytechnique Fédérale de Lausanne  
Eidgenössische Technische Hochschule Zürich  
Tokyo Institute of Technology  
Japan Society for the Promotion of Science (JSPS)

# Scientific Program

## ***Thursday, 9<sup>th</sup> of June***

11h                      Rolex Learning Center Tour

12h - 13h              Lunch

13h15                    Opening of Symposium

### **Session 1              Chair person:   Prof. Kai Johnsson**

13h30-14h              Prof. Hisakazu Mihara (TIT); *Designed Peptide Libraries for Protein and Cell Analyses*

14h-14h30              Prof. Christian Heinis (EPFL); *Bicyclic Peptides Binding to Therapeutic Targets*

14h30-15h              Prof. Jeffrey Bode (ETHZ); *Therapeutic Peptide Synthesis with the Ketoacid–Hydroxylamine Amide-Ligation*

15h-15h30              Prof. Nobuhiro Hayashi (TIT); *Technologies to Observe Life from Two Disparate Points of View, High Performance Proteomics for Bird's-eye View and Site-selective Modification of Proteins for One Molecule Observation*

15h30-16h              Coffee break

### **Session 2              Chair person:   Prof. Hisakazu Mihara**

16h-16h20              Prof. Harm-Anton Klok (EPFL); *Designer Polymer Interfaces for Biodiagnostics and Environmental Sensing*

16h20-16h40            Prof. Janos Vörös (ETHZ); *Polyelectrolytes at Electrodes: a Tool for Biosensors and Bioelectronics*

16h40-17h10            Prof. Yoshio Okahata (TIT); *Real-time Monitoring of Cell-free Translation Process on a 27-MHz Quartz-Crystal Microbalance*

17h10-17h40            Prof. Petra S. Dittrich (ETHZ); *Microfluidic Tools for Cell and Vesicle Analysis*

1745h-18h30            *Presentation of Tokyo Tech, ETHZ, EPFL for prospective exchange students*

**18h30-20h              *Poster Session in the SV Entrance Hall***



## **Friday, 10<sup>th</sup> of June**

### **Session 3**      **Chair person: Prof. Petra Dittrich**

- 9h-9h20      Prof. Kai Johnsson (EPFL); *Spying on Drugs and Metabolites in Living Cells*
- 9h20-9h50      Prof. Hideya Yuasa (TIT); *Upconversion Luminescent Nanoparticles and Synthetic Sugars for Photodynamic Therapy*
- 9h50h-10h20      Prof. Donald Hilvert (ETHZ); *Directed Evolution of a Protein Container*
- 10h20-10h50      Coffee break

### **Session 4**      **Chair person: Prof. Nobuhiro Hayashi**

- 10h50-11h10      Prof. Hilal A. Lashuel (EPFL); *Chemical Biology of  $\alpha$ -synuclein: The Role Post-translational Modification in the Pathogenesis of Parkinson's Disease & Related Disorders*
- 11h10-11h30      Prof. Peter Walde (ETHZ); *Enzyme Immobilization on Solid Surfaces with the Help of a Dendronized Polymer and the Biotin/Avidin System*
- 11h30-11h50      Prof. Matthias Lutolf (EPFL); *Designing Smart Materials to Instruct Stem Cell Fate*
- 11h50-12h10      Prof. Suliana Manley (EPFL); *Quantitative Static and Dynamic Imaging with Photoactivatable Fluorescence*
- 12h10-12h40      Prof. Yasunori Aizawa (TIT); *Small Protein World in the "Noncoding" Regions of the Human Genome*
- 12h40      Concluding Remarks
- 13h      Lunch
- 14h30 -16h      Lab visits

## ***Poster Session in the SV Entrance Hall***

1.  
Maarten Danial (EPFL) ; Combating HIV-1 with Polyvalent Peptide Copolymers
2.  
Clemens Mayer (ETHZ); Towards Novel Artificial Metalloenzymes
3.  
Narupat Hongdilokkul (ETHZ); An in vivo Selection System for Evolving Highly Active/Highly Stable Enzymes
4.  
Hiromichi Okura (TIT); Characterization of Fluorescein-binding Proteins selected from  $\alpha 3\beta 3$  de Novo Protein Libraries
5.  
Yusuke Aita (TIT); Analysis of Protein Kinase D1 Functional Phosphorylation Sites on the Human L-type Voltage-gated Calcium Channel
6.  
Mirva Hejjaou (EPFL) ; The Role of Phosphorylation at Y125 in Regulating the Structure, Aggregation, and Membrane Binding of Alpha-synuclein: Implications for the Pathogenesis of Parkinson's Disease
7.  
Loay Awad (EPFL); Novel Chemical Tools to Facilitate the Synthesis and Control the Folding and Self-assembly of Amyloid-forming Polypeptides
8.  
Bruno Fauvet (EPFL); Semisynthesis and Total Chemical Synthesis of  $\alpha$ -Synuclein to Study Post-Translational Modifications in Health and Disease
9.  
Enrico Condemi (EPFL); Tissue Transglutaminase-mediated Glutamine Deamidation of Amyloid Peptide
10.  
Phillip Kuhn (ETHZ); A Microfluidic Vesicle Screening Platform for Studies of Drug Membrane Permeation Kinetics
11.  
Farhima Akter (TIT); Development of Bioluminescent Fusion Protein for Aptamer Based Protein Detection
12.  
S.A. Kobel (EPFL); Microfluidic Platform to Assess the Fate of Hematopoietic Stem Cells at a Single Cell Level
13.  
Deborah Studer (ETHZ); Comparison of Chondrogenic Potential of Bone Marrow and Placenta-derived Mesenchymal Stem Cells
14.  
Alexandre Larmagnac (ETHZ); Novel Neuroprosthetic Device for Spinal Cord Stimulation
15.  
Amranul Haque (TIT); Design of Chimeric Proteins for Hepatic and Neural Differentiation from Embryonic Stem Cells

16.  
Hirohito Haruki (EPFL); Development of SNAP-based Techniques for Detection and Measurement of the Affinity of Small Molecule-protein Interactions
17.  
Alberto Schena (EPFL); Sensing Small Metabolites in vivo: a FRET-based Biosensor for the Neurotransmitter Acetylcholine
18.  
Jeremy Touati (EPFL); Bicyclic Peptide Inhibitors of Matrix Metalloproteinases
19.  
Julia Gunzenhäuser (EPFL); Quantitative Analysis of HIV-1 Gag Clusters and the Impact of Fluorescently Labelled Gag
20.  
Andrea Grotzky (ETHZ); Dendronized Polymer-Enzyme Hybrids
21.  
Katja Junker (ETHZ); Vesicle-Assisted Enzymatic Synthesis of Conductive Polyaniline
22.  
Daniel Fankhauser (ETHZ); Host-guest Complexation Studies of Resorcin[4]arene-based Container Molecules Using NMR Spectroscopy and ITC Analysis
23.  
Kenjiro Yazawa (TIT); Kinetic Studies of Disulfide-bond Exchange Reactions on DsbB Membrane Proteins by Using QCM
24.  
Luigino Grasso (EPFL); Cell-derived Vesicles as a Minimal Artificial Cell Prototype
25.  
Menno Tol (EPFL); Thermodynamic Stability of an  $\alpha$ -Helical Membrane Protein: the 5HT3 Receptor
26.  
Romain Wyss (EPFL) ; Subwavelength Metal Apertures for Investigating Biological Processes at the Single-molecule Level
27.  
Kunitoshi Chiba (TIT); A Novel Mechanism of Co-transcriptional Quality Control for mRNA Capping
28.  
Satoki Karasawa (TIT); Development of High-performance Affinity Magnetic Beads and its Application to Screening of Vitamin K2 Target Protein
29.  
Olivia Baud (EPFL) ; The Mouse Eugenol Odorant Receptor: Structural and Functional Plasticity of a Broadly Tuned Odorant Binding Pocket
30.  
Sophie Roizard (EPFL); Activation of G Protein Coupled Receptors in Plasma Membranes Supported on Beads
31.  
Thamani Dahoun (EPFL); Functional Characterization of the Mouse Olfactory Receptor mOR256-17
32.  
Joachim Piguet (EPFL); Acetylcholine Receptor Organization in Membrane Domains in Muscle Cells