

Report

THE FIRST SWITZERLAND-KOREA SCIENCE AND TECHNOLOGY FORUM

9-11 March 2005

**Ecole Polytechnique Federale de Lausanne
Lausanne, Switzerland**

Organized by

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Sponsored by

State Secretariat for Education and Research, Switzerland
Ministry of Science and Technology, Korea
Swiss National Science Foundation, Switzerland
Korea Science and Engineering Foundation, Korea
Ecole Polytechnique Federale de Lausanne, Switzerland
Korea Advanced Institute of Science and Technology, Korea

I. Overview

The first Switzerland-Korea Science and Technology Forum was held at Lausanne, Switzerland during 9-11 March 2005. The program of Forum was composed of one and a half day Field Trip and one day Technical Sessions. In the Field Trip, visit and research facility tours were made at the four sites, including the Institute of Microtechnology (IMT) at the University of Neuchatel, Swiss Center for Electronics and Microtechnology (CSEM), Colibrys Inc. and the Plasma Physics Research Center at EPFL. In the Technical Sessions of Forum, total 21 speakers, including 11 speakers from Switzerland and 10 from Korea, presented their collaboration activities between two countries. The Focal Points of two countries introduced the collaboration activities and plans on the working group meetings, joint homepage, forum and joint research center between two countries. Government representatives of two countries addressed the issues of science and technology policies and international collaboration programs. The speakers from two countries presented their collaboration activities and exchanged R&D interests in the three technical areas of micro/nano materials & systems, biomedical & bioengineering, and communication & network. The Forum placed a focus on the clustering of people and technology for a science and technology network between two countries through the presentation, sharing and discussion of previous and present collaboration activities. Further discussion on plans and methods for Joint Research Center and Seed Project was made at the end of the Forum.

II. Background and Description of Forum

1) Forum Mission and Function

- Clustering of people and technology for the Korea-Switzerland collaboration activity, focusing on industry-academia links between two countries.
- Annual presentation of collaboration activity or plans, including previous or on-going joint research, researcher exchange, joint symposium, and/or other activities between two countries

2) Forum Scope and Focus

- Annual presentation of focal point activity and plan
- Presentation and introduction of government policy and plans on international collaboration programs from each country
- Presentation of collaboration activity between Korea and Switzerland, focusing on the fusion or integration of each country's scientific strength or technical excellence between the technical areas of, but not limited to:
 - (a) Micro/Nano Materials & Systems
 - (b) Biomedical & Bioengineering
 - (c) Communication & Network
- Presentation of the status and results of individual collaboration activity, including previous or on-going joint research, researcher exchange, joint symposium, and/or other activities between two countries
- Presentation of the interest groups, partners or candidates of future collaboration activity between two countries

3) Forum Speakers

- 10~12 people from each country, including the Focal Point, 3 people from industry, 2 or 3 people from University, 2 or 3 people from National Laboratories and 2 or 3 people from Government, who are involved in the previous/present collaboration activity or interested in developing future collaboration between two countries.

III. Forum Programs

March 9 (Wednesday), 2005

Field Trip

[Attendees: Ambassador Christian Hauswirth, Sang-Joon CHO, Young-Ho CHO, Yong-Sung EOM, Seongsoo JANG, Soo-Young LEE, Yeong-Eun YOO]

- 10:00 Institute of Microtechnology (IMT), University of Neuchâtel
- 12:00 *Lunch*
- 13:30 Swiss Center for Electronics and Microtechnology, Inc. (CSEM)
15:30 Colibrys Inc.
- 18:00 *Welcome Drink – Hotel Alpha Palmiers, Lausanne*

March 10 (Thursday), 2005

Field Trip

[Attendees: Sang-Joon CHO, Yong-Sung EOM, Seongsoo JANG, Jung-Ho JE, Soo-Young LEE, Yeong-Eun YOO]

- 09:00 Plasma Physics Research Centre, EPFL
- 12:00 *Lunch*

Technical Program

- 13:00 Welcome Address
Ambassador Christian Hauswirth, Embassy of Switzerland in Korea
- 13:05 Welcome to EPFL
Giorgio Margaritondo, Vice-President of Academic Affairs

[Session 0] Science and Technology Policy (Session Chair: Prof. Jan-Anders Månson)

- 13:10 International Relations at EPFL
Martin Vetterli, EPFL
- 13:20 An Overview of Korea-Switzerland Focal Point Collaboration Activity
Young-Ho Cho, KAIST
- 13:40 Science & Technology Policy in Korea
Joo-Han Kim, MOST
- 14:00 A way to enhance Bilateral Cooperation between Korea and Switzerland under Korean International S&T Program Framework
Jeongho Park, KOSEF

[Session I] Biomedical & Bioengineering (Session Chair: Prof. Jan-Anders Månson)

- 14:20 International Collaboration between SNU and EPFL: Research on Embryonic Stem Cells using Animal Model
Jeong Mook Lim, SNU
- 14:40 Stem Cell Therapy : the Example of the Skin
Yann Barrandon, EPFL
- 15:00 New Approaches in Biomedical Research by Using Scanning Probe Microscopy

- 15:20 *Sang-Joon Cho, KAIST*
Finding a Cure for Atrial Fibrillation : Academics and Industry Working Together
Nathalie Virag, Medtronic Europe
- 15:40 *Coffee Break*
- 16:00 Modeling Human Auditory Pathway and its VLSI Implementations
Soo-Young Lee, KAIST
- 16:20 Biosurgery and Drug Delivery
Jeffrey Hubbell, EPFL

[Session II] Communication & Network (Session Chair: Prof. Soo-Young Lee)

- 16:40 Overview of the School of Computer and Communication Sciences
Willy Zwaenepoel, EPFL
- 17:00 1.25Gbps Optical Triplexer Transceiver Module using Planar Lightwave Circuit and Single Fiber
Yong Sung Eom, ETRI
- 17:20 An Overview of NCCR-MICS
Karl Aberer, EPFL
- 17:40 Signal Processing and Sensor Networks
Martin Vetterli, EPFL
- 18:00 WiseNet – An Ultralow-Power Solution for Wireless Sensor Networks
Christian Enz, CSEM
- 19:00 *Forum Banquet – Chalet Suisse, Lausanne*

March 11 (Friday), 2005

Room BP/A

[Session III] Micro/Nano Materials & Systems (Session Chair: Prof. Young-Ho Cho)

- 09:00 Nanoscale Manufacturing Technology in KIMM
Yeong-Eun Yoo, KIMM
- 09:20 Micro- and Nanostructuring Meets Electrochemistry
Ashwin Lal, EPFL
- 09:40 Materials Issues in the Down-scaling of Piezoelectric and Ferroelectric Based Devices
Nava Setter, EPFL
- 10:00 *Coffee Break*
- 10:30 Micro- to Nano-Radiology using Synchrotron X-rays
Jung-Ho Je, POSTECH
- 10:50 Attachment of Carbon Nanotubes on SPM Probes by Vision-based Nanomanipulation Inside a Scanning Electron Microscope
Stephan Fahlbusch, EMPA
- 11:10 Silicon Nitride Cantilever Arrays Integrated with Si Heater and Piezoelectric Sensor for SPM Data Storage Applications
Seongsoo Jang, LG-ELITE
- 11:30 *Discussion*
- 12:00 *Lunch – Le Parmentier, Lausanne*

IV. Forum Speakers

Country	Name	Affiliation	Position
Switzerland (11 Speakers)	Karl Aberer	Institute of Core Computing Science (IIF), EPFL	Professor
	Yann Barrandon	Institut de Génomique du développement (IGD), EPFL	Professor
	Christian Enz	Microelectronics Department, Swiss Center for Electronics and microtechnology (CSEM)	Executive Vice-President
	Stephan Fahlbusch	Swiss Federal Laboratories for Materials Testing and Research (EMPA)	Research Scientist
	Jeffrey Hubbell	Institute for Biological Engineering and Biotechnology (IGBB), EPFL	Professor
	Ashwin Lal	Institut de Production et Robotique (IPR), EPFL	Research Assistant
	Jan-Anders E. Månson	Ecole Polytechnique Fédérale de Lausanne (EPFL)	Professor, Vice-President
	Nava Setter	Institute of Materials (IMX), EPFL	Professor
	Martin Vetterli	Institute of Communication Systems (ISC), EPFL	Professor
	Natalie Virag	Medtronic Europe	Senior Scientist
	Willy Zwaenepoel	Institute of Core Computing Science (IIF), EPFL	Professor
Korea (10 Speakers)	Sang-Joon Cho	Chung Moon Soul Center for Bio-Information And Electronics, Korea Advanced Institute of Science and Technology (KAIST)	Research Assistant Professor
	Young-Ho Cho	Department of BioSystems, Korea Advanced Institute of Science and Technology (KAIST)	Professor
	Yong-Sung Eom	Integrated Optical Module Team, Electronics and Telecommunications Research Institute (ETRI)	Senior Researcher
	Seongsoo Jang	Device and materials laboratory , LG Electronics Institute of Technology (LG-ELITE)	Senior Researcher
	Jung-Ho Je	Department of Materials Science and Engineering, Pohang University of Science and Technology (POSTECH)	Professor
	Joo-Han Kim	Europe & Oceania Cooperation, Ministry of Science and Technology	Director
	Soo-Young Lee	Department of BioSystems, Korea Advanced Institute of Science and Technology (KAIST)	Professor
	Jeong Mook Lim	Division of Animal Genetic Engineering, Seoul National University (SNU)	Professor
	Jeongho Park	Team of International Programs II, Korea Science and Engineering Foundation (KOSEF)	Head
	Yeong-Eun Yoo	Department of Intelligence and Precision Machine, Korea Institute of Machinery and Materials (KIMM)	Senior Researcher

V. Forum Organizers

Switzerland	Korea
Prof. Jan-Anders E. Månson Laboratory of Composite and Polymer Technology (LTC) Institute of Materials (IMX) Ecole Polytechnique Fédérale de Lausanne IMX-LTC, MX-G341, Station 12, CH-1015 Lausanne, Switzerland Tel: +41-21-693-4285 Fax: +41-21-693-5880 E-mail: jan-anders.manson@epfl.ch	Prof. Young-Ho Cho Digital Nanolocomotion Center Department of BioSystems Korea Advanced Institute of Science and Technology 373-1 Guseong-dong, Yuseong-gu Daejeon, Korea Tel: +82-42-869-8691 Fax: +82-42-869-8690 E-mail: mems@kaist.ac.kr

VI. Summary and Conclusions

The first Switzerland-Korea Science and Technology Forum, held at Lausanne, Switzerland, provided fine opportunities for the key researchers of both countries to exchange technical interests and to discuss in-depth collaboration on the fusion or integration of each country's scientific strength or technical excellence. Government representatives from both countries attended the entire programs and showed the strong interests and supports on the international collaboration between two countries. Especially, Ambassador Christian Hauswirth from the Embassy of Switzerland in Korea, participated the full schedule of the Forum and provided encouragements to the participants from both countries for a long-term active collaboration. Forum participants discussed the plan and methods for future collaboration and JRC Seed Project, thereby making the following agreements and decisions.

- 1) Focal Points collect the presentation materials of the Forum and distribute the copies to Forum attendees. The copies of proceedings are to be posted on the Homepage at <http://skistec.org> for public distribution.
- 2) Focal Points collect brief proposals on joint research topics and potential collaboration partners for JRC Seed Project. Forms for brief proposals are prepared by Focal Points and announced to the forum attendees as well as to the researchers involved in the previous collaboration activities between two countries. The call for proposals will be also announced at the Homepage at <http://skistec.org>.
- 3) Forum participants proposed to include more participants and contributions from industry, especially in the field of communication & network. Focal Points agreed to collect industrial interests and attention in the preparation process for the Forum and JRC Seed Project.
- 4) The 2nd Forum will be held in Korea during the first half of 2006. Focal Points will prepare and exchange the list of 10~12 speakers from each country, including the Focal Point, 3 people from industry, 2 or 3 people from university, 2 or 3 people from national laboratory and 2 or 3 people from government. The speakers will be selected from the people, who are involved in the previous/present collaboration activity, interested in JRC Seed Projects and future collaboration in industry sectors between two countries.