



Laboratoire International Associé (LIA-CNRS) "Engineering Lyon Tohoku joint laboratory"

Co-direction :

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Ph. Kapsa, ECL

Inventer l'ingénierie du futur

INSA - ECL - Tohoku University



- A long history of collaboration initiated more than 25 years ago
 - by Prof JM Georges and Prof K Kato Tribology
 - And by Prof PF Gobin and Prof Tani Smart Materials
- Organisation of various workshops in common
 - INABIO, 3 editions
 - JFSIMS, 6 editions

Recent history 2003-2006

Inter Research Centers Cooperative Program (IRCP)
IRCP project between IFS and labs from ECL and INSA

Tribology and surfaces:

cooperations with LTDS (computational chemistry for tribochemical phenomena, tribology of carbon based thin coatings), and LAMCOS (EHD lubrication with additives)

Smart materials:

cooperation with LGEF (piezo actuators), MATEIS (EMAT development) and LTDS (SMA actuators, coatings)

Biomedical applications:

Cooperation with LTDS (tribology of catheter on blood vessels contacts)

Output:

4 stays of staff members each side, plenty more students exchange, 4 joint conferences, 2 doctors honoris causa
(small drawback for French evaluation system ; few common papers in international peer-reviewed journals)

Recent history 2003-2006, cont'd

Reinforcement of Tohoku U, ECL and INSA relationships

- 2004: opening of Liaison Office, at INSA and at TU
- 2005: double Master degrees between ECL and TU and between INSA and TU



INSA - ECL - Tohoku University

2007: 50th anniversary of INSA-Lyon
100th anniversary of Tohoku University
150th anniversary of INSA-Lyon



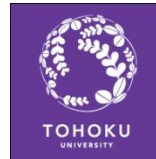
LYON TOHOKU

リヨンー東北：将来に向けての提携
Une alliance pour le futur

LYON TOHOKU

TOHOKU
INSA LYON
AAAA CENTRAL

INSA - ECL - Tohoku University



Lyon - Tohoku, teaming for the future
Towards a joint laboratory

*2008: administrative launch
of the joint lab ELyT.*

*2008: Celebration of the
150th anniversary of France-
Japan diplomatic and
economic partnership*



enierie du futur

INSA LYON

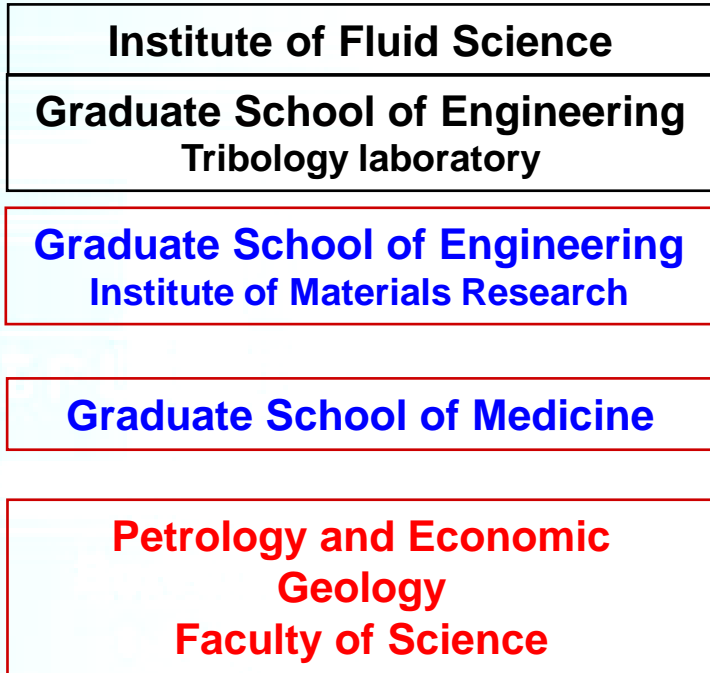


dec 2008,
Signature ceremony in
Sendai

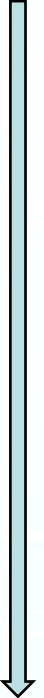
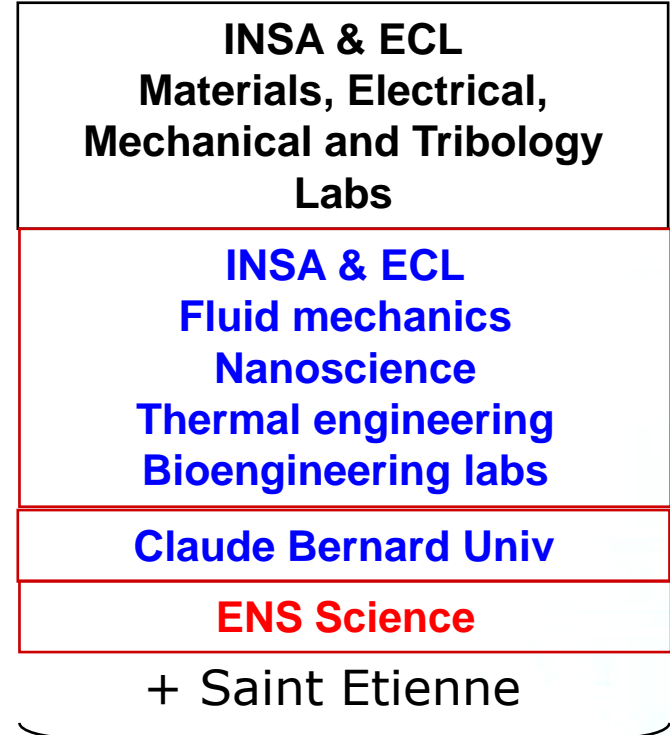
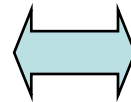




Engineering Science Lyon Tohoku joint Laboratory



historic



Tohoku University

Inventer l'ingénierie

University of Lyon

+ invited col., ex: Grenoble

Structuration of LIA activity

- Definition of scientific thematics, with leaders (F and J)
 - Bioscience and Engineering (B)
 - Reliability in Energy and Transportation (R)
 - Micro and Nano scale materials and devices Durability (M)
 - Flow Dynamics, heat transfers and microfluidics (F)
 - Tribology (T)
- Definition of scientific commun F / J projects

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Bioscience and Engineering



Japanese side leader: OSUMI Noriko & OHTA Makoto

French side leader: LAGARDE Michel

#	SubProjects	French & Japanese leaders
B1 (T)	Bio Tribology of Catheters BioCath	FRIDICI Vincent OHTA Makoto
B3	Understanding the Relation between Cell Friction, Adhesion and Motion: Modeling and Experiments Using Dictyostelium. BioCellFric	HAYAKAWA Yoshinori RIEU Jean-Paul
B4 (T)	Bioengineering of Tactile Perception: Haptic Tribometry Artfinger	ZAHOUNANI Hassan PAILLER MATTEI Cyril TANAKA Mami
B5	Lipid biology and its application. <u>LipidScience</u>	LAGARDE Michel OSUMI Noriko

Durability Reliability in Energy and Transportation



Japanese side leader: WATANABE Yutaka

French side leader: COURBON Joel

#	SubProjects	French & Japanese leaders
R1	Non Destructive Evaluation & Mitigation NDE & Mitigation	COURBON Joel UCHIMOTO Tetsuya
R2	Self-powered and Wireless Smart Systems and its Applications to Vibration Control/Energy Harvesting and Structural Health Monitoring SPWSS	GUYOMAR Daniel KUWANO Hiroki
R3	Understanding and Managing SCC UMaSCC	NORMAND Bernard WATANABE Yutaka
<u>R4</u>	Aging and damage of Polymers for coating and insulation under irradiations <u>PolymIrrad</u>	CHAZEAU Laurent KUBO Momoji
<u>Ext.</u> <u>R5</u>	Metallic Coating processed by Cold Spray <u>Cold spray</u>	NELIAS Daniel OGAWA K

Micro and Nano scale materials and devices



Japanese side leader: CHIBA Akihiko

French side leader: FAVE Alain

#	SubProjects	French & Japanese leaders
M1	Development of probes and of an Active Nanostructured Calibration Standard for SThM Techniques SThMstandard	GOMES Severine ONO Takahito
M2	NANOstructured Co Alloys for Hip IMPlant: Optimisation of the Microstructure and Damage Mechanisms NANOCHIMPion	FABREGUE Damien CHIBA Akihiko
M4	Fatigue and Cracking Resistance of Bulk Metallic Glasses BMG	PELLETIER J M ⇒ CHAZEAU Laurent YOKOYAMA Y ⇒ LOUZGUINE Dmitri
M5	Great Improvement of the Lateral Resolution of AFM Electrical Measurements Using Specific Tips TEGAMI	BREMOND Georges AKIYAMA Kotone

Micro and Nano scale materials and devices, cont'd



Japanese side leader: CHIBA Akihiko

French side leader: FAVE Alain

#	SubProjects	French & Japanese leaders
M6	Silicon and Germanium Based NanoMaterials for Photovoltaic Application SIMPA	FAVE Alain USAMI Noritaka
M7	<i>MEchanical CHAracterization of Properties of THIN Films by means of MEMS Methods</i> MECHATHIN	<i>FABREGUE Damien</i> <i>ESASHI Masayoshi</i>
M8	<i>Nano-intercalated Systems with Accurate Physical Property Control</i> NANOINTER, finished	<i>SAN-MIGUEL Alfonso</i> <i>TANIGAKI Katsumi</i>
M9	Electron microscopy for nanostructures <u>EMINA</u>	EPICIER Thierry KONO Toyohiko
M10	Materials behavior under high pressures <u>HP-MAT</u>	MATTAS Jan OHTANI Eiji

Flow Dynamics, heat transfers and microfluidics



Japanese side leader: TOKUMASU Takashi

#	SubProjects	French & Japanese leaders
F2	Radiative properties of complex materials for design and control of engineering systems RadiativMat	VAILLON Rodolphe MARUYAMA Shigenao

☞ F1, cancelled

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Tribology



Japanese side leader: KOSHI Adachi

French side leader: MAZUYER Denis

#	SubProjects	French & Japanese leaders
T1	Experimental and Quantum Chemical Molecular Dynamics Approach to Action Mechanisms of Lubricant Additives TRIBOCHEM	MARTIN Jean Michel MINFRAY Clotilde KUBO Momoji
T2 (F)	Nano-Scale Modeling of Tribological Interfaces NaSMoTI	VERGNE Philippe TOKUMASU Takashi
T3	Friction and Contact Noise FrictionNoise	ZAHOUNANI Hassan Le BOT Alain ADACHI Koshi FUADI Zahrul
T4	Tribologically-based Design Strategies for Advanced Carbon Coatings CarbonCoat	FONTAINE Julien MIKI Hiroyuki

ELyT lab organised events

- 1st scientific ELyT Seminar (Dec. 2008)
- 1st ELyT school
 - Sept 2009 in Lyon for TU students
- 2nd scientific ELyT Seminar
 - Mars 2010 in Annecy (about 90 participants : 50 F and 40 J)
- 2nd ELyT school
 - Oct 2010 in Sendai for Lyon & TU Liaison Office students
- 3rd scientific ELyT Seminar
 - Feb 22-24, 2011, in Japan



+ many bilateral meetings, focused workshops, etc.

Outlooks... ELyT as a "platform" for Person exchange

We have developed an *integrated system*

- Liaison Office: to welcome our visitors
- Summer School: to attract students
- double master degrees
- joint PhD (or double PhD degree)

☞ *within the frame of "ELyT lab"*

Financial support for stays ($F \rightarrow J$ and $J \rightarrow F$)
within the frame of various projects

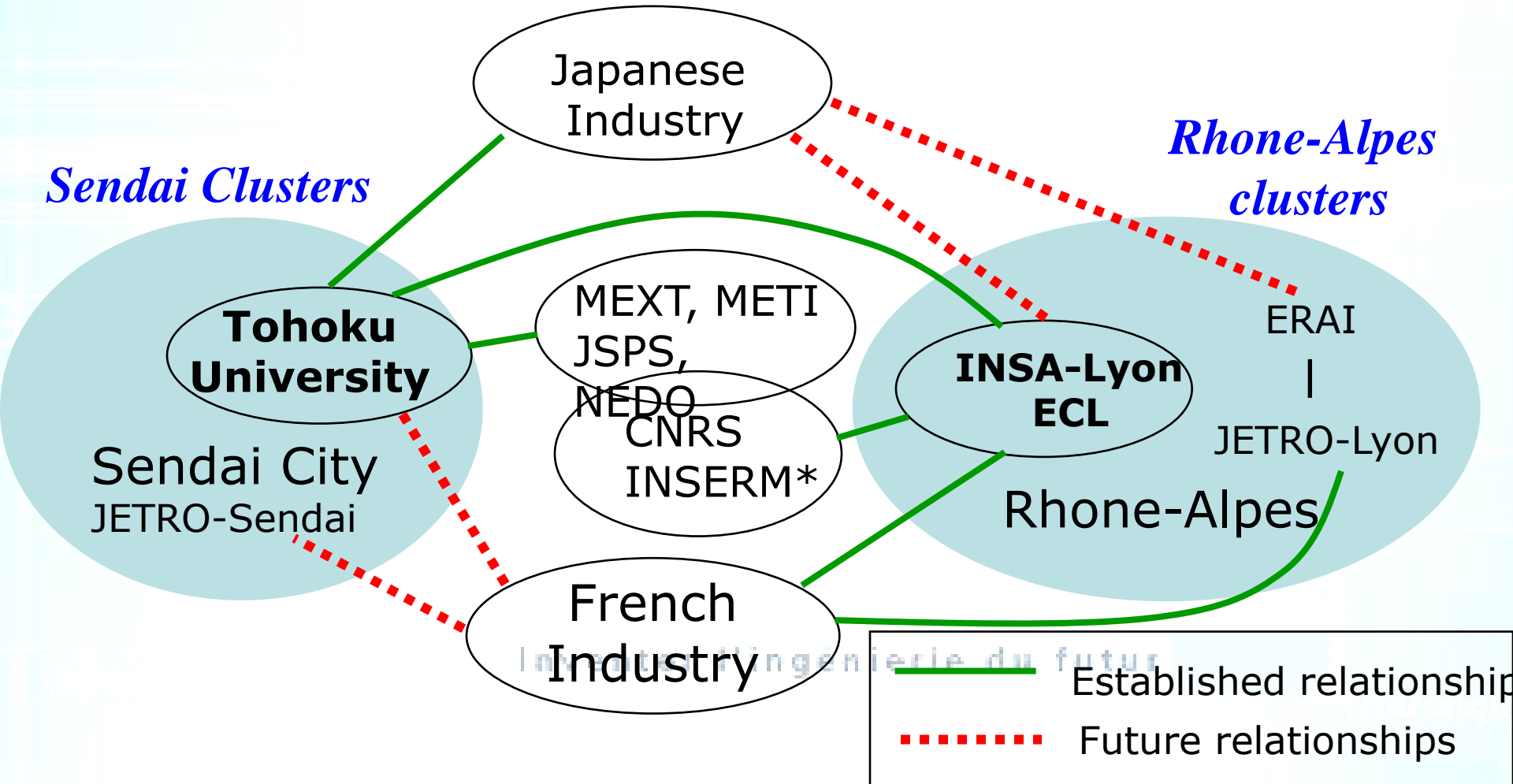
Master degree level
PhD level
Postdoc position

Under the double
Japanese + French
Supervision

Relationships with industrial partners ?

*Concluding Remarks of 3rd Joint Forum for Dialogue
with Regional Industrial Partners
16th & 17th, Nov. 2006*

Hosted by : Tohoku University, INSA-Lyon & ECL in France

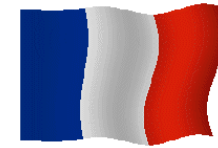
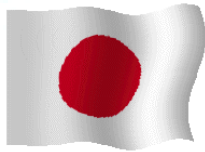


* INSERM: Institut National de la Santé et de la Recherche Médicale

** ERAI: Entreprises Rhone-Alpes International



ありがとうございます



Annual Workshop of ELyT Laboratory on Feb. 22 - 24, 2011 in Sendai

Day	AM 9:00 – 10:30	Coffee Break 10:30 – 10:45	AM 10:45 – 12:30	Lunch 12:30 – 13:30	PM 13:30–15:30	Coffee Break 15:30 – 15:45	PM 15:45–17:45	Evening Event
Tuesday, Feb. 22	Opening Session by EVP Iijima	Coffee Break 10:30 – 10:45	Opening Session & 11:30 – 12:30 Plenary Lecture by Prof. Kingo Itaya on “Atomic Scale Aspects of Electrode/Electrolyte Interfaces”	Sakura Hall, Buffet Style	“Organized session on Surface and Interface”	Coffee Break 15:30 – 15:45	Bioscience and Engineering	Welcome Party
Wednesday, Feb 23	Durability Reliability in Energy and Transportation		Durability Reliability in Energy and Transportation	Sakura Hall, Buffet Style	Plenary Lecture by Y. Brechet. Flow Dynamics, Heat Transfers		Organized Session: Industry-University-District Solidarite	By your own
Thursday, Feb 24	Micro and Nano Scale Materials and Devices		Micro and Nano Scale Materials and Devices	Sakura Hall, Buffet Style	Tribology		CNRS ELyT Steering committee	President Dinner
	Inventer l'Poster Session du futur							
Friday, Feb 25	Touristic Tours							