

ELyT Workshop 2015 in Matsushima – Comprehensive Research on  
Materials, Systems and Energy for Sustainable Future  
In Memory of Professor Pierre Francois Gobin  
February 18 – 21, 2015

At Matsushima Century Hotel: Aza Senzui 8, Matsushima-cho, Miyagi-gun,  
Miyagi-ken 981-0213 Japan  
Phone:+81-(0)22-354-4111 Fax: +81-(0)22-354-4191

**February 18, Wednesday, 2015**

(You are supposed to check-in the hotel before 17:30.)

Plenary Lecture 1 Introduced by <b>Toshiyuki Takagi</b>	18:00	Professor Pierre Francois Gobin: From Physical Metallurgy to Materials Science. From GEMPPM to ELyT Laboratory <b>Jean-Yves Cavaille (INSA-Lyon)</b>
	18:45	

19:00-21:00 Nice-to-get-together Dinner

21:00-22:30 Academic Discussions

**February 19, Thursday, 2015**

07:00-09:00 Breakfast

ELyT Lab Steering Committee	09:00	<b>(CNRS) Yves Remond (INSA-Lyon) Jean-Francois Gerard, Jean-Yves Cavaille, Marie-Pierre Favre (ECL) Jean-Pierre Bertoglio, Philippe Kapsa (Tohoku) Toshiya Ueki, Sadayoshi Ito, Toshiyuki Takagi, Masaaki Sato, Tetsuya Uchimoto, Naoto Wada</b>
	10:50	

Opening Session Chaired by <b>Naoto Wada</b>	11:00	Opening Remarks by: (TBD)
	11:45	

11:50-12:50 Lunch

Plenary Lecture 2 Introduced by <b>Philippe Kapsa</b>	13:00	Multiscale, Multiphysics Computational Chemistry Methods Design for Energy and Mass Transport <b>Akira Miyamoto (Tohoku)</b>
	13:45	

Interface Design for Energy and Mass Transport (D)	13:45	Chaired by <b>Toshiyuki Takagi and Shigeru Obayashi</b>
	15:00	
	13:45 14:00	International Collaboration through JSPS Core-to-core Program <b>Toshiyuki Takagi (Tohoku)</b>
	14:00 14:15	Determination of optimal shape cavity under uncertain vibroacoustic criteria affected by absorption coefficients <b>Frederic Gillot and Sebastien Besset (ECL)</b>
	14:15 14:30	FSI computational study of offshore tsunami and mega-floating structures <b>Jun Ishimoto (Tohoku)</b>
	14:30 14:45	Development and evaluation of high temperature EMAT <b>Tetsuya Uchimoto, Toshiyuki Takagi, Shohei Ogata (Tohoku) and Joel Corbon (INSA-Lyon)</b>
	14:45 15:00	Stochastic inverse analysis of QNDE using generalized polynomial chaos <b>Fumio Kojima (Kobe University)</b>

15:00-15:15 Coffee Break

Flow Dynamics, Heat Transfer and Micro-fluidics (F)	15:15	Chaired by <b>Takashi Tokumasu and Rodolphe Vaillon</b>
	16:15	
	15:15 15:30	Suitable operating mode of actuators for instability wave control <b>Seiichiro Izawa (Engineering, Tohoku)</b>
	15:30 15:45	Molecular Dynamics Study of Momentum Transport Phenomena of a Nanoscale Liquid

		Bridge <b>Takashi Tokumasu (IFS, Tohoku)</b>
	15:45 16:00	Analysis of High Reynolds Number Flow Behind a Square Cylinder by Hybrid Wind Tunnel (Reproduction of Turbulent Velocity Fluctuations) <b>Jumpei Okuyama, Toshiyuki Hayase, Kosuke Inoue, Shusaku Sone and Kenichi Funamoto (Tohoku)</b>
	16:00 16:15	Mass Transfer Control of Protein by Hindered Diffusion Process <b>Atsuki Komiya (Tohoku), Jerome Chevalier, Sebastien provost and Sebastien Livi (INSA-Lyon)</b>

Bio-Science and Engineering (B)	16:15 16:30	Chaired by <b>Jean-Yves Cavaille</b>
	16:15 16:30	The role of fatty acid binding protein in the brain and sensory systems <b>Noriko Osumi (Med., Tohoku)</b>

16:30-16:45 Coffee Break

Nano and Micro (M)	16:45 19:00	Chaired by <b>Masami Nakano and Daniel Nelias</b>
	16:45 17:00	Influence of the martensite fraction on mechanical properties of titanium alloys for biomedical applications <b>Damien Fabregue (MATEIS, INSA-Lyon)</b>
	17:00 17:15	Advances on rare earth-doped Lu <sub>2</sub> O <sub>3</sub> sesquioxide laser ceramics <b>Georges Boulon (University Lyon 1) and Akira Yoshikawa (Tohoku)</b>
	17:15 17:30	Improvement of Mechanical Properties in short Fiber Reinforced Thermoplastic Polymers <b>Michel C. Faudree (Tokai University)</b>
	17:30 17:45	Strengthening, Degradation and Safety design Level of Polymers

		<b>Yoshitake Nishi (Tokai University)</b>
	17:45 18:00	Molecular Dynamics Simulation on Sintering Process of Ceramic Composites <b>Lucile Joly-Pottuz (INSA-Lyon) and Yuji Higuchi (Tohoku)</b>
	18:00 18:15	Porous metals fabricated by de-alloying in a metallic melt <b>Hidemi Kato (Tohoku), Eric Maire (INSA-Lyon) and Takeshi Wada (Tohoku)</b>
	18:15 18:30	Controllable Electrostriction of carbon nano-filled composite polyurethane <b>Masae Kanda (Tokai University)</b>
	18:30 18:45	Micro-Motor of Electro-Active Polymer Composite Rotor in Dielectric Liquid <b>Masami Nakano (Tohoku)</b>
	18:45 19:00	3D microstructural characterization of polymer matrix nanocomposites <b>Thierry Epicier (INSA-Lyon)</b>
	19:00 19:15	Materials for energy conversion <b>Gael Sebald (INSA-Lyon)</b>
	19:15 19:30	Insight on the process ability of bulk metallic glasses by thermo-mechanical analysis and dynamic mechanical analysis <b>J.C. Qiao, S. Cardinal, J.M. Pelletier (INSA-Lyon) and H. Kato (Tohoku)</b>

19:30-21:00 Welcome Dinner

21:00-22:30 Academic Discussions

### **February 20, Friday, 2015**

07:00-08:30 Breakfast

Plenary Lecture 3	08:45	Materials durability and life time prediction under severe environmental condition in service
Chaired by <b>Jean-Yves Cavaille</b>	09:30	<b>Tetsuo Shoji (Tohoku)</b>

Tribology (T)	09:30 10:45	Chaired by <b>Philippe Kapsa and Momoji Kubo</b>
	09:30 09:45	Characterization of low-friction diamond coatings thanks to the relaxation tribometer technique <b>Michel Belin (ECL) and Hiroyuki Miki (Tohoku)</b>
	09:45 10:00	Green Lubrication: Experiments and Computer Simulations <b>Momoji Kubo (Tohoku) and Manuel Cobian (ECL)</b>
	10:00 10:15	Tribological behavior of lubricant: Contribution of simulation at mesoscopic scale <b>Sophia Berkani (NICHe, Tohoku-TOTAL)</b>
	10:15 10:30	Tribologically-based Design Strategies for Advanced Carbon Coatings <b>Julien Fontaine (ECL) and Hiroyuki Miki (Tohoku)</b>

10:30-10:45 Coffee Break

Bio-Science and Engineering (B)	10:45 12:00	Chaired by <b>Guy Courbebaisse, Toshiyuki Hayase and Makoto Ohta</b>
	10:45 11:00	Bone Drilling <b>Vincent Fridrici (ECL), Gaetan Bouvard ( ), Philippe Kapsa (ECL) and Makoto Ohta (Tohoku)</b>
	11:00 11:15	Interactive Flow Diverter Deployment <b>Guy Courbebaisse (INSA-Lyon), Hitomi Anzai, Mingzi Zhang and Makoto Ohta (Tohoku)</b>
	11:15 11:30	Rolling characteristics of neutrophils on PDMS surfaces mimicking the endothelium topography <b>Jean-Paul Rieu (UCB Lyon 1) and Atsushi Shirai (Tohoku)</b>
	11:30 11:45	Tribological properties of artificial alivas for oral dryness (Xerostomia) <b>Cyril Paillet-Mattei, Roberto Vargiolu, Simon Tupin and Hassan Zahouani (ECL)</b>
	11:45	Investigation of the resorption process of

	12:00	calcium phosphate bone substitutes <b>M. Gallo, S. Tadier, S. Meille and J. Chevalier (INSA-Lyon)</b>
	12:00 12:15	Characterization of the biomechanical properties of the bone-implant interface under extreme conditions <b>Guillaume Haiat (CNRS-University of Paris-Est)</b>

12:15-13:15 Lunch

13:15-17:15 Outgoing

Poster Session	17:15 19:15	<b>Sho Takeda, Eijiro Abe, Asuka Konno, Amanda Lo Van, Toshinori Sato, Mingzi Zhang, Yujie Li, Kaihong Yu, Wataru Sakuma, Michiyoshi Sato, Kei-ichi Shirasu, Nicolas J. A. Wallisky, Daisuke Oshiyama, Paul Profizi, Kesavan Ravi, Juan A. Chafino-Aixa, Fethi Hamdani, Hiroki Iwakane, Simon Tupin, Osamu Waseda, Morgane Mokhtari, Roberto Vargiolu, Haifa Nahali, Nacer Azeggagh, Yoichiro Tsurimaki-(Rodolphe Vaillon), Takatori Takeno, Guillaume Lacaille, Yingying Wang, Renaud Rinaldi, Daniel Hartmann</b>
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19:30-21:00 Banquet

21:00-22:30 Academic Discussions

### **February 21, Saturday, 2015**

07:00-08:20 Breakfast

Durability and Reliability (R)	08:30 10:00	Chaired by <b>Tetsuya Uchimoto, Yutaka Watanabe and Bernard Normand</b>
	08:30 08:45	Determination of optimal shape cavity under uncertain vibroacoustic criteria affected by absorption coefficients <b>R. Trojan (ECL), K. Shimoyama (Tohoku), Sebastien</b>

		<b>Beset (ECL) and Frederic Gillot (ECL)</b>
	08:45 09:00	Concrete durability under freezing conditions <b>Patrick Bonnaud (TOTAL-Tohoku)</b>
	09:00 09:15	Experiments and Simulation Studies on Degradation of Polymer under Gamma Irradiation <b>Yuji Higuchi (Tohoku)</b>
	09:15 09:30	Monotonic and fatigue behavior of short and continuous carbon reinforced REFK composite adhesive bonding: Influence of surface morphology <b>R. Ourahmoune, M. Salvia and T. G. Mathida (ECL)</b>
	09:30 09:45	Development of fatigue sensor made of metal-containing diamond like carbon <b>Hiroyuki Kosukegawa (ECL), Takanori Takeno (Tohoku), Julien Fontaine (ECL), Hiroyuki Miki (Tohoku) and Toshiyuki Takagi (Tohoku)</b>
	09:45 10:00	FiniteElementModeling of Errosion Damage Caused by the Oblique Impact of Solid Particle <b>Daniel Nelias, Jing Xie, Helene Walter-le-berre, Aalin Combesure (INSA-Lyon) and Kazuhiro Ogawa (Tohoku)</b>

10:00-10:15 Coffee Break

Durability and Reliability (R, cont'd)	10:15	Chaired by <b>Tetsuya Uchimoto, Yutaka Watanabe and Bernard Normand</b>
	10:45	
	10:15 10:30	Stress Variations of Solid Oxide Fuel Cells under Operating Conditions <b>Kazuhisa Sato and Toshiyuki Hashida (Tohoku)</b>
	10:30 10:45	Design of Nickel based alloys dedicated for severe environments <b>B. Normand (INSA-Lyon), Y. Watanabe (Tohoku), H. Abe (Tohoku), F. Hamdani (INSA-Lyon/Tohoku) and B. Ter-Ovanessian (INSA-Lyon)</b>

Discussion on Future Schedule and Closing Ceremony Chaired by <b>Naoto Wada</b>	11:00	Discussion on Future Schedule
	12:00	Closing Remarks by: (TBD)

12:00-13:00 Lunch

13:00 Adjourn