



2016 TFC ELyT Workshop

8th Annual Workshop

Tohoku University & Miyagi Zao Royal Hotel,
October 6-8, 2016,



PROGRAM

TFC ELYT Workshop
October 6-8, 2016, Tohoku University & Miyagi Zao Royal Hotel, Japan

**TFC ELYT Off-campus Workshop for Intensive Discussions
at Miyagi Zao Royal Hotel, Togatta, Japan**

Introductory and a Plenary Talk Session: 16:50-19:05

Session chairs: N. Wada (TU) and Ph. Kapsa (ECL)

16:50-17:00	Core-to-core Program Now and Future: International Research Core on Smart Layered Materials and Structures for Energy Saving T. Takagi, T. Uchimoto (TU)
17:00-17:20	ELYTMaX JY. Cavaille (INSA-Lyon) , K. Ogawa (TU)
17:20-17:40	ELYTGlobal – Initiatives toward a global network between academic and industry partners D. Fabregue (INSA-Lyon), J. Fontaine (ECL), T. Uchimoto (TU)
17:40-17:45	ELYT Summer School N. Wada (TU), V. Fridrici (ECL), A. Fave (INSA-Lyon)
17:45-18:25	Plenary talk How to move sliding surfaces (almost) without rubbing? D. Mazuyer (ECL)
18:25-19:05	Plenary talk 70 years of Orthopedics: On the role of biomaterials for implants and tissue engineering J. Chevalier (INSA-Lyon)

19:15 - 21:00 Dinner

TFC ELyT Workshop

October 6-8, 2016, Tohoku University & Miyagi Zao Royal Hotel, Japan

Friday, October 7, 2016

Breakfast: 07:00-08:30

Plenary Talks: 08:40-10:20

Session chairs: T. Uchimoto (TU) and D. Fabrègue (INSA-Lyon)

8:40-9:20	Next Generation Plant Facility Management with NEC Big Data Analytics technology, "SIAT" T. Soma (NEC, Japan)
9:20-10:00	Microstructure and Mechanical Properties Evolution of Biomedical Co-Cr-Mo Alloys Manufactured by Electron Beam Additive Manufacturing A. Chiba (TU)
10:00-10:20	Coffee Break

Session Engineering for Health (1): 10:20-12:00

Session chairs: D. Hartmann (ECL) and M. Ohta (TU)

10:20-10:30	Presentation of the theme Leaders: D. Hartmann, T. Hayase, M. Ohta
15	Assembly of protein- and cellulose fibrils with potential applications in bioengineering F. Lundell (KTH, Sweden)
15	Study of Mechanical Properties of Acrylic Composite for Drilling Bone Biomodel. M. Ohta, V. Fridrici, Ph. Kapsa, Y. Muramoto, J. Seiller, G. Bouvard
15	Effects of unesterified docosahexaenoic acid (DHA) and a structured phospholipid containing DHA on neurogenesis and oxidation A. Lo Van, N. Sakayori, M. Hachem, M. Picq, M. Lagarde, NB. Hubac, N. Osumi
15	Influence of the carbon content of CO based alloys on cytotoxicity D. Hartmann, K. Yamanaka, A. Chiba, D. Fabrègue
15	Biophysics properties of human finger : ageing and gender effect H. Zahouani, M. Otsuki, M. Djaghoul, CP. Mattei, A. Abdouni , E. Amaied, R. Vargiolu
15	Optimization of stent Flow Diverter for cerebral aneurysms G. Courbebaisse, M. Ohta

12:00 – 13:00 Lunch

TFC ELyT Workshop

October 6-8, 2016, Tohoku University & Miyagi Zao Royal Hotel, Japan

Session Engineering for Health (2): 13:00-14:00

Session chairs: **H. Zahouani (ECL)**

15	Improving the mechanical properties of Ti-6Al-4V ELI alloy through its TRIP effect JA. Chafino Aixa, D. Farbègue, A. Chiba, K. Yamanaka
15	Metallic glasses for biomedical applications: case of the $Ti_{40}Zr_{10}Cu_{36}Pd_{14}$ BMG A. Liens, H. Kato, JM. Pelletier, D. Fabrègue
15	Corrosion of CoCrMo alloys B. Ter Ovanessian, A. Chiba
15	Electrospun membranes from biosourced and biodegradable polymers for bioengineering applications Jean-François Gérard

Session Energy (1): 14:00-15:25

Session chairs: **C. Boller (University of Saarland) and N. Mary (INSA-Lyon)**

14:00-14:10	Presentation of the theme Leaders: T. Shoji, B. Normand + G. Dobmann
15	German Contributions to ELyT Global Program G. Dobmann (Universität des Saarlandes, Germany)
15	Propriétés mécaniques du Nitrure de Silicium (Si_3N_4), these de Nacer Azzegagh D. Nélias
15	Metal oxide heterostructures: growth, characterizations and applications in nanoelectronics and energy harvesting B. Vilquin
15	Crystallization Process of Alumina-Zirconia Ceramics Composites by Molecular Dynamics Simulation LJ. Pottuz, Y. Higuchi, M Kubo
15	Nd^{3+}/Yb^{3+} rare earth ions-doped transparent laser ceramics and comparison with laser crystals G. Boulon, A. Yoshikawa, T. Goto
15:25-15:45	Coffee Break

Session Energy (2): 15:45-18:00

Session chairs: **J. Courbon (INSA-Lyon) and K. Adachi (TU)**

15	Effects of Homogeneous EB-Irradiation on Electrostriction of Electroactive Polymer M. Kanda, K. Yuse, D. Guyomar, Y. Nishi
15	Simulation approaches for a better understanding of polymer ageing, Y. Higuchi, M. Kubo, L. Chazeau, JY. Cavaille, T. Shoji
15	On adhesion modelling: application to cold spray mechanism understanding P. Profizi, A. Combescure
15	Development, Modeling and Characterization of Efficient Magneto-Rheological Elastomers for Vibrational Energy Harvesting G. Sebald, M. Nakano, M. Lallart, JY Cavaille
15	Modeling of dynamic magnetic properties and its application to magnetic nondestructive evaluation B. Duchane, G. Sebald, T. Uchimoto, T. Takagi
15	Collaborative Research Activities between INSA and IFS Heat Transfer Control Laboratory S. Maruyama, A. Komiya
15	FSI Approach of Hydrogen Leakage Problems with Crack Propagation J. Ishimoto, T. Sato, A. Combescure
15	Material design dedicated for severe environments – Nuclear applications Y. Watanabe, H. Abe B. Normand, B. Ter-Ovanessian

TFC ELyT Workshop

October 6-8, 2016, Tohoku University & Miyagi Zao Royal Hotel, Japan

15	Non destructive damage evaluation of high voltage overhead transmission lines by Electro Magnetic Acoustic Transducers P. Guy, T. Uchimoto, T. Takagi
-----------	--

Poster Session: 18:00-19:15

Chairman	H. Kosukegawa, G. Diguët, M. Kanda
18:00-19:15	<p>PS1 Effect of lubricant composition on Hydrogen induced Fatigue Cracking in tribological systems, B. L'Hostis, C. Minfray, M. Fregonese, C. Verdu, BT-Ovanessian, ADC. d'Ambrose, F. Jarniasc</p> <p>PS2 Rubber-Ice Friction mechanisms: Multi-Physical and multi-scale approach, S. Hemente, K. Kurihara, J. Cayer-Barrioz, D. Mazuyer</p> <p>PS3 Design of the Geometry of a Cavity and Its Absorption Coefficients Under Vibroacoustic Criteria, K. Shimoyama, R. Troian, F. Gillot, S. Besset,</p> <p>PS4 Effective thermal conductivity measurement of vacuum insulation panel, A. Takahashi, J. Okajima, A. Komiya, S. Maruyama</p> <p>PS5 Study of the quantum effect on potential barrier for hydrogen diffusion in metal by molecular simulation, S. Ikawa, H. Nagashima, S. Tsuda, T. Tokumasu</p> <p>PS6 Conversion Efficiency Improvement of Cold Spray Fabricated Dye-Sensitized Solar Cell by TiO₂ /Dye mixture particle, Y. Xue , K. Ogawa</p> <p>PS7 Drilling under constant feed rate for bone biomodel made of acrylic composites, Y. Muramoto, G. Bouvard, V. Fridrici, Ph. Kapsa, M. Ohta</p> <p>PS8 In-vitro evaluation of the effect of a multi-layer stent device deployment on the aorta-renal artery bifurcation hemodynamics, S. Tupin, Y. Shimizu, H. Anzai, K. Takase, M. Ohta.</p> <p>PS9 Comparison Study of Blood Flow Pattern Changes due to the Blood Vessel Deformation during Intravascular Stent Deployment, Narendra Kurnia Putra, Hitomi Anzai, Makoto Ohta</p> <p>PS10 Evaluation of tissue heating for Radiofrequency ablation Using a Vibrating Catheter, Kaihong Yu, Vincent Fridrici, Philippe Kapsa, Makoto Ohta</p> <p>PS11 Effects of EB-irradiation on Charpy impact value and Bending Elastic modulus of Fibers Reinforced Thermoplastic Polymers, MC. FaudreE, R. Nomura, R. Ourahmoune, H. Takei, M. Kanda, N. Inoue, M. Salvia, Y. Nishi</p> <p>PS 12 Nondestructive Evaluation of Residual Strain of Carbon Steels by Magnetic Incremental Permeability Method, T. Matsumoto, T. Uchimoto, T. Takabi, G. Dobmann</p>

TFC ELyT Workshop

October 6-8, 2016, Tohoku University & Miyagi Zao Royal Hotel, Japan

18:00-19:15	PS13 Interparticle Bonding of Metal Powder Particles by Compression Shearing Process, S. Takeda, H.Miki, J. Fontaine, M. Guibert, L. Billaut, T. Miyazaki, T. Takagi
	PS14 Digital Image Correlation for quantitative evaluation of multiple stress corrosion cracks interactions, JV. Bolivar, M. Fregonese, J. Rethore, C. Duret, P. Combrade
	PS15 Development of CoCrMo alloys for biomedical applications: Biocompatibility, Corrosion, Tribocorrosion, Biotribocorrosion, B. Normand, BT. Ovanessian, CD. Loughian, L. Gremillard, A. Impergre, A. Chiba
	PS16 Combined study of dislocation dynamics of single crystals under cyclic loading : Acoustic emission (AE) and microstructural characterizations G.L'hôte, S. Deschanel, C.Le Bourlot, S.Cazotte, M.Montagnat
	PS17 Development Of High Functional Polymer/Metal Integrated Systems By Using Cold Spray, K. Ravi, K.Ogawa, O. Lame, JY Cavaillé
	PS18 Influence of Building Position on Phase Distribution in Co-Cr-Mo Alloy Additive Manufactured by Electron-Beam Melting, S. Aota, T. Takashima, T. Saito, Y. Li, Y. Koizumi, K. Yamanaka, K. Aoyagi, A. Chiba
	PS19 Molten Pool Behavior during Electron Beam Melting of Co-Cr-Mo Alloy Simulated by Computational Fluid Dynamics, Y. Zhao, Y. Koizumi, A. Chiba
	PS20 Design and implementation of a corrosion fatigue test for brass steel cords in tire environment, N. Mary, A. Romaine, B. Normand, F. Dufour,
	PS21 Stainless steels repassivation behavior from tribocorrosion, N. Mary, A. Romaine, B. Normand
	PS22 Radiofrequency Ablation: Lesion Size Measurement on Agar Phantom, GF. Akasum, K. Yu, Suprijanto, M. Ohta
PS23 Corrosion of CoCrMo alloys, B. Ter Ovanessian, A. Chiba	

19:30 – 21:30 Banquet

TFC ELyT Workshop
October 6-8, 2016, Tohoku University & Miyagi Zao Royal Hotel, Japan

Saturday, October 8, 2016

Breakfast: 07:00-08:30

Session Transportation (1): 8:30-10:10

Session chairs: H. Alfredsson (KTH) and M. Kubo (TU)

8:30-8:40	Presentation of the theme Leaders: P. Kapsa and K. Adachi
15	Overview of the achieved and future collaborative research work on Robust Design Optimization K. Shimoyama, F. Gillot, S. Besset,
15	Application of semi-active vibration and noise control in aerospace engineering K. Xiong, J. Qiu, H. Ji (NUAA, China)
15	Effects of EB-Irradiation on Mechanical properties of Polymers Y. Nishi, M. Kanda, MC. Faudree, A. Minegishi, S. Takase, O. Lame, T. Deplancke, JY. Cavaille
15	Development Of High Functional Polymer/Metal Integrated Systems By Using Cold Spray, K. Ravi, K.Ogawa, O. Lame, JY Cavaillé
15	Towards ultralow friction of microcrystalline diamond films- overview and perspective M. Belin, H. Miki
15	Organic Friction Modifier: interaction molecule-surface and impact on friction behavior C. Minfray, JM. Martin, C. Matta, S. Loehle, A. Miyamoto
10:10-10:30	Coffee Break

Session Transportation (2): 10:30-10:10

Session chairs: D. Mazuyer (ECL) and T. Takeno (TU)

15	Superlubricity of ta-C with oleic acid Evidence for graphene oxide formation JM. Martin, M. Isabel De Barros Bouchet, S. Bai, M. Kubo
15	Surface forces measurement for tribology K. Kurihara
15	Efficiency and Aging of the Next Generation of Automotive Catalysts using Artificial Intelligence-based Multiscale, Multiphysics Simulations B. Patrick, K. Inaba, Y. Ishizawa, M. Sato, R. Komuro, M. Sato, R. Sato, R. Miura, A. Suzuki, N. Miyamoto, N. Hatakeyama, M. Hariyama, A. Miyamoto
15	CarbonCoat: Tribologically-based design strategies for advanced carbon coatings J. Fontaine Julien, S. Bec, M. Belin, TL. Mogne, R. Hombo (Denso Co.), H. Miki, T. Takeno, K. Ito (Nihon University, Japan), M. Goto (Ube National College of Technology, Japan), K. Adachi, T. Takagi
15	Mechanism Analysis Technique for Fuel Diversification: Corrosive Wear of Stainless Steel in Methanol Blended Gasoline K. Yoshida, R. Hombo, S. Tachikawa, N. Inayoshi (DENSO Co.)
15	Tribology Research Partnership between France and Japan P. Zerlauth, M. Kawada (Nihon Michelin Tire Co.)

TFC ELYT Workshop
October 6-8, 2016, Tohoku University & Miyagi Zao Royal Hotel, Japan

Session chairs: M. Sato (TU) and JY. Cavaille (INSA-Lyon)

12:00-12:30:

Presentations of the 3 main scientific topics (3 x 10'):

Materials and structure design by E. Maire and A. Chiba,

Surfaces and interfaces by C. Minfray and T. Takeno,

Simulation and modeling by P. Chantrenne and T. Tokumasu (*presentation by ELYT Global leaders*).

12:30-13:00:

Discussion on general aspects for the future of ELYT Global – Closure of the meeting

T. Uchimoto, J. Fontaine, D. Fabrègue

13:00 – 14:00 Lunch

Transportation back to Sendai: 14:00-15:30

Two chartered buses are to carry the participants to Sendai Station.

(Adjourn)