ISFF6

6th International Symposium on Fretting

Final Conference Schedule

April 19 - 21, 2010

Chengdu, China

Organized by Southwest Jiaotong University, China

西南交通大學 Southwest Jiaotong University

http://www.ISFF6.com

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Monday, April 19		
10 :00-12:00 14:00-18:00	**Registration**	
14:00-17:30	*Social Program 1*-Visit the *Chengdu Panda Base*	
Tuesday, April 20		
08:10-08:30	**Welcome And Opening Remarks** (Room-A)	
08:30-10:10	**Session 1-Plenary** (Room-A)	
10:10-10:30	Refreshment Break	
10:30-12:10	**Session 2A**-Fretting Fatigue (Room-A)	**Session 2B**-Fretting Corrosion (Room-B)
12:10-13:30	Lunch Break (Jinghu Hotel)	
14:10-15:50	**Session 3A**-Fretting Fatigue (Room-A)	**Session 3B**-Fretting in Environments (Room-B)
15:50-16:10	Refreshment Break	
16:10-17:50	**Session 4A**-Fretting Fatigue (Room-A)	**Session 4B**-Fretting Wear (Room-B)
18:30-21:00	**Banquet** (*Old Shunxin Teahouse*) and **entertainment** (*Watch sichuan opera*)	
Wednesday, April 21		
08:10-09:50	**Session 5-**Plenary (Room-A)	
09:50-10:10	**Refreshment Break**	
10:10-12:00	**Session 6A**-Fretting Fatigue (Room-A)	**Session 6B**-Fretting wear (Room-B)
12:00-13:30	**Lunch Break** (Jinghu Hotel)	
14:10-16:30	**Session 7**: Fretting Wear (Room-A)	
16:00-19:00	*Social Program 2*-Visit *Jinli old Street* in Chengdu	
19:30-20:30	**Dinner** (Jinghu Hotel)	
Thursday, April 22		
08:30-16:30	*Social Program 3*-One-day tour on *Mount Qincheng and the Dujiangyan Irrigation System*- World Cultural and Natural Heritage	
18:30-20:00	**Dinner** (Jinghu Hotel)	
Friday, April 23		
	Free time or return	
Note	All the social programmes are **free** and optional, and pre-registration will be required during the registration process of the conference (April 19,2010)	

Tuesday April 20, 2010

08:10 AM		**Opening Remarks**
		Z.R. Zhou, Southwest Jiaotong University, China

Session 1 - Plenary

Chair: **Helmi Attia**, McGill University, Canada

08:30 AM	1-1	**Fretting Fatigue Considerations in Holistic Structural Integrity Based Design Processes (HOLSIP)- A continuing evolution (Keynote)** David W. Hoeppner University of Utah,USA
08:55 AM	1-2	**Progress in Standardization of Fretting Fatigue Terminology and Testing (Keynote)** R. W. Neu Georgia Institute of Technology, USA
09:20 AM	1-3	**Fretting Fatigue Life Estimations Based on Fretting Mechanisms** T. Hattori , V. T. Kien and M. Yamashita **(Keynote)** Gifu University, Japan
09:45 AM	1-4	**The Fretting Behaviour of Artificial Hip Joint Stems (Keynote)** S. R. Ge China University of Mining & Technology, China
10:10 AM		**Refreshment Break**

Session 2A- Fretting fatigue

Chair: **R. W. Neu**, Georgia Institute of Technology, USA

10:30 AM	2A-1	**Stress Gradient Effect on Crack Initiation in Fretting** R.Amargier[1,2], S.Fouvry [2], L.Chambon[3], C.Schwob[3], C.Poupon[1] [1]Airbus France, France, [2]Ecole Centrale de Lyon, France
10:50 AM	2A-2	**Comparison and Development of Fretting Fatigue Prediction Models in Shaft-hub Connection** L.J. Shen [1] , A. Lohrengel [1], G. Schäfer[1] [1]Clausthal University of Technology, Germany [2] Central South University, China
11:10 AM	2A-3	**Shear Traction for Flat Punch under Partial Reverse Slip Conditions** N. Hamza , H. Murthy Indian Institute of Technology Madras, India

11:30 AM	2A-4	**Mechanism of Fretting Fatigue Limit Reduction in Hydrogen Gas in SUS304** M. Kubota [1], Y. Tanaka [2], K. Kuwada [3], Y. Kondo [1] [1]Kyushu University & AIST, Japan, [2]Mitsubishi Heavy Industries, LTD. Japan, [3]Kyushu University, Japan
11:50 AM	2A-5	**Effect of Variable Friction Coefficient on Contact Tractions** K. Vadivuchezhian , H. Murthy Indian Institute of Technology Madras, India
12:10 PM		**Lunch Break**

Session 2B: Fretting Corrosion

Chair: **S.R.Ge**, China University of Mining Technology, PR China

10:30 AM	2B-1	**Fretting-Corrosion Characterization of Power Lines Exposed to Marine Atmosphere** J. H. Foggi[1], S. Refsnæs[2], N. Espallargas[1], K. Nisancioglu[1] [1]Norwegian University of Science and Technology (NTNU) , Norway [2]Sintef Energy Research AS, Electric Power Technology, Norway
10:50 AM	2B-2	**Fretting Corrosion Wear of Hoisting Rope of Mining in Alkaline Solution** H.T.Liu, D.K.Zhang, X.H.Hou, L.M.Xu, Y.Shen China University of Mining & Technology, China
11:10 AM	2B-3	**Unlubricated Sliding Friction of the Steel AISI 1045 / Steel AISI 1045 Couple under Magnetic Field in Different Gas Environments** M. Amirat , H. Zaidi Université de Poitiers, France
11:30 AM	2B-4	**Fretting-corrosion of Inconel 600 in 3.5 wt% NaCl Solution** M. Lgried, T. Liskiewicz, A. Neville University of Leeds, UK
11:50 AM	2B-5	**Fretting Wear of Carburized Titanium Alloy against ZrO_2 under Serum Lubrication** Y. Luo, S. R. Ge, D. k. Zhang, Q. L. Wang, H. T. Liu China University of Mining Technology, PR China
12:10 PM		**Lunch Break**

Session 3A: Fretting Fatigue

Chair: **T. Hattori**, Gifu University, Japan

14:10 PM 3A-1 **Prediction of Fretting Fatigue Nucleation Life of Aerial Aluminum Alloy**
M. S. Yang , Y. L. Chen
Naval Aeronautical Engineering Academy, China

14:30 PM 3A-2 **Study on Fretting Fatigue Propagation Life of Aluminum Alloy YL12CZ**
M. S. Yang , Y. L. Chen
Naval Aeronautical Engineering Academy, China

14:50 PM 3A-3 **Contact of two Wavy Anisotropic half Planes under Fretting-type Loading**
Q. C. He , Q. D. To , H.-P. Yin
Universite Paris-Est, France

15:10 PM 3A-4 **Finite Element Analysis of Shot-peening Effect on Fretting Fatigue Parameters**
S. M. H-Gangaraj [1], G. H. Farrahi [1] , Y. Alvandi[2], H. Ghadbeigi[3]
[1]Sharif University of Technology, Iran,
[2]University of Tabriz, Iran, [3]University of Sheffield, UK

15:30 PM 3A-5 **Effect of Three-dimensional Loading on Macroscopic Fretting Aspects over the Blade-disc Dovetail Interface of an Aero-engine**
K. Anandavel [1,2] , Raghu V. Prakash [1,2]
[1]Indian Institute of Technology Madras, India,
[2]Infotech Enterprises Limited, India.

15:50 AM **Refreshment Break**

Session 4A: Fretting Fatigue

Chair: **T. Liskiewicz**, University of Leeds, UK

16:10 PM 4A-1 **Influence of Residual Stresses Induced by Machining on the Crack Nucleation Threshold of a Ti-10V-2Fe-3Al Titanium Alloy Solicited in Fretting and Fretting Fatigue**
S. Heredia[1,2], S. Fouvry[1], B. Berthel[1], J. Panter [2]
[1]Ecole Centrale de Lyon, France,
[2]EUROCOPTER, Aéroport Marseille/Provence, France

16:30 PM 4A-2 **Modelling and Evaluation of the Fretting Fatigue Cracking Risk in Smooth Spherical Contact**
A. Lehtovaara [1], R. Rabb [2], A. Pasanen[1]
[1]Tampere University of Technology, Finland,
[2] Research & Development, Wärtsilä Finland

16:50 PM	4A-3	**Multiaxial Fretting Fatigue Characteristic and Micromechanism of Al-Mg-Si alloy** X. S. Jiang [1], G. Q. He[1] , B. Liu [1], Z.B.Cai [2],M. H. Zhu [2] [1]Tongji University; Shanghai, China, [2]Southwest Jiaotong University, China
17:10 PM	4A-4	**An Experimental Study on Bending Fretting Fatigue Characteristics of 316L Austenitic Stainless Steel** J. F. Peng, C. Song, M. X. Shen, J. F. Zheng, Z. R. Zhou, M. H. Zhu Southwest Jiaotong University, China
17:30 PM	4A-5	**Analysis of Shot and Laser Peening and its Effect on Fretting Fatigue Life** J. Vázquez, C. Navarro, J. Domínguez University of Seville, Spain
18:30 PM		**Banquet**(*Old Shunxin Teahouse*)**and entertainment**(Watch sichuan opera)

Session 3B: Fretting in Environments

Chair: **S. Fouvry**, Ecole Centrale de Lyon, France

14:10 PM	3B-1	**Effect of the Composition and Roughness of Surface Coating on the Dynamic Friction and Energy Dissipation Capacity of Ti Alloys in Steam Environment at 100℃** H. Attia[1], S. Rajagopalan[2], T. Wang and , S. R. Shinde[2] [1] National Research Council, Canada (NRC), [2] Siemens Power Generation, USA,
14:30 PM	3B-2	**Fretting Wear Tests of Steels in Hydrogen Gas Environment** N. Izumi[1], T. Morita[1], N. Mimuro[2], and J. Sugimura[1.2] [1]Kyushu University, Japan, [2]National Institute of Advanced Industrial Science and Technology, Japan
14:50 PM	3B-3	**Fretting Fatigue Characteristics of INCONEL 690 in High Temperature** J. D. Kwon [1], I.Chung[1], H. K. Jeung [2], D. K. Park[2], D. H. Yoon[3] [1]Yeungnam University, Kyongsan, South Korea, [2]Korea Textile Machinary Institute, South Korea, [3]Korea Aerospace Research Institute, South Korea
15:10 PM	3B-4	**Fretting Fatigue Behavior of Al7075-T6 at Sub-zero Temperature** G. H. Majzoobi [1], R. Hojjati [2], M. Sori [2] [1]Bu-Ali Sina University, Iran, [2]TIAU University, Iran
15:30 PM	3B-5	**The Effect of Temperature on Fretting Fatigue Behavior of Al7075-T6** G. H. Majzoobi [1], M. Soori[1], G. H. Farrahi [2] [1]Islamic Azad University, Iran, [2]Sharif University of Technology, Iran

15:50 AM **Refreshment Break**

Session 4B: Fretting Wear

Chair: **N. Diomidis**, Swiss Federal Institute of Technology of Lausanne (EPFL), Switzerland

16:10 PM 4B-1 **Effect of Start-up Schemes and Amplitude of Tangential Motion on Friction Behavior in Fretting Point Contact**
J. Hintikka [1], A. Lehtovaara [1,] C. Lönnqvist[2]
[1]Tampere University of Technology, Finland,
[2]Wärtsilä Finland Oy, Finland

16:30 PM 4B-2 **Evaluating and Predicting Durability of Bonded Solid Lubricant Coatings under Fretting Conditions**
D. B. Luo [1,2], V. Fridrici [2], Ph. Kapsa[2]
[1]Southwest Jiaotong University, P. R. China,
[2]École Centrale de Lyon, France

16:50 PM 4B-3 **Fretting Wear Characteristics of Steel Wire under Friction-increasing Grease Condition**
Y. Shen , D. K. Zhang, J. J. Duan, D. G. Wang
China University of Mining and Technology, China

17;10 PM 4B-4 **Torsional Fretting Wear Behaviors of UHMWPE against Ti6Al4V Alloy and Alumina Femoral Head Ball**
Z.B. Cai, M.H. Zhu, J. Yu, S. X. Qu, Z. R. Zhou
Southwest Jiaotong University, China

17:30 PM 4B-5 **Fretting Wear Characteristics of Cold Gas-Dynamic Sprayed Aluminum Alloys**
H. Attia [1,2], M. Meshreki[1], V.Thomson[2], V.Chung[3]
[1]National Research Council Canada, Canada,
[2]McGill University, Canada, [3]Honeywell Aerospace, USA

18:30 PM **Banquet** (*Old Shunxin Teahouse*) **and entertainment** (Watch sichuan opera)

Wednesday April 21, 2010

Session 5 - Plenary

Chair: **David W. Hoeppner**, University of Utah,USA

09:45 AM 5-1 **An extended Fretting Fatigue Mapping strategy to quantify how gross slip wear can reduce the cracking risk (Keynote)**
S. Fouvry, R. Ferre, J. Meriaux

Ecole Centrale de Lyon, France

09:00 AM 5-2 **Thermal Constriction Phenomenon in Fretting: Theory and Implications (Keynote)**
Helmi Attia [1,2]
[1]National Research Council Canada (NRC), [2]McGill University, Canada

08:55 AM 5-3 **Fretting Wear Mechanisms under Varied Motion Modes (Keynote)**
M. H. Zhu, Z. R. Zhou
Southwest Jiaotong University, China

09:25 AM 5-4 **Tangential Stress Range-Compressive Stress Range Diagram for Fretting Fatigue Design Curve (Keynote)**
Y. Mutoh, M. Jayaprakash
Nagaoka University of Technology, Japan

09:50 AM 5-5 **Nanofretting on Si(100) Surface (Keynote)**
L. M. Qian, J. X. Yu, Z. R. Zhou
Southwest Jiaotong University, China

10:15 AM **Refreshment Break**

Session 6A: Fretting Fatigue

Chair: **Q. C. He**, Universite Paris-Est, France

10:35 AM 6A-1 **Improvement of the Fretting Damage Resistance of Ti811 Alloy by Cu/Ni Multilayer Films**
X. H. Zhang[2], D. X. Liu[1], G. H. Liu[1], Z. Y. Wang[1], B. Tang[2]
[1] Northwestern Polytechnical University, China,
[2]Taiyuan University of Technology, China

10:55 AM 6A-2 **Fretting Fatigue Behavior in 35CrMoA Steel**
B. Liu[1], G. Q. He[1], X. S. Jiang[1], M. H. Zhu[2]
[1]Tongji University, China, [2]Southwest Jiaotong University, China

11:15 AM 6A-3 **Experiment on Fretting Fatigue of a Shrink-fit Shaft Subjected to Rotating Bending**
G.X.Yang, J.L.Xie
Beijing Jiaotong University, China

11:35 AM 6A-4 **Influence of the Normal Load on Fretting Fatigue Behaviors of Wires**
D. G. Wang , D. K. Zhang *
China University of Mining & Technology, China

11:55 AM 6A-5 **The Effect of low Temperature Nitriding on the Fretting Fatigue Behavior of AISI420 Stainless Steel**
J. G. Tang , D. X. Liu*, Y. T. Xi, X. H. Zhang

Northwestern Polytechnical University, China

12:15 PM **Lunch Break**

Session 6B: Fretting wear

Chair: **Lehtovaara**, Tampere University of Technology, Finland

10:35 AM 6B-1 **The Contribution of the Micropores in Bone Cement Surface to Generation of Fretting Wear on Polished Femoral Stems**
H. Y. Zhang [1, 2], L. Brown [1], L. Blunt 1, X. Q. Jiang [1]
[1]University of Huddersfield, UK, [2]Tsinghua University, Beijing, China

10:55 AM 6B-2 **Wear Characteristics of ACSR under the Aeolian Vibration in Different Vibration Times**
X. Z. Zhao [1], W. Gao [1], H. J. Lao [2]
[1]China Three Gorges University, China, [2] Guiyang Hydropower Investigation & Research Institute, China

11:15 AM 6B-3 **Surface Modification of Metallic Materials Induced by Fretting-nanoindentation Mapping Analysis**
T. W. Liskiewicz, K. J. Kubiak, E. A. Ferreira
University of Leeds, UK

11:35 AM 6B-4 **Study on the Tribological Behavior of Microarc Oxidation Ceramic Coating Formed on Ti6Al4V Alloy**
Q. L. Wang, X. L. Shi, S. R. Ge
China University of Mining & Technology, China

12:15 PM **Lunch Break**

Session 7: Fretting Wear

Chair: **Yoshiharu Mutoh**, Nagaoka University of Technology, Japan

14:10 PM 7-1 **Fretting Damage in Thin Sheets: Analysis of an Experimental Configuration**
M. R. Hirsch , R. W. Neu
Georgia Institute of Technology, USA

14:30 PM 7-2 **Critical Parameters on the Replication of the Fretting Mechanism of Steel Cables**
N. Diomidis, S. Mischler
Swiss Federal Institute of Technology of Lausanne (EPFL), Switzerland

14:50 PM 7-3 **Surface Morphology in Engineering Applications: Influence of Roughness on Sliding and Wear in Dry Fretting**
K.J. Kubiak [1], T.W. Liskiewicz [1], T.G. Mathia [2], Ph. Carval [3]

[1] University of Leeds, United Kingdom, [2] Ecole Centrale de Lyon, France, [3] ALTIMET SAS 1, France

15:10 PM	7-4	**Prediction of Fretting Wear Using Boundary Element Method** S. M. Moon [1], T. W. Kim [2], S. D. Lee [1], Y. J. Cho [1*] [1]Pusan National University, Korea [2]Pukyong National University, Korea,
15:30	7-5	**Identification of Wear Mechanism in Rotation Fretting of PMMA /steel Contact by Means of Tribo-noise and Vibration Signals** J. Yang, M. H. Zhu, J. L. Mo, G. X. Chen, X. B. Xiao, Z. R. Zhou Southwest Jiaotong University, China
15:50 PM		**Closing Remarks**
16:10 PM		**End of Conference**

Post-Conference Tourist

Chengdu is the capital of Sichuan Province and is awarded "The Best Tourist City of China " by World Tourism Organization and National Tourism Administration in 2006,Chengdu was one of the first centers of printing in China and has been famous for its luxurious satins, brocades, and lacquer ware since the 13th century. Chengdu is also home to the Chengdu **Giant Panda Research Base (Chengdu Panda Breeding Area , http://www.panda.org.cn/)**, one of the most important centers in the world for the captive conservation of the Giant Panda. The Research Centre has evolved into China Panda City. Panda City encompasses a museum, as well as the Chengdu Zoo.

Sichuan Province, located in southwest China (area 470 000 km^2), is bordered by the Tibetan Plateau in the west and by the Three Gorges and the Yangtze River in the east. Sichuan is known as the "Land of Abundance " and has four places on the World Cultural and Natural Heritage List:

Tour No.1 (optional): three-day tour to Jiuzhai Gou and Huanglong National Park.

Cost: US$550 (covering return air-tickets, land transportation, entrance tickets, 4/5 star hotel, eating, insurance, English tour guide).

Tour No.2 (optional): Four-day tour to Jiuzhai Gou and Huanglong National Park.

Cost: US$180 (covering return bus-tickets, land transportation, entrance tickets, 2/3 star hotel, eating, insurance, English tour guide).

Tour No.3 (optional): two-day tour to Leshan Giant Buddha and Mountain Emei.

Cost: US$100 (covering land transportation, entrance tickets, 4-star hotel, eating, insurance, English tour guide).

Note 1: Due to the uncertainty on the seasonal discounts related to hotel, air-tickets and other tour issues, the fees indicated in Tour 1-3 are estimated average cost.

Contact information:

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