

Preliminary Program

Frontiers in Boundary Lubricating Films

**April 9-14, 2006
Valpre Conference Center
Lyon, France**

Conference Chair

Stephen Hsu
NIST, USA

Conference Co-Chairs

Hugh Spikes
Imperial College, London, UK

Keiji Nakayama
AIST, Japan

Jean Michel Martin
Ecole Centrale de Lyon, France

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Northwestern University, USA.

ECI

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Local Organization

The local organization of the conference is coordinated by LTDS (Laboratoire de Tribologie et Dynamique des Systemes), a CNRS laboratory at Ecole Centrale de Lyon, located at Ecully.

Jean Michel Martin

Sandrine Bec

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Dr. **George Fenske**, Argonne National Laboratory, USA

Sunday, April 9, 2006

16:00 – 18:00

Registration

16:00 – 19:30

Opening Reception

19:30 - 21:00

Buffet Dinner

Monday, April 10, 2006

Tribochemistry

07:00 – 08:00	Breakfast
08:00 – 09:00	Tribomechanical, Chemistry and Boundary Lubrication Dr. S. M. Hsu (NIST, USA)
09:00 – 10:00	Chemical Reactions with Metal Surfaces Prof. Mori (Iwate University, Japan)
10:00 – 10:30	Coffee Break
10:30 – 11:30	Microplasma, Triboemission, and Tribochemistry Dr. Nakayama (AIST, Japan)
11:30 – 12:30	Fracto-emission & Tribochemistry Prof. Tom Dickenson (Washington State University, USA)
12:30 – 14:00	Lunch
17:00 – 18:00	Poster Session
18:00 – 19:30	Dinner
19:30 – 20:30	Extreme Pressure Additive Chemistry Prof. Wilfred Tysoe (University of Wisconsin, USA)
20:30 – 21:30	Adsorption of ZDDPs onto Solid Surfaces from Hydrocarbon Solutions Prof. S Plaza (University of Lodz, Poland)

Tuesday, April 11, 2006

Molecular dynamic simulations

07:00 – 08:00	Breakfast
08:00 – 09:00	Structure and Tribology of DLC From First Principles Theory and Simulation Prof. Bill Goddard (California Institute of Technology, USA)
09:00 – 10:00	Integrated Computational Chemistry Approach to Tribology and Tribochemistry Prof. Akira Miyamoto, (Tohoku University, Japan)
10:00 – 10:30	Coffee Break
10:30 – 11:30	Examination of the Tribology of DLC and SAMs Using Molecular Dynamics Prof. Judith Harrison (US Naval Academy)
11:30 – 12:30	Molecular Mechanisms of Anti-wear Film Formation and Function Prof. Martin H Müser (University of Western Ontario, Canada)
12:30 – 14:00	Lunch
14:00 – 17:00	Optional Tour I
17:00 – 18:00	Poster Session
18:00 – 19:30	Dinner
19:30 – 20:30	Nanomechanical Properties of BL Films Dr Sandrine Bec (Ecole Centrale de Lyon, France)
20:30 – 21:30	Nanomechanical Properties of Thin Films Prof. D. Mazuyer (Ecole centrale de Lyon, France)

Wednesday, April 12, 2006

Surface Chemistry & Nanomechanical Properties

07:00 – 08:00	Breakfast
8:00 – 9:00	ZDDP and ZP Film Chemical Analysis Prof. Jean Martin (Ecole central de Lyons, France)
9:00 – 10:00	Chemical Imaging of Lubricating Films Prof. Nic Spencer (ETH, Zurich, Switzerland)
10:00 – 10:30	Coffee break
10:30 – 11:30	Scuffing Performance of Laser Modified Surfaces Under Lubricated Contacts Dr. Layo Ajayi (Argonne National Laboratory, USA)
11:30 – 12:30	Pressure-induced Cross-linking in ZDDP Antiwear Action: Progress Towards Experimental Verification Prof. Peter Norton (University of Western Ontario, Canada)
12:30 – 14:00	Lunch
14:00 – 17:00	Optional Lab Tour
17:00 – 18:00	Poster Session
18:00 – 21:30	Banquet

Thursday, April 13, 2006

Alternative Antiwear chemistries: ZDDP replacement

07:00 – 08:00	Breakfast
08:00 – 09:00	The New Frontier for Lubricating Oil Additives: Boron Chemistry Dr. Elaine Yamaguchi (Chevron)
09:00 – 10:00	Promise and Pitfalls of Boron and Its Derivatives as Alternative Boundary Lubrication Additives for Fuels and Lubricants Dr. Ali Erdemir (Argonne National Laboratory)
10:00 – 10:30	Coffee Break
10:30 – 11:30	Zinc Dialkylphosphate as a New Replacement Chemistry of Zinc Dialkyldithiophosphate Dr. Jinichi Igarashi (Nippon Oil, Japan)
11:30 – 12:30	Reserved for Short Talks
12:30 – 14:00	Lunch
14:00 – 17:00	Free time
17:00 – 18:00	Posters
18 :00 – 19:30	Dinner
19:30 – 20:30	Colloidal Additives a Promising Approach for Protection of Non-reactive Surfaces and ZDDP Replacement Prof. Jean Louis Mansot (Université des Antilles et de la Guyane, France)
20:30 – 21:30	Ecofriendly CHO and/or CHNO antiwear additives and their effect on the base oil viscosity Prof. Czeslaw Kajdas (Central Petroleum Laboratory, Warsaw, Poland)

Friday, April 14, 2006

BL modeling and prediction

07:00 – 08:00	Breakfast
08:00 – 09:00	Influence of Organic Friction Modifiers on Hydrodynamic Friction Prof. Hugh Spikes (Imperial College, UK)
09:00 – 10:00	Running-in phenomena and the Role of Antiwear Additives Diann Hua (Caterpillar, USA)
10:00 – 10:30	Coffee Break
10:30 – 11:30	MD-EHL Characterization of Thin Film Lubrication Prof. Jane Wang (Northwestern University, USA)
11:30 – 12:30	Numerical Simulation of Sliding Wear in Mixed EHL Contacts Don Zhu (Eaton Corporation, USA)
12:30 – 14:00	Lunch
14:00 – 17:00	Optional Tour II

POSTER LIST (as of 1-22-06)

1. Effect of Surface Texturing and Lubricant Chemistry on Friction Reduction Under Fluid Lubricated Condition
Zahedul Huq, Eaton Corporation, USA
2. Antiwear Study on Very Low/Phosphorus-Free Additives Using HFRR
Hong Gao, ConocoPhillips, USA
3. Low Energy Tribochemistry From Emissions
Czeslaw Kajdas, Central Petroleum Laboratory, Poland
4. Wear Protection by Formation of Reaction Layers – An Analytical and Nanomechanical Study
Manuela Reichelt, RWTH Aachen University, Germany
5. Reactivity of Diamond-Like Carbon Coatings with Oils and Additives
Mitjan Kalin, University of Ljubljana, Slovenia
6. A Micro to Nano-Scale Simulation of Liquid Lubricated Textured Surfaces
Robert Jackson, Auburn University, USA
7. Intrinsic Properties of a ZDDP Tribofilm at Different Temperatures
Clotilde Minfray, Ecole Centrale Lyon, FRANCE
8. Numerical Simulation of Sliding Wear in Mixed EHL Contacts
Dong Zhu, Eaton Corporation, USA
9. Tight-Binding Quantum Chemical Molecular Dynamics Simulations on Tribochemical Reaction Dynamics Under Friction Condition
Momoji Kubo, Japan Science and Technology Agency, Japan

10. Apparent Non-Hertzian Wear in the Four-Ball Test Under Certain Conditions
Joachim Domeier, Ann Arbor Testing & Development Inc, USA
11. Promise and Pitfalls of Boron and its Derivatives as Alternative Boundary Lubrication Additives For Fuels and Lubricants
Ali Erdemir, Argonne National Laboratory, USA
12. Improved Mixed and Boundary Lubrication with an Ester-Diamond Technology
Maria Isabel De Barros Bouchet, Ecole Centrale de Lyon, France
13. Comparison of the Tribochemistry of Metal-Containing and Metal-Free Lubricant Additives
Roman Heuberger, ETH Zürich, Switzerland
14. Scuffing Performance of Laser Modified Surfaces Under Lubricated Contacts
Dr. Saud Aldajah, United Arab Emirates University, UAE
15. Effect of Rectangular Pore on Face Seal Performance
Dr. Tanvir Rahman Faisal, BUET, Bangladesh
16. Zinc Phosphate Behavior Under High Hydrostatic Pressure By Raman Spectroscopy
M. Gauvin, Ecole Centrale de Lyon, France
17. Inorganic Fullerene-Like Nonoparticles as Novel Lubricant Additives
Fabrice Dassenoy, Ecole Centrale de Lyon, France
18. Computational Chemistry Study on the Tribochemical Reaction of ZDDP Lubricant Additives
Tasuku Onodera, Tohoku University, Japan
19. Performance of Friction Modifiers on Additive-Generated Surfaces
Ksenija Topolovec Miklozic, Imperial College London, United Kingdom
20. Microplasma, Triboemission and Tribochemistry
Keiji Nakayama, AIST, Japan
21. Experimental Simulation of the Organosulfurs Tribochemical Reactions
Johny Tannous, Ecole Centrale de Lyon, France
22. Experimental Simulation of Borate Ester Tribochemical Reactions
David Philippon, Ecole Centrale de Lyon, France
23. Nanotribological and Nanomechanical Properties of Anti Wear Films
L. Romana, Universite des Antilles et de la Guyane, France
24. Base Oils for Extreme Pressure Lubricants Obtained From Vegetable Oils and Synthetic Esters
Cosmina Puscas, West University of Timisoara, Romania