

# TENTH INTERNATIONAL SYMPOSIUM ON SPECIAL TOPICS IN CHEMICAL PROPULSION (10-ISICP)

## TECHNICAL PROGRAM

### “Advancements in Energetic Materials & Chemical Propulsion”

**June 2-6, 2014**

**ENSMA**

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Monday June 2, 2014		
15:00 18:00	On-Site Registration & Check-In	ENSMA
18:00 21:00	Welcome Reception	ENSMA

**Tuesday morning, June 3, 2014**

8:00 8:30	<b>ENSMA Amphitheater</b> <b>SYMPOSIUM OPENING – Profs. Kenneth K. Kuo, Charles Kappenstein, Marc Bellenoue, Yann Batonneau</b>		
8:30 9:15	<b>10-ISICP Invited Plenary Lecture</b> <b>ENSMA Amphitheater</b> <b>Prof. Jimmie Oxley University of Rhode Island, USA</b> <b>“Explosive Detection: How We Got Here and Where are We Going?” (Paper #093)</b>		<i>Session Chair: Prof. Ken Kuo</i>
	<b>Room B 140</b>	<b>Room A 102</b>	<b>Room A 101</b>
	<b>Hazard Reduction and Safety Aspects</b> <u>5</u> <i>Co-Chairs: Prof. J. Oxley &amp; Dr. B. Baschung</i>	<b>Ignition and Initiation Processes</b> <u>11</u> <i>Co-Chairs: Profs. V. Weiser &amp; Yu Cong</i>	<b>Synthesis &amp; Characterization of Energetic Materials</b> <u>2</u> <i>Co-Chairs: Prof. V. Sinditskii &amp; Prof. Ruiqi Shen</i>
9:15 9:35	<b>Desensitization of Energetic Materials by Gel Entrapment (Paper #055)</b> <i>L. Gottlieb, A. Weitz, A. Tsoglin, &amp; G. Korogodski</i>	<b>Pyrotechnic Ignition based on Thermite Mixtures and their interaction with different types of propellants (Paper #051)</b> <i>V. Weiser, E. Roth, &amp; St. Kelzenberg</i>	<b>Active Boron Dispersion and Ignition in Gel Droplets (Paper #039)</b> <i>Y. Solomon, D. Grinstein &amp; B. Natan</i>
9:35 9:55	<b>The Auto-Ignition of an Ammonium Perchlorate Based Composite Propellant (Paper#045)</b> <i>T.D. Hedman, M.L. Gross, J.J. Davis, N.D. Davis, K.P. Ford, A.I. Atwood</i>	<b>Ignition of Solid Fuels under CO<sub>2</sub> Laser Irradiation (Paper #041)</b> <i>Z. Qin, L.B. He, C. Paravan, G. Colombo, R.Q. Shen, &amp; L.T. DeLuca</i>	<b>Enhanced Reactivity of Aluminum Powders by Capping with a Modified Glycidyl Azide Polymer (Paper #052)</b> <i>R. J. Pontes Lima, C. Dubois, R. Stowe, S. Ringuette</i>
9:55 10:15	<b>Numerical study simulation of ignition and combustion of two insensitive powders used as propellants in internal ballistic (Paper #005)</b> <i>C. Boulnois, P. Gillard, &amp; C. Strozzi</i>	<b>Autoignition and Combustion Characteristics of Heptane Droplets with the Addition of Aluminum Nanoparticles at Elevated Temperatures (Paper #101)</b> <i>I. Javed, S.W. Baek, &amp; K. Waheed</i>	<b>One-pot catalytic liquid-phase transformation of DCPD to high energy density fuel exo-THTCPD (Paper #099)</b> <i>W. Wang, Y. Cong, S. Chen, C. Sun, X. Wang, T. Zhang</i>
10:15 10:35	<b>Singular Thermochemical Oscillations in Detection of Liquid Explosives &amp; Control of Thermal Runaway (Paper #033)</b> <i>R. Ball</i>	<b>Self-ignition of hydrogen release into ambient air (Paper #059)</b> <i>O. Bozier, F. Virot, R. Sorin, R. Zitoun, &amp; D. Desbordes</i>	<b>A New Synthesis of 5-Picrylamino-1,2,3,4-tetrazole (PAT) and Unexpected N-N Bond Cleavage of 1,5-Diaminotetrazole (DAT) (Paper #030)</b> <i>H. Yang, Y. Tang, X. Ju, C. Lu, G. Cheng</i>
10:35	<b>COFFEE BREAK (Posters + Exhibitors) until 10:55</b>		
10:55 11:40	<b>10-ISICP Invited Plenary Lecture</b> <b>ENSMA Amphitheater</b> <b>Prof. Sébastien Candel Ecole Centrale Paris, France</b> <b>“Structure and Dynamics Of Cryogenic Flames Under Transcritical Conditions” (Paper #112)</b>		<i>Session Chair: Prof. Marc Bellenoue</i>
	<b>Room B 140</b>	<b>Room A 102</b>	<b>Room A 101</b>
	<b>Test Methods &amp; Diagnostic Techniques in Chemical Propulsion &amp; Energetic Materials</b> <u>10</u> <i>Co-Chairs: Prof. S. Candel &amp; Dr. R. Stowe</i>	<b>Innovative Rocket Propulsion Techniques</b> <u>14</u> <i>Co-Chairs: Profs. B. Natan &amp; T. Pourpoint</i>	<b>Theoretical Modeling &amp; Numerical Simulation for Chemical Propulsion Topics</b> <u>6</u> <i>Co-Chairs: Profs. R.A. Yetter &amp; P. Gillard</i>
11:40 12:00	<b>Experimental Investigations of Drop Size Distributions with Impinging Liquid Jets Using Phase Doppler Anemometer (Paper#012)</b> <i>C. Indiana, M. Bellenoue, &amp; B. Boust</i>	<b>Paraffin-based Solid Fuels Filled with Lithium Aluminum Hydride (Paper #105)</b> <i>M. Boiocchi, A. Petrova, L. Galfetti, &amp; L. Di Landro</i>	<b>A robust multi-time scale method for stiff combustion chemistry (Paper #091)</b> <i>H. Terashima, Y. Morii, M. Koshi</i>
12:00 12:20	<b>Hydrazine decomposition phenomena observed by Neutron radiography at a catalyst bed (Paper #024)</b> <i>H. Kagawa, T. Nagata, T. Masuoka, H. Ikeda, D. Itoh, Y. Saito &amp; Y. Kawabata</i>	<b>Observation of combustion behavior of low melting temperature fuel for hybrid rocket using double slab motor (Paper #027)</b> <i>Y. Wada, K. Seki, N. Kato, &amp; K. Hori</i>	<b>Kinetic Modeling of Hypergolic Ignition of N<sub>2</sub>H<sub>4</sub>-NTO Mixtures at Low Temperatures and the Sawyer-Glassman Experiment on Reactions of N<sub>2</sub>H<sub>4</sub> with NO<sub>x</sub>(x=1,2) at High Temperatures (Paper #089)</b> <i>Biren Gu, P. Raghunath, Gary C. H. Cheng, Y. S. Chen, J. S. Wu, and M. C. Lin</i>
12:20	<b>Hotwire based experimental setup for</b>	<b>Performance of Aluminum-Based Additives in Paraffin</b>	

12:40	<b>characterization of metal powder ignition temperature</b> (Paper#062) <i>S. Dossi, F. Maggi, G. Colombo, &amp; L.T. De Luca</i>	<b>Fueled Hybrid Rocket Motors</b> (Paper #021) <i>C.R. Zaseck, S.C. Shark, S.F. Son, &amp; T.L. Pourpoint</i>	
12:40	<b>LUNCH (until 14:00)</b>		

**Tuesday Afternoon, June 3, 2014**

	<b>Room B 140</b>	<b>Room A 102</b>	<b>Room A 101</b>
	<b>Nano-Technology &amp; Innovative Methods in Energetic Material Development</b> <b>1</b> <i>Co-Chairs: Profs. J.A. Puszynski &amp; R. Zitoun</i>	<b>Performance Evaluation of Energetic Materials</b> <b>7</b> <i>Co-Chairs: Dr. B. Tappan &amp; Prof. V.E. Zarko</i>	<b>Theoretical Modeling &amp; Numerical Simulation for Chemical Propulsion Topics</b> <b>6</b> <i>Co-Chairs: Profs. N. Gascoin &amp; B. Natan</i>
14:00 14:20	<b>Low-power laser ignition of aluminum/metal oxide nanothermites</b> (Paper #032) <i>C.F. Petre, S. Ringuette, D. Chamberland, T. Ringuette, S. Paradis &amp; R. Stowe</i>	<b>Magnesium-Boron solid rocket propellant combustion residuals analysis</b> (Paper #061) <i>M.Fassina, L.T. DeLuca</i>	<b>The Effect of Flight and Motor Operating Conditions on IR Signature Predictions of Rocket Exhaust Plumes</b> (Paper #040) <i>R. Stowe, S. Ringuette, P. Fournier, T. Smithson, D. Alexander, and R. Link</i>
14:20 14:40	<b>WO<sub>3</sub>/Al/ADA Nanothermite Composition as Igniter Material for Low Vulnerability Gun Propellant</b> (Paper #069) <i>B. Baschung, C. Boulnois, M. Comet &amp; A. Bouchama</i>	<b>Combustion and Performance Studies of GAP and its Mixtures as Hybrid Rocket Fuel</b> (Paper #054) <i>P. Chang, A. Garg, S. Tomiyoshi, H. Nakayama, M. Kimura, &amp; K. Hori</i>	<b>Towards a Predictive Propellant Burning Rate Model Based on High-Fidelity Numerical Calculations</b> (Paper #044) <i>M.L. Gross &amp; T.D. Hedman</i>
14:40 15:00	<b>The Catalytic Influence of Nano-sized Titanium Dioxide on the Thermal Decomposition and Combustion of HMX</b> (Paper #090) <i>N. Muravyev, A. Pivkina, K. Monogarov, &amp; J. Schoonman</i>		<b>A Study on the Effect of Orientation of Oxidizer Particles on Burning Rate of Composite Propellants</b> (Paper #065) <i>H. Hasegawa, M. Fukunaga, K. Kitagawa &amp; T. Shimada</i>
15:00 15:45	<b>10-ISICP Invited Plenary Lecture</b> <b>ENSMA Amphitheater</b> <b>Dr. Bryce Tappan, Los Alamos National Lab, USA</b> <b>“Reactions of Powdered Al in Combustion and Explosions With Carbon Dioxide or Water”</b> (Paper #042)		<i>Session Chair: Prof. Ken Kuo</i>
15:45 16:05	<b>ENSMA Amphitheater</b> <b>Poster Snapshot Introduction Session 1</b> <i>Session Co-Chairs: Dr. Julien Sotton &amp; Prof. Sébastien Candel</i> Each Poster Presenter will have 2 minutes to make a brief presentation to highlight his/her paper. There will be no time allowed for questions. Questions can be asked to the Poster Presenters during the Poster Session. The poster snapshot presentations will be made in the same chronological order as indicated in the list of Poster Session 1.		
<b>16:05</b>	<b>COFFEE BREAK (Posters + Exhibitors) until 16:30</b>		
16:30 17:30	<b>Poster Room</b>	<b>Poster Session 1 (All posters available)</b>	<i>Session Co-Chairs: Dr. Julien Sotton &amp; Dr. Helmut Ciezki</i>
18:00 23:00	18:00-18:30 Bus transportation to Poitiers 19:30-22:30 free visit of Poitiers and free dinner	18:30-19:30 Welcome Reception at the Prefecture or City Hall 22:30-23:00 Bus return to hotels	

Wednesday Morning, June 4, 2014			
8:30 9:15	<b>10-ISICP Invited Plenary Lecture</b> <b>ENSMA Amphitheater</b>		<i>Session Chair: Prof. Yann Batonneau</i>
	<b>Dr. Helmut Ciezki, DLR Lampoldshausen, Germany</b> <b>“Advanced Liquid and Gelled Propellants for Rocket and Ramjet Propulsion”</b> (Paper #106)		
	<b>Room B 140</b>	<b>Room A 102</b>	<b>Room A 101</b>
	<b>Insensitive Munitions</b> <u>4</u> <i>Co-Chairs: Dr. N. Iaroshenko &amp; Dr. C. Woodley</i>	<b>Environmentally-Friendly Green Propellants</b> <u>16</u> <i>Co-Chairs: Dr. H. Ciezki &amp; Dr. R. Stowe</i>	<b>Theoretical Modeling &amp; Numerical Simulation for Chemical Propulsion Topics</b> <u>6</u> <i>Co-Chairs: Dr. Y. Daimon &amp; Prof. A. Gany</i>
9:15 9:35	<b>Burning Rates of Polymer-Bonded Explosives</b> (Paper # 001) <i>C. Woodley, P Henning, &amp; K Cox</i>	<b>ADN/GAP Composite Propellants with and without metallic fuels</b> (Paper #075) <i>V. Gettwert, V. Weiser, T. Heintz, A. Franzin, L.T. Deluca</i>	<b>Modeling of Heterogeneous Structure and Heat Transfer in Solid Rocket Propellants</b> (Paper #068) <i>D. Davidenko &amp; Y. Fabignon</i>
9:35 9:55	<b>AIMS: Advanced Inertive Munitions Search</b> (Paper #002) <i>E. Schultz &amp; P-F Peron</i>	<b>Large scale production of ammonium dinitramide</b> (Paper #116) <i>J. Zevenbergen, Helen Stenmark, Henrik Skifs, &amp; Martin Skarstind</i>	<b>Boron Agglomeration in Combustion of Boron-Rich Solid Propellants</b> (Paper #071) <i>S.A. Rashkovskiy</i>
9:55 10:15	<b>Chemical, Dynamic Mechanical and Bullet Impact Testing of Artificially Aged PBX</b> (Paper #009) <i>M. Brassard, S. Villeneuve, P. Brousseau</i>	<b>A study on combustion mechanism of hydroxyl ammonium nitrate</b> (Paper #121) <i>T. Katsumi, R. Amrousse, Y. Niboshi, K. Hori, M. Koshi</i>	<b>Simulation of Aluminum Flame Structure Relating to Heterogeneous Surface Reactions</b> (Paper #084) <i>J.A.Webb &amp; E.B.Washburn</i>
10:15 10:35	<b>Trinitroethyl – A Functionality Leading to Energetic Compounds with High Nitro Content</b> (Paper #022) <i>H. Gao &amp; J.M. Shreeve</i>	<b>Experimental investigation of decomposition of liquid monopropellant on high-active high-porous catalyst by using high-speed filming</b> (Paper #125) <i>N.T. Iaroshenko &amp; N.A. Podlevskikh</i>	<b>Molecular modeling and experimental assessment of the sensitivity of polymer-bounded composites</b> (Paper #115) <i>D. Brochu, H. Abou-Rachid, J. Neidert, P. Brousseau, J. Brisson, &amp; C.F. Petre</i>
10:35	<b>COFFEE BREAK (Posters + Exhibitors) until 10:55</b>		
10:55 11:40	<b>10-ISICP Invited Plenary Lecture</b> <b>ENSMA Amphitheater</b>		<i>Session Chair: Prof. Ken Kuo</i>
	<b>Dr. Josette Bellan, Jet Propulsion Laboratory, NASA, USA</b> <b>“Modeling and Numerical Simulations of Multi-Species High-Pressure Flows”</b> (Paper #004)		
	<b>Room B 140</b>	<b>Room A 102</b>	<b>Room A 101</b>
	<b>Performance Evaluation of Energetic Materials</b> <u>7</u> <i>Co-Chairs: Prof. R.A. Yetter &amp; Dr. R. Brahmi</i>	<b>Detonation and/or Deflagration Processes</b> <u>12</u> <i>Co-Chairs: Prof. C. Fernandez-Pello &amp; S. Kwon</i>	<b>Theoretical Modeling &amp; Numerical Simulation Chemical Propulsion Topics</b> <u>6</u> <i>Co-Chairs: Dr. J. Bellan &amp; Dr. D. Davidenko</i>
11:40 12:00	<b>Effects of CL-20 on the properties of glycidyl azide polymer (GAP) solid rocket propellant</b> (Paper #122) <i>Weiqiang Pang</i>	<b>On the Sensitivity to Chemical Kinetics of Two Characteristic Lengths of Detonation Dynamics in Homogeneous Gases</b> (Paper #096) <i>P. Vidal, R. Zitoun, J. Luche and S. Boulal</i>	<b>Boron Oxide Condensation in a HC-Boron Gel Fuel Ramjet</b> (Paper #037) <i>S. Balas and B. Natan</i>
12:00 12:20	<b>Burning rate behavior of advanced Elastomer modified composite double base (EMCDB) propellants</b> (Paper #34) <i>H. Singh &amp; SM Pande</i>	<b>Ignition of Non-toxic Hypergolic Liquid Fuel and Hydrogen Peroxide as an Oxidizer</b> (Paper #119) <i>H.J. Kang, S.M. Lee, J.M. Huh and S.J. Kwon</i>	<b>Theoretical and Numerical Modeling of Aluminum Particle Combustion</b> (Paper #019) <i>D.H. Han, J.S. Shin, H.G. Sung</i>

12:20 12:40	<b>Withdrawn</b> Effect of Oxygen Balance on the Formation of Gun Propellant Residue (Paper #025) <i>W. Zheng, Q. Li, X. Lin, &amp; R. Pan</i>	Modeling of the Confined Combustion of High Explosives for Projectile Propulsion. Applications to Space Pyrotechnics (Paper #113) <i>J. Nicoloso, E. Fousson, T. De Ressaiguier, &amp; B.A. Khasainov</i>	<b>Withdrawn</b> Influence of flame length on agglomeration phenomenon (Paper # 063) <i>S. Dossi, F. Maggi, &amp; L.T. De Luca</i>
12:40	<b>LUNCH Until 14:00</b>		
<b>Wednesday Afternoon, June 4, 2014</b>			
	<b>Room B 140</b>	<b>Room A 102</b>	<b>Room A 101</b>
	<b>Test Methods &amp; Diagnostic Techniques in Chemical Propulsion &amp; Energetic Materials 10</b> <i>Co-Chairs: Dr. S.A. Rashkovskiy &amp; Prof. P. Gillard</i>	<b>Synthesis &amp; Characterization of Energetic Materials 2</b> <i>Co-Chairs: Prof. A. Gany &amp; Dr.S. Gallier</i>	<b>Environmentally Friendly Green Propellants 16</b> <i>Co-Chairs: Prof. T. Zhang &amp; Dr. J. Zevenbergen</i>
14:00 14:20	<b>Disintegration behavior of Gel Propellant Using Gel Centered Shear Coaxial Injector</b> (Paper #023) <i>S.J Han, K.H Kim, J.K Kim, J.K. Koo &amp; H.J Moon</i>	<b>The Explosive Threat</b> (Paper #092) <i>J. Oxley</i>	<b>Electrolytic Decomposition of Hydroxyammonium Nitrate (HAN) mixtures in Transparent Microthruster</b> (Paper #064) <i>W.-S. Chai, J. Chin, T. F. W. Ku Chik</i>
14:20 14:40	<b>Combustion behaviors and mechanism of AP-based compositions with nitroester binders</b> (Paper #047) <i>V. Sinditskii, A.N. Chernyi, V.V. Serushkin, &amp; S.A. Filatov</i>	<b>An Investigation into Fabrication, Combustion &amp; Application of Porous Silicon Nanoenergetic Materials</b> (Paper #097) <i>S. Wang, R. Shen, Y. Ye, &amp; Y. Hu</i>	<b>Basic Properties of Hydroxyl Ammonium Nitrate (HAN) Based Monopropellant for Thrusters</b> (Paper#085) <i>N. Azuma, K. Hori, Y. Niboshi, T. Katsumi, Y. Nakayama, T. Matsumura, Y. Sugiyama</i>
14:40 15:00	<b>What Can We Learn from Small-scale Tests &amp; Can They be Correlated?</b> (Paper #094) <i>J. C Oxley; J.L. Smith; R. Rettinger; M. Porter</i>	<b>Modification</b> Synthesis and characterization of aluminum hydride AlH <sub>3</sub> for solid and hybrid propulsion (Paper #126) <i>L. Potet, Y. Batonneau, L. Pirault-Roy, C. Kappenstein, E. Labarthe, G. Jacob</i> <b>Withdrawn</b> Theoretical and Experimental Packing Density Study of HTPB-AP Based Propellant and Its Influence on Burning Rate (Paper #056) <i>H. Esiyok, M.E. Candarli</i>	<b>Hydrogen Peroxide Blended with Ethanol as a Non-toxic Monopropellant</b> (Paper #120) <i>S.M. Lee, S.J. Kang &amp; S.J. Kwon</i>
15:00 15:45	<b>10-ISICP Invited Plenary Lecture</b> <b>ENSMA Amphitheater</b> <b>Prof. Tao Zhang, Chinese Academy of Sciences, DICP, Dalian, China</b> "Catalytic Decomposition of Propellants: Nitrous Oxide, Hydrogen Peroxide" (Paper #098) <i>Session Chair: Prof. Charles Kappenstein</i>		
15:45 16:05	<b>ENSMA Amphitheater</b> <b>Poster Snapshot Introduction Session 2</b> <i>Session Co-Chairs: Dr. Fabien Chassagne &amp; Prof. Keiichi Hori</i> Each Poster Presenter will have 2 minutes to make a brief presentation to highlight his/her paper. There will be no time allowed for questions. Questions can be asked to the Poster Presenters during the Poster Session 2. The poster snapshot presentations will be made in the same chronological order as indicated in the list of poster presentations		
16:05	<b>COFFEE BREAK (Posters + Exhibitors) Until 16:30</b>		
16:30 18:00	<b>Poster Room</b> <b>Poster Session 2 (All posters available)</b> <i>Session Co-Chairs: Prof. Yann Batonneau &amp; Prof. Keiichi Hori</i>		
19:00 22:00			



**Session Chairpersons' Dinner (by Invitation)**  
**(Hotel Plaza, Futuroscope area, close to ENSMA)**

**Thursday Morning, June 5, 2014**

8:30 9:15	<b>10-ISICP Invited Plenary Lecture</b> <b>ENSMA Amphitheater</b> <b>Dr. Arif Karabeyoglu, Space Propulsion Group, USA</b> <b>“Challenges in the Development of Large-Scale Hybrid Rockets” (Paper #104)</b>		<i>Session Chair: Prof. Kenneth K. Kuo</i>
	<b>Room B 140</b>	<b>Room A 102</b>	<b>Room A 101</b>
	<b>Performance of Advanced Propulsion Systems 18</b> <i>Co-Chairs: Dr. A. Karabeyoglu &amp; Prof. K. Hori</i>	<b>Test Methods &amp; Diagnostic Techniques in Chemical Propulsion &amp; Energetic Materials 10</b> <i>Co-Chairs: Prof. V. Sinditskii &amp; Prof. N. Gascoin</i>	<b>Performance Evaluation of Energetic Materials 7</b> <i>Co-Chairs: Prof. H. Singh &amp; Dr. T. Katsumi</i>
9:15 9:35	<b>Development of Test Facilities for 5kN-Thrust Hybrid Rocket Engines &amp; a Swirling-Oxidizer-Flow-Type Hybrid Rocket Engine for Technology Demonstration</b> (Paper#066) <i>K. Kitagawa, T. Sakurai, S. Yuasa, S. Hatagaki, H. Ando, N. Shiraishi, T. Yagishita, N. Suzuki, A. Takayama, R. Yui, &amp; T. Shimada</i>	<b>Elevated Initial Temperatures and Propellant Pressure Coupled Response</b> (Paper #083) <i>J. A. Spurling</i>	<b>Effects of Methanol and Nano-Scale Additives on the Linear Burning Rates of Aqueous Hydroxylammonium Nitrate Solutions</b> (Paper #060) <i>K.W. McCown &amp; E.L. Petersen</i>
9:35 9:55	<b>Combustion of Plain and Reinforced Paraffin with Nitrous Oxide (Paper #028)</b> <i>S. Sisi, A. Gany</i>	<b>Effects of Propellant Web Size on the Formation of Combustion Residue (Paper #107)</b> <i>Qinhua Li, Wenfang Zheng, Renming Pan</i>	<b>Characterization of Gelled Hydrocarbon Fuels and Hydrogen Peroxide as a Hypergolic Bi-Propellant</b> (Paper #086) <i>T. L. Connell Jr., G. A. Risha, R. A. Yetter, &amp; B. Natan</i>
9:55 10:15	<b>Performance Characterization of Hybrid Rocket Fuel Grains with Complex Port Geometries Fabricated Using Rapid Prototyping Technology (Paper #079)</b> <i>D. Arnold, E. Boyer, B. McKnight, J. D. DeSain, J. K. Fuller, K. K. Kuo, &amp; T. Curtiss</i>	<b>Registration and Analysis of Object's Acceleration History under Projectile or Energetic Material Impact (Paper #018)</b> <i>M. Yu. Sotskiy, V.A. Veldanov, V. S. Kozlov, Yu. M. Sotskiy, &amp; A. Yu. Dauriskikh</i>	<b>Supported MnOx/SrO-Al<sub>2</sub>O<sub>3</sub> High Cell Density Honeycomb Ceramic Monolith Catalyst for High Concentration Hydrogen Peroxide Decomposition</b> (Paper #100) <i>C. Wu, X. Wang, X. Zhou, T. Yang, &amp; T. Zhang</i>
10:15 10:35	<b>Paraffin-based fuels for hybrid rocket engines application feasibility studies</b> (Paper #108) <i>E. Toson, M. Kobald, L.T. De Luca, &amp; H. Ciezki</i>	<b>Study of initiation of FTDO based mixes by pulses of laser and electron beam radiation (Paper #026)</b> <i>V.Zarko, V.Tsipilev, V.Oleshko, A. Knyazeva, A. Kiskin, A. Razin, R. Akhmetshin, V. Lysyk, &amp; P. Kalmykov</i>	<b>Theoretical Investigation of a High Energetic Dodecanitro-Dodecaaza- Nonacyclo Tetracosane (Paper #114)</b> <i>G.Z. Zhao &amp; M. Lu</i>
10:35	<b>COFFEE BREAK (Posters + Exhibitors) Until 10:55</b>		
10:55 11:40	<b>10-ISICP Invited Plenary Lecture</b> <b>ENSMA Amphitheater</b> <b>Prof. Alexander Gromov, Ohm University, Nurnberg, Germany</b> <b>“Nanometals in energetic systems: achievements and future” (Paper #006)</b>		<i>Session Chair: Prof. Marc Bellenoue</i>
	<b>Room B 140</b>	<b>Room A 102</b>	<b>Room A 101</b>
	<b>Detonation and/or Deflagration Processes 12</b>	<b>Ignition and Initiation Processes 11</b>	<b>Nano-Technology &amp; Innovative Methods in Energetic</b>

	<b>Hazard Reduction and Safety</b> <u>5</u> <i>Co-Chairs: Dr. B. Tappan &amp; Dr. C Strozzi</i>	<i>Co-Chairs: Dr. C.F. Petre &amp; Dr. P. Vidal</i>	<b>Material Development</b> <u>1</u> <i>Co-Chairs: Prof. A. Gromov &amp; Dr. R. Beauchet</i>
11:40 12:00	<b>About Influence of Diethylenetriamine on Detonation Ability of Nitromethane Mixtures with Non-Explosive Liquids</b> (Paper #046) <i>S.A. Koldunov, A.V. Ananin, A.V. Utkin</i>	<b>Hypergolic Ignition Mechanism of Hydrazine/N<sub>2</sub>O<sub>4</sub>-NO<sub>2</sub> Co-flowing Jets at Low Temperatures</b> (Paper #031) <i>H. Tani, H. Terashima, Y. Daimon, M. Koshi</i>	<b>Additive Manufacturing Techniques for Composite Energetic Materials</b> (Paper #087) <i>L.J. Groven, Z.D. Doorenbos, J.A. Puszynski</i>
12:00 12:20	<b>Electric Field Effects on Propagating Premixed Methane-Air Flames</b> (Paper #020) <i>D. Murphy &amp; C. Fernandez-Pello</i>	<b>Numerical simulation of the ignition sequence of a turbulent methane/air mixture by a Nanosecond Repetitive Pulse Discharge</b> (Paper #078) <i>M. Castela, B. Fiorina, A. Coussement, O. Gicquell, N. Darabiha, &amp; C. Laux</i>	<b>Comparative effect of different metal powders on the burning rates of solid rocket propellants</b> (Paper #035) <i>H. Singh &amp; BK Athawale</i>
12:20 12:40		<b>Ignition and Combustion of Energetic Particles at Ultra-High Pressures and Heating Rates</b> (Paper #043) <i>G. P. Lee, K. K. Kuo, and R. Houim</i>	<b>Nanostructured Energetic Materials &amp; Explosive Chips</b> (Paper #050) <i>R. Shen, Y. Ye, P. Zu, Y. Hu, L. Wu, S. Wang, C. Chen, R. Guo, D. Li, &amp; Z. Qin</i>
12:40	<b>LUNCH (Posters + Exhibitors) until 14:00</b>		

**Thursday Afternoon, June 5, 2014**

	<b>Room B 140</b>	<b>Room A 202</b>	<b>Room A 101</b>
	<b>Synthesis and Characterization of Energ. Materials</b> <u>2</u> <i>Co-Chairs: Prof. J. Shreeve &amp; Dr. R. Ball</i>	<b>Aging Stability, Compatibility &amp; Environment</b> <u>8, 9</u> <i>Co-Chairs: Prof. S. Kwon &amp; Dr. J. Fleming</i>	<b>Theoretical Modeling &amp; Numerical Simulation Chemical Propulsion Topics</b> <u>6</u> <i>Co-Chairs: Dr. J. Bellan &amp; Dr. B. Boust</i>
14:00 14:20	<b>Production and Energetic Characteristics of Magnesium Polyborides</b> (Paper #013) <i>V. Rosenband &amp; A. Gany</i>	<b>Modeling of loss factors of elastomer binders for high explosive charges and composite rocket propellants to separate binder fractions with different molecular mobility used to follow aging</b> (Paper #118) <i>M. A. Bohn, G. Mußbach, &amp; S. Cerri</i>	<b>Flowfield and Heat Transfer Analysis in MON/MMH Bipropellant Rocket Engine</b> (Paper #074) <i>Y. Daimon, H. Negishi, Y. Matsuura, S. Iihara, &amp; S. Takada</i>
14:20 14:40	<b>Experimental investigations of 1,4-Di(Azidomethyl)-1',4'-DiMethyl-2-Tetrazene and 1-Azidomethyl-1',4,4'-TriMethyl-2-tetrazene for the replacement of Hydrazines in Bipropellant Systems – Synthesis and Optimization</b> (Paper #111) <i>T. Gilloux, C. Darwich, L. Joucla, G. Jacob, E. Labarthe &amp; H. Delalu</i>	<b>The REACH regulations and implications for a rocket motor manufacturer</b> (Paper #015) <i>J. Fleming, S. Bullock &amp; M. Sloan</i>	<b>Numerical Investigations of Chemical Kinetics for Methane Catalysis and Pyrolysis</b> (Paper #117) <i>G. Fau &amp; N. Gascoin</i>
14:40 15:00	<b>Flow and Dynamic Rheological Characterization of Metalized and Non-Metalized Ethanol Based Gelled Propellants</b> (Paper #102) <i>B.V.S. Jyoti &amp; S. Wook Baek</i>	<b>Advanced biological treatment for solid propulsion</b> (Paper #110) <i>C. Marraud, A. Schyns, A. Mano</i>	<b>Investigation of a Thruster Based on a Traveling Propellant Charge</b> (Paper #029) <i>D. Michaels &amp; A. Gany</i>
15:00 15:45	<b>10-ISICP Invited Plenary Lecture</b> <b>ENSMA Amphitheater</b> <span style="float: right;"><i>Session Chair: Prof. Charles Kappenstein</i></span>		
	<b>Prof. Jean'ne M. Shreeve, University of Idaho, USA</b>		

	<b>“Ionic Liquids as Hypergolic Fluids” (Paper #007)</b>
15:45	<b>COFFEE BREAK until 16:30</b>
15:45 16:45	<b><u>ENSMA Amphitheater</u></b> <b>Chairman’s Meeting for Award Selections</b>
16:45 17:45	<b><u>ENSMA Amphitheater</u></b> <b>Presentation of Proposed Future Symposium Hosting Group &amp; Selection of the 11<sup>th</sup> ISICP Symposium Site</b>
19:00 19:30 20:00 22:30	<b>Bus Depart from Hotels</b> <b>Cocktail</b> <b>Symposium Banquet at the Abbaye Notre Dame du Pin (<a href="http://abbavedupin.com/">http://abbavedupin.com/</a>)</b> <b>&amp; Best Paper Awards</b> <b>Bus return to Hotels</b>



# Poster Session 1 June 3, 2014 in Poster Room

*Co-Chairs: Dr. Julien Sotton & Dr. Helmut Ciezki*

1. E.A.Khmelnikov, A.V. Styrov, K.V. Smagin, N.S. Kravchenko, V.L. Rudenko, A.V. Svidinsky “**Evaluation of the energy possibilities of reaction materials in high-velocity interaction with targets containing aluminum and titanium alloys**” (Paper #008) – Area 6
2. A. Hadad, D. Grinstein & B. Natan, “**Time Dependent Combustion Modeling of Gel Fuel Droplets**” (Paper #036) – Area 6
3. V.S. Abrukov, D.A. Troeshestova, S.V. Abrukov, E.V. Karlovich, A.I. Polykarpov “**New Combustion’s Experiment: Data Mining for Modeling and Creation of Knowledge Base**” (Paper #058) – Area 6
4. Sergey Rashkovskiy, Yu. M. Milyokhin, A. N. Klyuchnikov, and A. V. Fedorychev “**Model Equation for Unsteady Combustion of Solid Propellant,**” (Paper #070) – Area 6
5. Stefan Kelzenberg, N. Eisenreich, S. Knapp, V. Weiser “**Shrinking Core Model to Describe Metal Particle Oxidation from Thermal Analysis Data,**” (Paper #073) – Area 6
6. N. Iaroshenko & N.A. Podlevskikh “**Mathematical modeling of catalytic monopropellant rocket engines and gas generants,**” (Paper #109) – Area 6
7. M. Zou, H. Huang, X. Guo, R. Yang “**Study of Reactions of Different Types of Metal Powders in Heated Steam,**” (Paper #067) – Area 7
8. L. Potet, Y. Batonneau, L. Pirault-Roy, C. Kappenstein, E. Labarthe, G. Jacob “**Synthesis and characterization of aluminum hydride  $AlH_3$  for solid and hybrid propulsion,**” (Paper #126) – Area 2

**Poster Session 2** June 4, 2014 in Poster Room  
*Co-Chairs: Prof. Yann Batonneau & Prof. Keiichi Hori*

1. P. Wang & X.-Y. Ling “**Controlling method about pore structure in nitrocellulose base microspheres prepared by leaching process,**” (Paper #017) – Area 2
2. C. Miró Sabaté & H. Delalu, “**Oxidation of (E)-1,1,4,4-Tetramethyl-2-tetrazene with Potassium Permanganate,**” (Paper #049) – Area 2
3. Liu Lin-lin, He Guo-qiang and Liu Pei-jin “**Effects of Tert-butylferrocene, Catocene and Butacene on the Primary Combustion Performance of Boron-based Fuel-rich Propellant,**” (Paper #123) – Area 3
4. Cao Jun-wei, Jin Bing-ning\*, Liu Pei-jin, Du Xiao-kun, Guan Yu, Yang Tian-hao, “**Effects of the Different Virgin Aluminum Particle Sizes in Composite Propellant on the Size Distribution of Condensed Phase Product,**” (Paper #124) – Area 3
5. W. Zhang, X. Ma, R. Shen, Y. Ye, L. Wu, Y. Hu, P. Zhu “**DFT study of laser-induced decomposition of RDX,**” (Paper #072) – Area 11
6. A. Lukin, “**Self-Organization & Self-Synchronization of the Micro/Nano-Structures in the Reactionary Zones and Advanced Small-Scale Propulsion Concept,**” (Paper #014) – Area 18
7. V. Chernov, “**Investigation of Solid-Fuel SCRAMJET combustion chamber at flight conditions of Mach 5.5,**” (Paper #077) – Area 18
8. A.S. Zharkov, P.I. Kalmykov, Yu.N. Burtsev, N.V. Chukanov, and V.E. Zarko “**Phase Transformations in the FTDO-DNP System,**” (Paper #095) – Area 12

**Eighteen (18) different areas covered in this Symposium and the International Journal of Energetic Materials and Chemical Propulsion (IJEMCP):**

1. Nano Technology and Innovative Methods in New Energetic Material Development;
2. Synthesis & Characterization of Energetic Materials;
3. Formulation, Processing, and Manufacturing of Energetic Materials;
4. Insensitive Munitions;
5. Hazard Reduction and Safety Aspects;
6. Theoretical Modeling and Numerical Simulation Techniques for Propellants, Combustion, and Chemical Propulsion Topics;
7. Performance Evaluation of Propellants, Pyrotechnics, and Explosives;
8. Aging, Stability, and Compatibility;
9. Recycling, Disposal, and Environmental Aspects;
10. Test Methods and Diagnostic Techniques in Chemical Propulsion and/or Combustion of Energetic Materials;
11. Ignition and Initiation Processes;
12. Detonation and/or Deflagration Processes;
13. Thermobarics and Thermites;
14. Innovative Rocket Propulsion Techniques;
15. Rocket Thermal Protection Materials;
16. Environmentally-Friendly "Green" Propellants;
17. Commercial Applications of Energetic Materials; and
18. Advanced Propulsion Systems (e.g., Pulse Detonation Engines, Hybrid Rockets, Gel Propellants, Micro Propulsion, Ramjets, Scramjets, etc.).

## Technical Tour & Social Excursion

<b>Friday, June 6, 2014</b>	
7:30	<b>First bus departure from hotels</b> <b>The precise schedule will be defined during symposium</b>
08:00 10:30	<b>Technical Visit to CEAT (Centre d'Etudes Aérodynamiques et Thermiques)</b>  <a href="http://ceat.univ-poitiers.fr/?lang=en">http://ceat.univ-poitiers.fr/?lang=en</a>  <b>For 10-ISICP participants only, registration requested.</b> <b>Visit Clearance Request is mandatory (see 10-ISICP website )</b>
10:30 11:00	<b>Short stop at the hotels</b> <b>Accompanying persons join the tour</b>
12:30 14:00	<b>Lunch at Loire Castle Chenonceaux</b>
14:00 17:30	<b>Visit of Loire Castles: Chenonceaux and Azay le Rideau</b>
19:00	<b>Expected time for arrival at the hotels</b>