

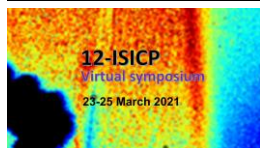
# 12<sup>th</sup> International Symposium on Special Topics in Chemical Propulsion & Energetic Materials (12-ISICP)

Preliminary Technical Program/Agenda, Issue F dated 20<sup>th</sup> March '21

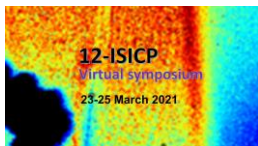
*Virtual Symposium*

23-25 March 2021 (with a short Welcome on 22<sup>nd</sup> March)

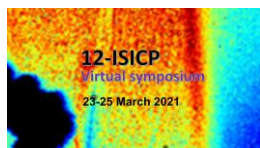
CET Start Time	Monday, March 22, 2021 (Day "0")		
2:00 PM to 2:30 PM	<b>Welcome</b> <b>Prof. Richard Yetter, Penn State University (USA)</b>		
	Tuesday, March 23 (Day 1)		
12:00 PM	Invited Speaker <b>Asst. Prof. Ellen Mazumdar, Georgia Tech (USA)</b> <b>Optical diagnostics for multiphase combustion of propellants and energetic materials</b>		
12:30 PM	Invited Speaker <b>Mr Ronald Veraar, TNO (The Netherlands)</b> <b>Ramjet Propulsion for Projectiles - An Overview of World-Wide Achievements and Future Opportunities</b>		
	Stream 1	Stream 2	Stream 3
	<b>Chair: Prof. Alon Gany</b> Technion (Israel)	<b>Chair: Prof. Charles Kappenstein</b> Uni. of Poitiers (France)	<b>Chair: Dr. Helmut Ciezki</b> German Aerospace Center, Institute of Space Propulsion (Germany)
1:00 PM	Technical Area: 16 Paper N <sup>o</sup> 70671 <b>Study of the combustion wave structure in a GAP/AP propellant</b> <u>Tamiaki Takasago</u> , Kazuki Nagao, Yutaka Wada, Kaiichi Baba, Tatsuya Oda	Technical Area: 18 Paper N <sup>o</sup> 70646 <b>Enhancement of Combustion of a solid fuel ramjet for its application in an artillery shell</b> <u>Yogeshkumar Velari</u> , R. V. Reji, Prof P. A. Ramakrishna	
1:20 PM	Technical Area: 16 Paper N <sup>o</sup> 65863 <b>Investigation and production of hexaaluminate-ceramics</b> <u>Dr. Tijen Seyidoglu</u> , Robert Jan Koopmans,	Technical Area: 18 Paper N <sup>o</sup> 70659 <b>Unsteady Combustion in Hybrid Rocket with Liquefying Fuel</b> <u>Jina Kim</u> , Wonjeong Hyun, Changjin Lee	Technical Area: 12 Paper N <sup>o</sup> 70638 <b>Reduction of Pyro Shock in Stage Separation Mechanism by use of Gas Generator Systems</b> <u>A.Chakraborty</u> , N. Rathi, Prof P. A. Ramakrishna, M. Haradanahalli, R Srinivasan A.



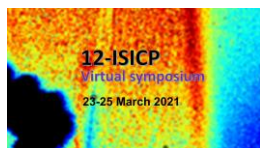
1:40 PM	<p>Technical Area: 1 Paper N° 70663</p> <p><b>Combustion Performance of the Nanosized Nitrocellulose and Its Nanocomposites Produced by the Supercritical Antisolvent Processing</b></p> <p><u>Nikita Muravyev</u>, Dimitri B. Meerov, Mikhail N. Zharkov, Ilya V. Kuchurov</p>	<p>Technical Area: 17 Paper N° 70692</p> <p><b>Scientific misconducts from retracted or corrected articles - Case studies including energetic materials</b></p> <p>Prof. Charles Kappenstein</p>	<p>Technical Area: 8 Paper N° 70806</p> <p><b>The Effects of Accelerated Aging with High Relative Humidity and Temperature on the Boron Potassium Nitrate (BPN) Pyrotechnic Composition</b></p> <p><u>Beril Dumalilar Tabak</u>, Dr. Nil Ezgi Dincer Yilmaz</p>
2:00 PM	<p>Technical Area: 3 Paper N° 70627</p> <p><b>Printable Energetic Materials</b></p> <p><u>Levi Gottlieb</u>, Yoav Eichen, Yuval Zertal, Avishai Levi, Matthew Young</p>	<p>Technical Area: 6 Paper N° 70630</p> <p><b>Effect of the melt viscosity on regression rate of low-melting solid fuel in hybrid rocket engines</b></p> <p><u>Sergey Rashkovskiy</u>, Sergey Yakush</p>	<p>Technical Area: 14 Paper N° 70658</p> <p><b>Testing Water-Augmented Rocket Motor</b></p> <p><u>Nachum E. Eisen</u>, Prof. Alon Gany</p>
2:20 PM	<p>Technical Area: 3 Paper N° 70805</p> <p><b>Solventless Extruded Double Base (EDB) propellant charges - a review of the properties, technology, and applications</b></p> <p><u>Jim Fleming</u>, Martijn Zebregs, Chris van Driel, Dr. Werner Rousseau</p>	<p>Technical Area: 6 Paper N° 66492</p> <p><b>Understanding burning of heterogeneous solid propellants through mesoscale modeling</b></p> <p><u>Stany Gallier</u>, Mathieu Plaud</p>	<p>Technical Area: 14 Paper N° 70675</p> <p><b>Recent Advances in Gel Propulsion Technology at DLR Lampoldshausen</b></p> <p><u>Christoph Kirchberger</u>, Maxim Kurilov, Sophie Ricker, Dominic Freudenmann</p>
2:40 PM	<p>Technical Area: 3 Paper N° 70679</p> <p><b>Formulation Design – An Integrated Approach</b></p> <p>Prof. Adam Cumming</p>	<p>Technical Area: 10 Paper N° 66552</p> <p><b>Optical Investigation on the Hypergolic Reaction of Green Liquid Ionics with Highly Concentrated Hydrogen Peroxide</b></p> <p><u>Dr. Robert Stützer</u>, Jakob Balkenhohl, Felix Lauck, Michael Oschwald, Stefan Schlechtriem</p>	<p>Technical Area: 15 Paper N° 70443</p> <p><b>Analysis of the Multistep Degradation Kinetics of EPDM-based Thermal Protection System</b></p> <p>Ramin Shilav, Dr. Levi Gottlieb</p>
3:00 PM	<p><b>Panel 1</b> Technical Area: 3</p> <p><b>3D printing of energetics &amp; RAM: what new applications are expected by 2025?</b></p> <p>Chair: Prof. R Yetter Dr. Eric Beckell, US Army Lawrence Farrar, Resodyn Corp Prof. Lori Groven, South Dakota School of Mines Prof. Steven Son, Purdue University Dr. Kyle Sullivan, US Army</p>	<p>Technical Area: 11 Paper N° 70321</p> <p><b>Ammonium nitrate - Thermal vaporization vs catalytic decomposition: recent results into an old field</b></p> <p><u>Prof. Charles Kappenstein</u>, Yann Batonneau PhD, Romain Beauchet</p>	<p>Technical Area: 15 Paper N° 70678</p> <p><b>Influence of Nozzle Radiation on Solid Rocket Motors Tail-off Thrust</b></p> <p><u>Prof. Fabrizio Pontj</u>, Mini Stefano, Luca Fadigati, Adriano Annovazzi, Michela Archi</p>



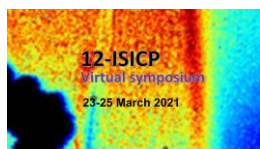
3:20 PM	(Note that Panel 1 will finish at 4 PM)	Technical Area: 11 Paper N° 70693 <b>Participation of Poitiers to European Programs on Space Propulsion GRASP, PRECISE, RHEFORM and GRAIL: an Overview</b>  <u>Prof. Charles Kappenstein</u> , Yann Batonneau, PhD	Technical Area: 2 Paper N° 70297 <b>Development and Performance Evaluation of “Green” Primary Explosives for Use in Electro-explosive Devices and Detonators</b> <u>Euan McLean</u> , Dr Alistair MacCuish, Prof. David K. Harrison, Dr Rob P. Claridge, Patrick McMaster
3:40 PM			Technical Area: 2 Paper N° 70647 <b>A Novel Method of Assessing Impact Sensitivities of Energetic Materials</b> <u>Patrick McMaster</u> , Dr David M. Williamson, Olivia J. Morley
<b>March 24 (Day 2)</b>			
11:00 AM	Invited Speaker <b>Prof. Sergey A. Rashkovskiy</b> , Ishlinsky Institute for Problems in Mechanics (Russia) <b>Non-one-dimensional combustion modes of solid homogeneous energetic materials</b>		
11:30 AM	Invited Speaker <b>Prof. Luigi DeLuca</b> , Politecnico di Milano (Italy) <b>Nano aluminum for solid rocket propulsion: illusions and reality</b>		
	<b>Stream 1</b> <b>Chair: Prof. Kenichi Takahashi</b> Nihon University (Japan)	<b>Stream 2</b> <b>Chair: Prof. P.A. Ramakrishna</b> Indian Inst. of Technology (India)	<b>Stream 3</b> <b>Chair: Prof. Jack Yoh</b> Seoul National University (Korea)
12:00 PM	Technical Area: 10 Paper N° 70662 <b>Methods of Analysis of T-burner Experimental Data</b>  Ganesan S, S. R. Chakravarthy	Technical Area: 14 Paper N° 66622 <b>Combustion mechanism of uncured polyethylene glycol and glycidyl azide polymer mixture fuel</b> <u>Yutaka Wada</u> , Kazuki Nagao, Tamiaki Takasago, Shintaro Hatano, Kaiichi Baba	Technical Area: 1 Paper N° 66493 <b>New Insights in the Energetic Materials Performance Enhancement Through Synergistic Effect of Hybridized Carbon-Based Nano-Additives Properties Modification by Electrostatic Field</b> <u>Alexander Lukin</u> , Yutaka Wada
12:20 PM	Technical Area: 10 Paper N° 70665 <b>Residue oxide particle size distribution studies of aluminized solid propellants using plume collection</b> <u>Robin Rathi</u> , Hiteshkumar Zinjala, Satyanarayanan, R. Chakravarthy	Technical Area: 14 Paper N° 66623 <b>Flight demonstration of GAP/N2O direct injection gas-hybrid rocket system using a small rocket</b> <u>Shintaro Hatano</u> , Yuri Matsumoto, Tamiaki Takasago, Yutaka Wada, Kaiichi Baba	Technical Area: 1 Paper N° 70555 <b>Nanocomponents as a Source of Increasing the Energy Potential of Chemical Propellants</b>  Valery Babuk



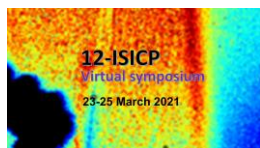
12:40 PM	<p>Technical Area: 10 Paper N° 70667</p> <p><b>Acoustic Admittance of the Aluminized Composite Solid Propellant by Laser Doppler Velocimetry at Low Pressure</b></p> <p><u>Rajendra Rajak</u>, Satyanarayanan R. Chakravarthy</p>	<p>Technical Area: 14 Paper N° 70563</p> <p><b>Photosensitive propellants applied to the laser-controlled combustion behavior</b></p> <p><u>Haonan Zhang</u>, Ruiqi Shen, Lizhi Wu, Prof. Luigi T. DeLuca, Buren Duan</p>	<p>Technical Area: 1 Paper N° 70640</p> <p><b>Green and MEMS-Compatible Energetic Composites with High Electrostatic Safety: Copper Azide Embedded in Oriented Carbon Nanotubes Arrays Grown on Silicon Substrate</b></p> <p>Xuwen Liu</p>
1:00 PM	<p>Technical Area: 10 Paper N° 70668</p> <p><b>Determination of Steady State Mean Burning Rate of Composite Solid Propellant Combustion under Open loop and Closed loop with Servo-Mechanism by Laser Doppler Velocimetry</b></p> <p><u>R Rajak</u>, S. R. Chakravarthy, B.S. Subhash Chandran, H Zinjala</p>	<p>Technical Area: 14 Paper N° 70569</p> <p><b>Design and Testing of Miniature Rocket Motors for control Applications</b></p> <p><u>Raj Alexander Y.</u>, Nikunj Rathi, R Srinivasan, Prof P. A. Ramakrishna</p>	<p>Technical Area: 11 Paper N° 66566</p> <p><b>Watching the ultrafast hot spots dynamics of PETN/FOX-7 under a tabletop microscope</b></p> <p><u>Wei Zhang</u>, Meysam Akhtar, Lawrence Salvati Dana D. Dlott, Ruiqi Shhen</p>
1:20 PM	<p>Technical Area: 10 Paper N° 70674</p> <p><b>Quantification of Binder melt: Aluminized Composite Propellants with RDX</b></p> <p><u>K Nagendra</u>, P. A. Ramakrishna, Rekha Sangtyani, Arvind Kumar</p>	<p>Technical Area: 14 Paper N° 70657</p> <p><b>Combustion of 5-Aminotetrazole Propellant for Laser-Augmented Chemical Propulsion</b></p> <p><u>Nianbai He</u>, Ruiqi Shen, Prof. Luigi T. DeLuca, Lizhi Wu, Wei Zhang</p>	<p>Technical Area: 11 Paper N° 70621</p> <p><b>Energetic initiators realized by Al/CuO reactive multilayer films in metal-interlayer-metal structures</b></p> <p><u>Fu Shuai</u>, Prof. Ruiqi Shen</p>
1:40 PM	<p>Technical Area: 10 Paper N° 70680</p> <p><b>Revisiting Combustion of Ammonium Perchlorate with Burn rate Modifiers</b></p> <p><u>Mahesh S Ingole</u>, Dr. Nagendra Kumar, Prof P. A. Ramakrishna</p>		<p>Technical Area: 11 Paper N° 70681</p> <p><b>Ignition Transient Study: Igniter Jet Impingement</b></p> <p><u>Sumit Sarma</u>, Prof P. A. Ramakrishna, Dr. Nagendra Kumar</p>
2:00 PM	<p>Technical Area: 10 Paper N° 70802</p> <p><b>Mechanical response of composite solid propellant under uniaxial loading</b></p> <p>Rajeev Ranjan, H. Murthy, V.S. Sadavarte, S.M. Pande, Debdas Bhowmik</p>		<p>Technical Area: 7 Paper N° 66531</p> <p><b>Ignition and Combustion Behavior of Al-Mg-Zr in Composite Propellants</b></p> <p>Zhao Qin</p>



2:20 PM	<p style="text-align: center;"><b>Panel 2</b> Technical Areas: All</p> <p><b>High Throughput Experimentation and Research with Energetic Materials, Artificial Neural Networks (ANN) for combustion, etc.</b></p> <p>Chair: Dr J Zevenbergen, TNO Dr. Victor S Abrukov, Chuvash State University Dr. Brian Barnes, US Army Dr. Mark Johnson, US Army</p>	<p>Technical Area: 3 Paper N° 66471</p> <p><b>Effect of hydroborate iron additives (BH-Fe) on the properties of composite solid rocket propellants</b></p> <p>Prof. Wei-Qiang Pang</p>	
2:40 PM		<p>Technical Area: 3 Paper N° 70633</p> <p><b>Coating Viton on Flake Aluminium and Its Effects on Performance of the Solid Rocket Motor</b></p> <p><u>Gaurav Marothiya</u>, Prof P. A. Ramakrishna</p>	
<b>March 25 (Day 3)</b>			
2:00 PM	<p>Invited Speaker</p> <p><b>Prof. Pengwan Chen</b>, Beijing Institute of Technology (China)</p> <p><b>Experiments, simulation and prediction on impact ignition and safety of polymer bonded explosives</b></p>		
2:30 PM	<p>Invited Speaker</p> <p><b>Dr. Denis Spitzer</b>, ISL: French-German Research Institute (France)</p> <p><b>From spray flash evaporation to spray flash synthesis: the case of ADN</b></p>		
	<p><b>Stream 1</b> Chair: <b>Prof. Greg Young</b> Virginia Tech (USA)</p>	<p><b>Stream 2</b> Chair: <b>Dr. Bryce Tappan</b> Los Alamos National Laboratory (USA)</p>	<p><b>Stream 3</b> Chair: <b>Prof. John Wen</b> University of Waterloo (Canada)</p>
3:00 PM	<p>Technical Area: 2 Paper N° 65736</p> <p><b>Alternatives to existing Primary Explosives</b></p> <p>Michael Williams</p>	<p>Technical Area: 5 Paper N° 70614</p> <p><b>The fragmentation test results for hybrid rocket fuels in an oxidizing atmosphere</b></p> <p>Akiyo Takahashi</p>	<p>Technical Area: 6 Paper N° 66461</p> <p><b>Structural integrity analysis of viscoelastic low-melting-point thermoplastic fuel for hybrid rocket systems</b></p> <p><u>Yo Kawabata</u>, Yutaka Wada, Takeshi Yasuda, Ryo Nagase, Nobuji Kato</p>
3:20 PM	<p>Technical Area: 2 Paper N° 70654</p> <p><b>Effect of Piezoelectricity on the Burning Rates of Fluoropolymer and Nanoaluminum Composite Energetic Materials</b></p> <p>David Drewniak</p>		<p>Technical Area: 6 Paper N° 70670</p> <p><b>Comparative Study of Numerical Schemes for Granular Combustion</b></p> <p><u>Annie Rose Elizabeth</u>, Dr. T. Jayachandran</p>



3:40 PM	<p>Technical Area: 16 Paper N° 66269</p> <p><b>Combustion of HAN-based Propellants and Decomposition of their Components</b> <u>Robert E. Ferguson</u>, Alan A. Esparza, Steven D. Chambreau, Ghanshyam L. Vaghjani, Evgeny Shafirovich</p>	<p>Technical Area: 14 Paper N° 70804</p> <p><b>Experimentation of a Large Lab-Scale Hybrid Rocket Engine Utilizing Paraffin-Based Fuels Containing High-Energy Materials</b>  Dillon J. Over</p>	
4:00 PM	<p>Technical Area: 16 Paper N° 66633</p> <p><b>Performance Enhancement and Ignition Delay Suppression of TMEDA using Amine-Borane Additives</b> <u>Michael Baier</u>, Andrew Noel, Steven Son</p>	<p>Technical Area: 13 Paper N° 70803</p> <p><b>Ignition and Combustion of TNT-Dispersed Aluminum Powder</b> <u>Asst. Prof. Ryan W. Houim</u>, Jacob Posey Swagnik Guhathakurta</p>	
4:20 PM	<p>Technical Area: 16 Paper N° 70687</p> <p><b>Characterization of Dense Green Oxidizer Formulations for Propulsion Applications</b>  Dillon J Over</p>	<p>Technical Area: 14 Paper N° 70363</p> <p><b>Effect of Electrical Stimuli on Combustion Behaviour of Solid Oxidizers</b>  <u>Bradley Gobin</u>, Sean Whalen, Gregory Young</p>	<p>Technical Area: 6 Paper N° 70631</p> <p><b>Comparison of Reactive Molecular Dynamics Simulation of HMX with FTDO Explosive</b> <u>F. Batista Mendonça</u>, R.F. Boschi Gonçalves, José A. Fritz Fidel R., M. Galizia Domingues, G. S.Urgessa</p>
4:40 PM	<p>Technical Area: 16 Paper N° 70695</p> <p><b>Electrocatalytic Decomposition of Hydroxylammonium Nitrate Aqueous Solutions</b>  <u>Eric Crisp</u>, Richard Yetter, J. Eric Boyer</p>	<p>Technical Area: 18 Paper N° 70362</p> <p><b>Improved Hybrid Rocket Performance by Additively Manufactured Gel-Infused Solid Fuels</b>  <u>James Meier</u>, John Reynolds, Sean Whalen, Michael J. Bortner, Associate Prof. Greg Young</p>	<p>Technical Area: 6 Paper N° 70648</p> <p><b>Analysis and Comparison of the Performance of Paraffins Based on Reactive Molecular Dynamics</b> <u>R.F. Boschi Gonçalves</u>, E.C. Rosa Araújo, José Atílio Fritz Fidel Rocco, Marcela Galizia Domingues</p>
5:00 PM	<p style="text-align: center;"><b>Panel 3</b> Technical Area: 16</p> <p><b>What can be done to sustain energetic materials &amp;/or increase the uptake of Greener materials</b></p> <p style="text-align: center;"><b>Chair: Prof. Keiichi Hori, JAXA</b> Dr. Jamie Neidert, US Army Dr. Uwe Schaller, ICT Dr. Guy Jacob, ArianeGroup</p>	<p>Technical Area: 2 Paper N° 70807</p> <p><b>Exploring new techniques for the analysis of nitrocellulose</b>  <u>Dr. Ruth Tunnell</u>, Dave Tod, Dan Pearce, Richard Moore, Richard Johnson</p>	<p>Technical Area: 3 Paper N° 70304</p> <p><b>Continuous Acoustic Chemical MicroReactor</b>  <u>Joe Mayne</u>, Lawrence C. Farrar, Bradley Sleadd, David Boruta</p>



5:20 PM	(Panel 3 will finish at 5:40 PM)	Technical Area: 10 Paper N° 70645 <b>Hybrid Rocket Motor thrust modulation by GOX flow rate control</b>  Bruno T. Rocco, M. Galizia Domingues, L. Rocco Junior, José Atílio Fritz, Fidel Rocco, Koshun Iha	Technical Area: 3 Paper N° 70308 <b>Safer and Cleaner Continuous ResonantAcoustic® Production of Energetic Material</b>  Mike Miller, Lawrence C. Farrar, Dr. Andrew Nelson, Michael Siirila
5:40 PM	<b>Prof. Richard Yetter Prize Awards &amp; Closing</b>		
6:00 PM to 6:20 PM	<b>Jim Fleming 13-ISICP &amp; Santander (Spain)</b>		

Note that the Excel version of the Programme/Agenda (that can be downloaded from [here](#)) includes the author's organisations.

**Key to technical areas: -**

Nº	Technical Area	Nº	Technical Area
1	Nano Technology and Innovative Methods in Energetic Material (EM) development	10	Test Methods and Diagnostic Techniques in CP and/or Combustion of EMs
2	Synthesis and Characterization of Ems	11	Ignition and Initiation Processes
3	Formulation, Processing, and Manufacturing of Ems	12	Detonation and/or Deflagration Processes
4	Insensitive Munitions	13	Enhanced Blast and Thermites
5	Hazard Reduction and Safety Aspects	14	Innovative Rocket Propulsion Techniques
6	Theoretical Modelling and Numerical Simulation for CP (Chemical Propulsion) and EM	15	Rocket Thermal Protection Materials, which may include associated liner &/or bonding with propellant
7	Performance Evaluation of EMs	16	Environmentally Friendly "Green" Propellants
8	Aging, Stability, and Compatibility	17	Commercial Applications of Ems
9	Recycling, Disposal, and Environmental Aspects	18	Performance of Advanced Propulsion Systems

