



ISEM2021 Schedule

Time JST (UTC+9)	Nov. 16, 2021 (Tue)		Nov. 17, 2021 (Wed)		Nov. 18, 2021 (Thu)	
	Room A	Room B	Room A	Room B	Room A	Room B
9:00	Opening		Invited Lecture L2 Denes V. Agoston		Invited Lecture L4 Kaiwen Xia	
10:00	A1 Explosion Safety 1	B1 Shock Compression of Condensed Matter 1	A4 Explosion Safety 2	B4 Gas Detonation	A7 Blasting	B7 Thermal Behavior 1
11:00	Lunch		Lunch		Lunch	
12:00	Lunch		Lunch		Lunch	
13:00	Invited Lecture L1 Alexander Vorozhtsov		A5 Propellant and Pyrolant 2	B5 Explosion Safety 3	Invited Lecture L5 Mitsuru Arai	
14:00	A2 HEMs 1	B2 Propellant and Pyrolant 1			A8 Fireworks	B8 Propellant and Pyrolant 4
15:00			Invited Lecture L3 Thomas M. Klapötke			
16:00	A3 HEMs 2	B3 Pyrotechnics and Analysis and Detection of Explosives	A6 Propellant, Pyrolant 3 and Pyrotechnics		A9 Thermal Behavior 2	B9 Shock Compression of Condensed Matter 2
17:00						
18:00					Closing	



The 7th International Symposium on Energetic Materials and their Applications

TECHNICAL PROGRAM

November 16–18, 2021
Virtual Symposium, Tokyo, JAPAN

Nov. 16 (Tue)

9:00-9:30	Opening	
	A1 Explosion Safety 1 Chair: Kunihiko Wakabayashi	B1 Shock Compression of Condensed Matter 1 Chair: Kazuyuki Hokamoto
9:30-9:50	A1-1 Effect of porous MgO when used as a stabilizer for nitrocellulose Katsumi Katoh, Japan	B1-1 A study of reaction growth-rate and burn-front velocity in PBXs through interface-resolved reactive simulations and experiments Shobhan Roy, USA
9:50-10:10	A1-2 Integrated safety system design for a detonation physics laboratory Michael Meadows, USA	B1-2 A novel framework for modeling the effects of single crystal plasticity in cyclotetramethylene tetranitramine (HMX) under shocks Oishik Sen, USA
10:10-10:30	A1-3 Laser ignition of GO/Al/KClO₄ ternary nanothermites for micro thruster applications Ahmed Fahd, Canada	B1-3 Canonical detonation phenomena and novel tools for characterization Eric Welle, USA
10:30-10:50	A1-4 New energetic molecule research at purdue university Davin G. Piercey, USA	
10:50-11:10	A1-5 Kinetic modeling for autoxidation of methyl acrylate containing radical inhibitor Michiya Fujita, Japan	
11:10-13:00	LUNCH	
13:00-14:00	L1 Invited Lecture 1 Decision of antibacterial and antiviral problems based on the experience of nanotechnologies application for HEMs Alexander Vorozhtsov, Tomsk State University, Russia	Chair: Keiichi Hori
	A2 HEMs 1 Chair: Alexander Vorozhtsov, Keiichi Hori	B2 Propellant and Pyrolant 1 Chair: Masafumi Tanaka
14:00-14:20	A2-1 Investigation of the mechanical properties of the A359 aluminum alloy reinforced with basalt fibers Vladimir Valihov, Russia	B2-1 Agglomeration and combustion characteristics of aluminum particles in ammonium perchlorate based composite propellants Kotaro Matsumoto, Japan

14:20-14:40	A2-2	Investigation of the effect of erbium particles on the structure and mechanical properties of the AA5056 alloy Nikolai Kakhidze, Russia	B2-2	Integration of fuel regression measurement function into hybrid rocket solid fuels with multi-material additive manufacturing Kohei Ozawa, Japan
14:40-15:00	A2-3	Structure and phase composition of AlMgB₁₄-TiB₂ obtained by SHS Dmitrii Tkachev, Russia	B2-3	Numerical analysis of hybrid rocket engine combustion with Al powder added to solid fuel Kanami Aoki, Japan
15:00-15:20	A2-4	Investigation of structure and mechanical properties of the AA5056 alloy reinforced with tungsten nanoparticles Anton Khrustalev, Russia	B2-4	Temperature measurements of boundary layer diffusion flames in hybrid rockets using fine thermocouple and spectroscopy techniques Ayana Banno, Japan
15:20-15:40	A2-5	The next generation of CAMES™ sensors stress sensitive microcapsules for sheer and contact stress detection Bernard M. Kosowski, USA		
15:40-15:50	BREAK			
	A3 HEMs 2 Chair: Sebastian Knapp, Keiichi Hori		B3 Pyrotechnics and Analysis and Detection of Explosives Chair: Oleg Glotov, Masafumi Tanaka	
15:50-16:10	A3-1	Consortia as a new format for the formation of a world-class competitive Russian research and educational space Elena. A. Danilova, Russia	B3-1	Effect of mechanically activated powder for use in high energetic materials Sergei D. Sokolov, Russia
16:10-16:30	A3-2	Influence of preparation methods on burning rate of pyrotechnic mixtures Sebastian Knapp, Germany	B3-2	Obtaining and studying the properties of mechanically activated powders Sergei D. Sokolov, Russia
16:30-16:50	A3-3	Evaporation dynamics of trinitrotoluene microparticles from the glass surface V. M. Gruznov, Russia	B3-3	Combustion of large porous titanium particles in air as individual and as component of composite propellant O. G. Glotov, Russia
16:50-17:10			B3-4	Development and characterization of fluorescent sensory materials based on polystyrene for detection of nitroaromatic compounds Roman Chuvashov, Russia

9:00-10:00	L2	Invited Lecture 2 When physics meets biology; explosive blast induced traumatic brain injury Denes V. Agoston, Uniformed Services University, USA Chair: Shunichi Sato		
10:00-10:10	BREAK			
	A4 Explosion Safety 2 Chair: Kiyonobu Ohtani, Tomotaka Homae		B4 Gas Detonation Chair: Kazuhiro Ishii, Shinichi Maeda	
10:10-10:30	A4-1	Effects of targeted application of a shock wave(s) to the brain and/or lungs in rats Satoko Kawauchi, Japan	B4-1	Generation of planar blast waves using a gaseous detonation-driven blast simulator Tomoki Takehara, Japan
10:30-10:50	A4-2	Scale effect on blast wave mitigation by interaction with water droplets Takahiro Tamba, Japan	B4-2	Experimental study on deflagration-to-detonation transition in a channel with densely-arranged roughness elements on the wall Shinichi Maeda, Japan
10:50-11:10	A4-3	Study on shock wave pressure attenuation by shock wave interaction with water droplets layer Kiyonobu Ohtani, Japan	B4-3	Flame propagation behavior in a swirling flow induced in a rotating tube Riku Hayashi, Japan
11:10-11:30	A4-4	Numerical analysis of the effect of water droplets layer location on the blast mitigation Kakeru Shibue, Japan	B4-4	Propagation characteristics of deflagration in swirling flow Hajime Takahara, Japan
11:30-11:50	A4-5	Blast-wave mitigation by periodic obstacles in a straight tube Tomotaka Homae, Japan	B4-5	Effects of bubble gas composition on bubble collapse by an underwater shock wave Masaki Yamada, Japan
11:50-12:10	A4-6	Numerical simulations on the blast wave mitigation during propagation inside an inner-grooved straight tube Yuta Sugiyama, Japan		
12:10-13:20	LUNCH			
	A5 Propellant and Pyrolant 2 Chair: Yutaka Wada		B5 Explosion Safety 3 Chair: Toshiharu Mizukaki	
13:20-13:40	A5-1	Combustion-mode transition of a solid propellant rocket motor by nitrogen gas injection Masafumi Tanaka, Japan	B5-1	Development of energetic material fast cook-off testing for the new nato standard (AOP-4240) Chong-Wei Ho, Taiwan
13:40-14:00	A5-2	Performance evaluation of WAX-based hybrid-rocket solid fuel with added Mg-Al powder Takayuki Fujita, Japan	B5-2	Thermal decomposition behaviour in dry and humid conditions of single base propellants having different methyl violet test stabilities Ayane Haba, Japan
14:00-14:20	A5-3	Experimental investigation of combustion of ethanol-methylcellulose gel droplets with Al powder Junyu Zhu, Japan	B5-3	Stability of NC-based explosives, relation between bergman-junk-siebert test and methyl violet paper test Ken Okada, Japan
14:20-14:40			B5-4	Thermal safety evaluation in nitration of toluene with ionic liquid Hiroaki Ono, Japan

14:40-14:50	BREAK	
14:50-15:50	L3	Invited Lecture 3 TKX-50: A new high explosive developed at LMU Munich Thomas M. Klapötke, Ludwig Maximilians University of Munich, Germany Chair: Shingo Date
	A6	Propellant, Pyrolant 3 and Pyrotechnics Chair: Robert Matyáš, Yuichiro Izato
15:50-16:10	A6-1	Detailed kinetic modeling for liquid-phase reactions of hydrazine nitrate based on quantum chemistry calculations Yu-ichiro Izato, Japan
16:10-16:30	A6-2	Characterization of periodate binary pyrotechnic mixtures Robert Matyáš, Czech Republic
16:30-16:50	A6-3	Exothermic reaction of fine and coarse magnesium powders with water Yosuke Nishiwaki, Japan
16:50-17:10	A6-4	Synthesis of dinitramide salts with small continuous reactor Hiroki Matsunaga, Japan
17:10-17:30	A6-5	Characterization of pyrotechnic igniter based on heat flux and propellant ignition delay Sumit Sarma, India

Nov. 18 (Thu)

9:00-10:00	L4	Invited Lecture 4 Quantification of dynamic fracture properties of rocks subjected to confinements Kaiwen Xia, University of Toronto, Canada	Chair: Shiro Kubota
10:00-10:10	BREAK		
	A7	Blasting Chair: Yuji Ogata	B7
			Thermal Behavior 1 Chair: Satoru Yoshino
10:10-10:30	A7-1	Evaluation of dynamic tensile fracture behavior of rocks by digital image correlation method Tei Saburi, Japan	B7-1
			Analysis of thermal destabilization mechanism of ammonium nitrate/ammonium chloride mixtures Kota Watanabe, Japan
10:30-10:50	A7-2	Influence of partially dense regions near the free surface on stress wave interference and crack propagation in laboratory blasting tests Yoshiaki Takahashi, Japan	B7-2
			Hazard evaluation of chlorosilanes based on thermodynamic data Masaya Sato, Japan
10:50-11:10	A7-3	Study on improvement of washing effect using underwater explosion phenomenon Hayate Ueda, Japan	B7-3
			Thermal behaviour of potassium periodate and mixtures thereof containing fuels and metal oxides Yuka Sakae, Japan
11:10-11:30	A7-4	Unsteady interaction between underwater explosion and the concave curved wall Yoshiteru Anshi, Japan	B7-4
			Detailed reaction simulation incorporating evaporation model of ammonium dinitramide Yuto Kubota, Japan
11:30-11:50	A7-5	Study of the controlled blasting method for concrete using GANSIZER® Kenji Murata, Japan	B7-5
			Evolved gas analysis of ammonium dinitramide and hydroxyethylhydrazinium nitrate mixture Kento Shiota, Japan
11:50-13:00	LUNCH		
13:00-14:00	L5	Invited Lecture 5 Recent topics in scientific study on fireworks Mitsuru Arai, The University of Tokyo, Japan	Chair: Katsumi Katoh
14:00-14:10	BREAK		
	A8	Fireworks Chair: Mieko Kumasaki	B8
			Propellant and Pyrolant 4 Chair: Hiroki Matsunaga
14:10-14:30	A8-1	Quantitative analysis of KClO₄ reduction by Ti in fireworks composition Kouta Odagiri, Japan	B8-1
			Electrolysis and ignition characteristics of HAN-based monopropellant Toshiyuki Katsumi, Japan
14:30-14:50	A8-2	Influence of charcoal properties on the burning rate of black powder Kenta Yuminaga, Japan	B8-2
			Thermal analytical screening of effective catalysts for the ignition of high energy ionic liquid propellants Noboru Itouyama, Japan
14:50-15:10	A8-3	Thermal and evolved gas analysis for oxidation of carbon in senko-hanabi Yukino Watanabe, Japan	B8-3
			Visualized image analysis of electrolysis-ignition of ammonium dinitramide based ionic liquid propellants using a high-speed camera Kiichiro Iguchi, Japan

15:10-15:30	A8-4	Analysis on bursting mechanism of carbon steel sparks Taro Kimura, Japan	B8-4	“Tandem-action” ferrocenyl iodocuprates promoting low temperature hypergolic ignitions of “green” EIL-H₂O₂ bipropellants Michael Gozin, Israel
15:30-15:40	BREAK			
	A9 Thermal Behavior 2 Chair: Shogo Tomiyama		B9 Shock Compression of Condensed Matter 2 Chair: Kazutaka Kitagawa	
15:40-16:00	A9-1	Stability of explosives under continued laser pulse exposure Thomas de Prinse, Australia	B9-1	Numerical investigation of reaction zone for steady state detonation of solid explosives Shiro Kubota, Japan
16:00-16:20	A9-2	Thermal runaway propagation mechanism analysis of multiple lithium-ion batteries Tomoya Suzuki, Japan	B9-2	Basic study on the processing of thick magnesium alloy plate by impact forming method Masatoshi Nishi, Japan
16:20-16:40	A9-3	Effect of ozone on the thermal decomposition behavior of guanidine nitrate Kyohei Amano, Japan	B9-3	Metal oxides as a sensitizer in laser initiation of energetic materials Anton S. Zverev, Russia
16:40-17:00	A9-4	Energetic cocrystal of 1H-tetrazole/sodium perchlorate Kazuki Inoue, Japan		
17:00-17:20	A9-5	Effect of mixing condition of ammonium nitrate aqueous solution on cyclic thermal behavior of some phase-stabilized ammonium nitrates Shingo Date, Japan		
17:20-17:40	BREAK			
17:40-18:00	Closing			