

WEEK AT A GLANCE

Time	Sunday 23	Monday 24	Tuesday 25	Wednesday 26	Thursday 27	Friday 28	Saturday 29	Time	
9:30		OPENING History Presentation	Presentations	Presentations	Presentations			9:30	
10:30		Presentation						Fireworks Video	
11:00		Break	Break	Break	Break			11:00	
11:30		Presentations	Presentations	Presentations	Presentations			11:30	
12:30	Registration					Lunch		Lunch	
13:00		Lunch	Lunch		Lunch		13:00		
13:30				Moderated Sessions		Presentations		13:30	
14:00								14:00	
14:30		Presentations	Presentations		Presentations	CLOSING Group Photo	Optional Tour 2	14:30	
15:00				CLOSE				15:00	
15:30		Break	Break			Break		15:30	
16:00					Optional Tour 1	Moderated Sessions		- Fireworks factory	16:00
16:30		Presentations	Presentations					- Firing site	16:30
17:00								- Sake brewery	17:00
17:30		CLOSE	CLOSE		CLOSE	Gala Dinner	- Fireworks display	17:30	
18:00				- Former Ikeda Family Garden					18:00
18:30		Welcome Party	Light Meal*	- Day fireworks	Light Meal*	See Note: 5		18:30	
19:00		See Note: 1	Fireworks	- Noh theatre	Fireworks				19:00
19:30						See Note: 4		See Note: 6	19:30
20:00				See Note: 3				20:00	
20:30								20:30	
21:00								21:00	
21:30								21:30	
22:00								22:00	
Trade Show	13:00-17:00 Set-up	11:00-17:00	9:30-18:00	9:30-14:30	9:30-18:00	9:30-12:00 Dismantle 13:30-17:00			

* At the fireworks audience area, participants can purchase food and drinks from vendors

Notes:

1. Monday - Japanese pyromusical by local fireworks companies
(15 minutes during party)
2. Tuesday - Japanese pyromusical by local fireworks companies
- 12 inch shell display
- International display
- Japanese pyromusical by winners of the Prime Minister's Prize
(45 minutes)
3. Wednesday - Day fireworks at Noh theatre
(10 minutes)
4. Thursday - Japanese pyromusical by local fireworks companies
- 12 inch shell display
- International display
- Japanese pyromusical by winners of the Prime Minister's Prize
(45 minutes)
5. Friday - During Gala dinner at rooftop venue
- Japanese pyromusical by local fireworks companies
- 12 inch shell display
- International display
- Japanese pyromusical by winners of the Prime Minister's Prize
- 24 inch shell
(45minutes)
6. Saturday- Japanese pyromusical by local fireworks companies
- 12 inch shell display
- International display
- Japanese pyromusical by winners of the Prime Minister's Prize
(80 minutes)

SYMPOSIUM PROGRAM SCHEDULE

MONDAY: April 24

9:30 Official Opening

Roger L. Schneider, ISF Acting Chairman

Masamitsu Tamura, Honorary Chairman

Guest Speakers

Representative of Ministry of Economy, Trade and Industry

Governor of Akita Prefecture

10:00 Invited Speaker

History of Fireworks in Japan - *Haruyuki Kono*, Japan Pyrotechnics Association (JPA), Japan

10:30 Complementary Paper Presentation

A Distinction between ‘Hanabi’ and ‘Fireworks’ - *Damien Liu-Brennan*, Researcher specialising in Edo Period Hanabi History and Culture, Australia

11:00 BREAK

Session 1

Session Chairperson: *Honorary Chairman Masamitsu Tamura*, Professor Emeritus, The University of Tokyo

11:30 High-Speed Visualization Measurement of Senko-Hanabi - *Chihiro Inoue*, The University of Tokyo, *Yuichiro Izato*, *Atsumi Miyake*, and *Mitsuo Koshi*, Yokohama National University, Japan

12:00 Outline of Explosives Regulations in Japan - *Shinichiro Fukushima*, Ministry of Economy, Trade and Industry, Japan

12:30 Storage of Black Powder Safety Distances in The Netherlands- *Piet Timmers and Soedesh Mahesh*, RIVM, National Institute for Public Health and the Environment, Centre for Environmental Safety and Security, The Netherlands

13:00 LUNCH

Session 2

Session Chairperson: *Chihiro Inoue*, Associate Professor, The University of Tokyo

14:00 Japanese Traditional Fireworks - *Shuji Hatanaka* and *Ikumi Matsui*, Japan Pyrotechnics Association (JPA), Japan

14:30 Characterization and Classification of Waste Pyrotechnic Compositions Wetted with Vegetable Oil - *Stephan A. Coman*, RES Specialty Pyrotechnics, Inc., *Troy A. Gardner* and *Kirt N. Sasser*, Safety Management Services, Inc., USA

15:00 Development of the Olympic Sacred Fire Torch “The Roots Were the Tokyo Olympic Games of 1964” - *Kenji Murata*, *Keita Itoh*, *Tomohiro Hayashi*, *Makoto Kawano* and *Takashi Kazumi*, Nippon Koki Co, Japan

15:30 BREAK

Session 3

Session Chairperson: *Marc Speer*, Pyrolab, Germany

16:00 **Research on Fireworks Automation and Intelligence** - *Shen Qin*, Nanchang Fireworks Industries Co. Ltd., China

16:30 **The History and Future of Shell Manufacturing in China** - *Cindy Cheung*, Shogun/Vulcan Fireworks, Hong Kong, China

17:00 **Fireworks Accidents in Japan during 2015** - *Shoko Abe, Ryoji Makino, Takako Itou, Maki Suzui, Nobuo Nakajima, Masahide Wakakura, and Yuji Wada*, Research Institute of Science for Safety and Sustainability (RISS), National Institute of Advanced Industrial Science and Technology (AIST), Japan

CLOSE

TUESDAY: April 25

Session 4

Session Chairperson: *Cindy Cheung*, Shogun/Vulcan Fireworks, Hong Kong, China

9:30 **Tradition of Handholding Fireworks “Tedsutsu Hanabi” in Arai, Shizuoka** - *Shuhei Sugimoto, Takeshi Ozaki, and Tomojiro Matsuyama*, Kosai City Hall, Japan

10:00 **Measurements of Recoil and Launch Speed of Small Fireworks** - *Ken Okada, Rene Yo Abe, Akihiro Shimada, and Takehiro Matsunaga*, Research Institute of Science for Safety and Sustainability (RISS), National Institute of Advanced Industrial Science and Technology (AIST), Japan

10:30 **Tumbling Effects of Cylindrical Shells** - *Martin Dümmel, Christian Lohrer, Lutz Kurth, Olaf Mücke*, Bundesanstalt für Materialforschung und -prüfung (BAM), Germany

11:00 BREAK

Session 5

Session Chairperson: *John E. Bouman*, The Walt Disney Company, USA

11:30 **Spain’s 2008 Economic Crisis and its ongoing Affects on Fireworks Competitions** - *Izaskun Astondoa*, Astondoa Piroteknia, and *Jordi Bertran*, University Rovira i Virgili, Spain

12:00 **Assigning Firing System Addresses for Complex Shows using Blueprints** - *Will Harvey*, Finale Fireworks, USA

12:30 **High-Performance Propellants (HPP)** - *Marc Speer*, Pyrolab, Germany

13:00 LUNCH

Session 6

Session Chairperson: *Shu Usuba*, AIST

14:00 **Improvement in Black Powder Lifting** - *Darren Naud*, DMD Systems, USA., John Thomas and *Adrian Segeren*, Ultratec, Inc., USA, *Antonio Gamon*, and *Jose M. Martinez*, Plasticos Gamon, s.a., Spain

14:30 **A Study on Reduced Smoke Firework Compositions using Ammonium Nitrate, Mg-Al and ALEX**, *Shotaro Tomiyoshi*, Yamato Protec Corporation, Japan, *Akinori Suzuki*, *Keiichi Hori*, ISAS/JAXA, Japan, and *Alexander B. Vorozhtsov*, Russia

15:00 **Smoke Particle Formation in Fireworks** - *Mitsuo Koshi*, Yokohama National University, Japan

15:30 BREAK

Session 7

Session Chairperson: *Gento Mogi*, Associate Professor, The University of Tokyo

16:00 **Teaching Mathematics and Physics by Designing Pyrotechnic Displays** - *Susan Hunt* and *Alberto Navarro*, Infinity Visions Inc., USA

16:30 **Real Science or Just Bangs: Cross-Curricular, Inter-Disciplinary, Multimedia Education and Public Engagement** - *Matthew Tosh*, Independent Pyrotechnician, Science Presenter & Broadcaster, England

17:00 **Revision of the United Nation's Classification Test of Flash Compositions** - *Shu Usuba*, *Ken Okada*, *Miyako Akiyoshi*, *Takehiro Matsunaga*, National Institute of Advanced Industrial Science and Technology (AIST), and *Shuji Hatanaka*, Japan Pyrotechnics Association (JPA), Japan

CLOSE

WEDNESDAY: April 26

Session 8

Session Chairperson: Will Harvey, Finale Fireworks, USA

9:30 **Enjoying Fireworks from Chemical and Educational Point of View** - *Yukiko Takegawa*, Osaka Science Museum, Japan

10:00 **Outline of Daisen Fireworks Industry Plan and its Activities** - *Tadanobu Komatsu*, Daisen Fireworks Industry Plan Project Steering Committee, Japan

10:30 **Thermal Properties of Aluminum-Water Systems Measured with Microcalorimetry** - *Ikumi Matsui*, Bureau of Pyrotechnics Inspection (BPI), and *Shuji Hatanaka*, Japan Pyrotechnics Association (JPA), Japan

11:00 BREAK

Session 9

Session Chairperson: *Mitsuo Koshi*, JHC Vice Chairman, Professor Emeritus, The University of Tokyo

11:30 **Study of Ammonium Perchlorate and Tetramethylammonium Nitrate-Based Pyrotechnic Blue Strobe Compositions** - *Dominykas Juknelevicius*, Faculty of Chemistry, Vilnius University, Lithuania *Alicia Dufter*, *Magdalena Rusan*, *Thomas M. Klapötke*, Ludwig-Maximilian University of Munich, Germany, *Arunas Ramanavicius*, Faculty of Chemistry, Vilnius University, Lithuania

12:00 **Comparative Study of Burning Rate Correlations for Pyrotechnic Compositions**, *Anirudha Ambekar* and *Jack J. Yoh*, Department of Mechanical and Aerospace Engineering, Seoul

12:30 LUNCH

MODERATED SESSIONS

13:30 – 15:00

The topics listed below were selected for various reasons to be presented in the popular, round table, moderated sessions.

Moderated Sessions Chairpersons:

Jorge M. Márquez M., Lux Pirotecnia, S.A. de C.V., Mexico

Mitsuru Arai, The University of Tokyo, Japan

TOPICS AND MODERATORS

1. **Scaling Law of Senko-Hanabi** - *Chihiro Inoue*, The University of Tokyo, Japan, *Emmanuel Villermaux*, Aix-Marseille University, France, *Yuichiro Izato*, *Atsumi Miyake*, and *Mitsuo Koshi*, Yokohama National University, Japan
2. **Study on Blue Colored Flame from Compositions Containing Copper Organic Compounds** - *Yuki Hasegawa*, *Masayuki Takagi*, *Dayu Ding*, and *Tadao Yoshida*, Ashikaga Institute of Technology, *Masayuki Kumekawa*, Omagari Hanabi Co-operative Association, Japan
3. **A Study of the Deterioration with Moisture of Ap/Mg Fireworks Compositions** - *Yosuke Nishiwaki*, *Mieko Kumasaki*, Graduate School of Yokohama National University, *Miyako Akiyoshi*, *Takehiro Matsunaga*, National Institute of Advanced Industrial Science and Technology, Japan
4. **Influences of Chemical Dyes on Laser Ignitionability and Thermal Stability of Ammonium Dinitramide-Based Energetic Ionic Liquid (ADN-Based EIL)** - *Mamoru Hayata*, *Kento Shiota*, *Yu-ichiro Izato*, Yokohama National University, *Hiroki Matsunaga*, Fukuoka University, *Hiroto Habu*, Japan Aerospace Exploration Agency/ Yokohama National University *Atsumi Miyake*, Yokohama National University, Japan
5. **Thermal Study of Ammonium Dinitramide and Acetamide Binary Mixture and their Agarose Mixture** - *Kento Shiota*^{1,2}, *Yu-ichiro Izato*¹, *Hiroki Matsunaga*⁴, *Hiroto Habu*⁵, *Atsumi Miyake*³, ¹Graduate School of Environmental and Information Sciences, Yokohama National University, ²Japan Society for the Promotion of Science, ³Institute of Advanced Sciences, Yokohama National University, ⁴Department of Chemical Engineering, Fukuoka University, ⁵Japan Aerospace Exploration Agency), Japan

6. **China Fireworks Export, 1996-2016** - *Andrew Tang*, General Manager of TCPL, Deputy Secretary General of IFA, China
7. **ISO-Standards for Fireworks - Testing and Assessment Criteria** - *Christian Lohrer*, Bundesanstalt für Materialforschung und -prüfung (BAM), Germany
8. **Passivation Treatment of Pyrotechnics**, *Xiaochen Zhang and Ming Zeng*, Baby Tiger Fireworks, China

THURSDAY: April 27

Session 10

Session Chairperson: *Pierre Thebault*, Pyroconsultant Sarl, France

9:30 **Japanese Fireworks Culture and its New Possibilities** - *Akihiro Koga*, Katsuragi Fireworks Co., Ltd., Japan

10:00 **History of Omagari Hanabi and Fireworks Judging Criteria** - *Shigeji Sasaki*, President Omagari Chamber of Commerce and Industry, Japan

10:30 **Verification of the Causes of Low Altitude Burst Phenomena**, *Kazunori Otsuka*, Kayaku, Japan Co., Ltd., Japan

11:00 BREAK

Session 11

Session Chairperson: *Atsumi Miyake*, Professor, Yokohama National University

11:30 **Comparative Study on the Safety of Multiple Report Rockets** - *Francesc Lleches Barber*, Pyrolab, Valencia, Spain

12:00 **Celebrating the 200th Anniversary of *Hanabi Hidenshū* (The Book of Fireworks Secrets) by Rishō, 1817 (the First Book on Recreational Fireworks to be published in Japan)** - *Damien Liu-Brennan*, Researcher specialising in Edo Period Hanabi History and Culture, Australia

13:00 LUNCH

Session 12

Session Chairperson: *Takehiro Matsunaga*, AIST

14:00 **Engineering Investigation of “Ryu-Sei” and Educational Applications of Model Rocket** - *Kazumi Masuda, Kenta Sugiyama, and Seiya Itoh*, Shizuoka Institute of Science and Technology (SIST), Japan

14:30 **Storing Stars in a Safe Manner: Danger and Risk Reduction** *Jean Champanet, Jérôme Gabilan and Pierre Thebault*, Etienne Lacroix Tous Artifices S.A., France

15:30 BREAK

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Jorge M. Márquez M., Lux Pirotecnia, S.A. de C.V., Mexico

Andrew Tang, General Manager of TCPL, Deputy Secretary General of IFA, China

TOPICS AND MODERATORS

- 1. Investigation of the Combustion Performance of Fireworks Shells Burst Charges -** *Masayuki Takagi, Yuki Hasegawa, Dayu Ding, Tadao Yoshida*, Ashikaga Institute of Technology, Japan
- 2. Thermal Analysis for Chemical Reactions of Senko-Hanabi -** *Yu-ichiro Izato*, Yokohama National University, *Chihiro Inoue*, The University of Tokyo, *Atsumi Miyake*, and *Mitsuo Koshi*, Yokohama National University, Japan
- 3. Comparison of Burning Performances of Some Guanidinium 1,5'-Bis-1H-Tetrazolate-Based Mixtures -** *Shingo Date*, National Defense Academy, Japan
- 4. Scale Effect on Combustion of Flash and Non-Flash Compositions,** *Kotaro Ouchida and Mitsuru Arai*, The University of Tokyo, Japan
- 5. Zero-Smoke Concussion Device -** *Darren Naud¹, John Thomas², and Adrian Segeren²*, (1: DMD Systems, 2: Ultratec, Inc.), USA
- 6. Determination of Safety Distances for Firework Shows: Are “Standard” Values Relevant and Practicable? -** *Pierre Thebault*, Pyroconsultant Sarl, France
- 7. Resisting the Impact of an Exploding 6” (150 mm) Dud Aerial Display Shell: Design and Testing of a Protective Roof Canopy** (Not included in these Proceedings) *Roger L. Schneider, John E. Bouman, Ken Agee and Ettore Contestabile*,
- 8. Development of Self Contained Musical Device Shot Tube Battery -** *Shixing Ouyang*, Ouyang Pyromusical Design Studio, China (Not included in these Proceedings)

CLOSE



FRIDAY: April 28

Fireworks Video

10:30 – 12:30

12:30 LUNCH

Session 13

Session Chairperson: *Steven A. Coman*, RES Specialty Pyrotechnics, Inc.

13:30 **Supporting Fireworks Culture as a Viewer** - *Motoo Mase, Hisashi Ikeda and Hitomi Kobayashi*, Japanese Association of Fireworks Appreciators, Japan

14:00 **1,200 mm Shells in North America: The Design, Construction, and Presentation** - *James C. Widmann*, Connecticut Pyrotechnic Mfg. LLC, USA

14:30 CLOSING

