



2024 HiSST Busan


The 3rd International Conference on
High-Speed Vehicle Science and Technology

April 14-19, 2024 | Busan, Korea

www.hisst2024.org

The 3rd International
Conference on
High-Speed Vehicle
Science & Technology

 Bexco, Busan, Korea

 April 14-19, 2024

 info@hisst2024.org

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Invitation Message

You are cordially invited to attend the 3rd HiSST Conference, co-hosted by CEAS (Council of European Aerospace Societies), KSAS (The Korean Society for Aeronautical and Space Sciences), and KSPE (Korean Society of Propulsion Engineers), in Busan, Korea from April 14 to 19, 2024.

The HiSST community encourages open discussions between research institutions, academia, and industry worldwide, focused on the research and development of enabling technologies for supersonic to high-speed vehicles. Presentations at the conference, paper reports, and interactive discussions will cover various aspects of high-speed aerial and space vehicle development, including fundamental research and technical solutions in aerodynamics, flight dynamics, operations, materials, and structures.

Conference topics will cover High-Speed Missions and Vehicles, Propulsion Systems and Components, Thermal, Energy and Management Systems, Guidance & Control Systems, Materials and Structures, High-Speed Aerodynamics and Aerothermodynamics, Testing & Evaluation, Operation, and Environment, Hypersonic Fundamentals, and History.

Leading specialists from research companies worldwide, including invited experts for providing general lectures, will attend this conference. The host city, Busan, is the second largest city in the Republic of Korea, where contemporary lifestyle meets long-standing history with state-of-the-art facilities and world-class infrastructure. You will have the opportunity to appreciate the rich natural, cultural, and urban legacies of Busan and have a rewarding and productive time in and around the conference.

We look forward to welcoming you to the 3rd HiSST Conference in Busan, Korea.

KEY DATES

- **Call For Abstracts**
May 10, 2023
- **Abstract Deadline**
September 30, 2023
- **Notification of Acceptance**
November 15, 2023
- **Early bird registration**
*October 15, 2023 ~
February 15, 2024*
- **Manuscript deadline**
March 15, 2024

CONTACT

For any questions,
feel free to contact:
Force Monster Co., Ltd
(meeting coordinator)
by e-mail:
info@hisst2024.org

Dr. Adam Siebenhaar
Chairman of International
Technical Committee
(Mach 7H Consulting)

Prof. Dr. Jeong-Yeol CHOI
Local Host of HiSST 2024
(Pusan National University)

PRELIMINARY PROGRAMME

April 14

Sun, April 14, 2024

- Registration
- Welcome Party

April 15

Mon, April 15, 2024

- Global Reviews
- Invited Sessions
- Paper Sessions

April 16

Tue, April 16, 2024

- Invited Sessions
- Paper Sessions
- HiSST TC Meeting

April 17

Wed, April 17, 2024

- Invited Sessions
- Paper Sessions
- Gala Dinner

April 18

Thu, April 18, 2024

- Invited Sessions
- Paper Sessions

April 19

Fri, April 19, 2024

- Technical Tour

INTERNATIONAL TECHNICAL COMMITTEE

Australia	Prof. Vincent Wheatley (Univ. of Queensland)
Brazil	Dr. Marco A.S. Minucci (Institute for Advanced Studies)
China	Prof. Xisheng Luo (Institute of Mechanics, Chinese Academy of Sciences)
Europe	Prof. Johan Steelant, Host of 2nd HiSST Conference (European Space Agency)
France	Francois Falempin (MBDA)
Germany	Dr. Jan Martinez-Schramm (DLR, German Aerospace Center)
India	Prof. Mohammed Ibrahim Sugarno (Indian Institute of Technology Kanpur, India)
Italy	Dr. Gennaro Russo (DAC, Campania Aerospace District)
Japan	Prof. Masataka Maita (International Aerospace Consulting)
Korea	Prof. Yunghwan Byun (Konkuk University)
Russia	Prof. Sergey Chernyshev, Host of 1st HiSST Conference (TsAGI)
UK	Prof. Matthew McGilvray (Oxford University)
US	Dr. Adam Siebenhaar, Committee Chairman (Mach 7H Consulting)

REGISTRATION FEE

REGISTRATION	DELEGATES	STUDENT/RETIREE*
Early-bird	\$ 990	\$ 550
Regular	\$ 1,250	\$ 580
On-site	\$ 1,300	\$ 600

The registration fee includes:

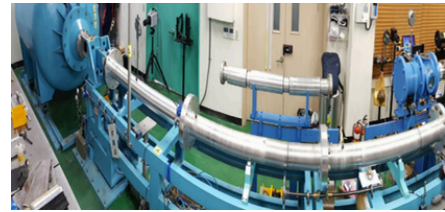
- Conference registration
- Conference kit
- Networking lunches
- Two coffee breaks per day
- Welcome party
- Gala dinner
- Technical tou

* For \$120, students/retirees can buy a ticket of the gala dinner.



High-Speed Missions and Vehicles *including:*

- Planned and ongoing national and international high-speed vehicle programs and missions
- Advanced launch vehicle concepts and hypersonic atmospheric flight vehicle concepts including commercial space tourism, intercontinental transport and (re)-entry
- Design, development and manufacturing of related technologies and components, both for reusable and expendable applications
- Overall system performance & optimization
- Design methodologies and engineering models



Propulsion Systems and Components *including rocket, ramjet, dual mode ramjet, scramjet, rocket and turbine combined cycles, detonation engines, electric propulsion and other advanced propulsion systems addressing:*

- Advanced cycles & concepts including plasma assisted combustion techniques covering full Mach range with application to hypersonic regimes
- System & component performance, development & manufacturing: inlets, isolators, combustors, injectors, ignition, flameholding, nozzles...
- Combustion and mixing processes incl. ignition, flame-out, instabilities...
- Airframe interaction and integration
- Conventional, cryogenic & alternative fuels, additives, catalysis
- Propulsion and fuel (sub)systems: feed-lines, pumps, tanks...
- Advanced computational techniques, CFD & engineering models



Thermal, Energy and Management Systems *for vehicle, subsystems, and payload, including sources, conversion and distribution systems addressing:*

- Thermal protection, heat exchangers, cooling, coating & ablative systems
- Active and Passive systems
- System & component performance, development & manufacturing
- On-board power generation and environmental control
- Design methodologies, engineering models and advanced computational techniques



Guidance & Control Systems *including flight mechanics, guidance, navigation, routing, trajectory optimization, operations research, sensors, actuators, controllers and algorithms, and health monitoring addressing:*

- Flight control and trajectory optimization techniques
- Health monitoring and management, fault detection isolation and recovery, health and usage monitoring systems
- System & component performance, development & manufacturing
- Advanced computational techniques, CFD & engineering models

Materials and Structures *for vehicle and all subsystems covering:*

- Metallic & non-metallic materials for hot and cooled structures and thermal protection systems
- Active/functional materials
- Hot, cold and integrated structural architectures incl. conformal layouts
- Quality control, damage tolerance, structural health monitoring and survivability
- Materials manufacturing and processing
- Advanced modelling & computational techniques



TECHNICAL TOPICS

High-Speed Aerodynamics and Aerothermodynamics with application to hypersonic regimes covering full Mach range from take-off, cruise and (re)-entry including:

- Numerical and experimental studies including aero-thermodynamics, stability-transition-turbulence, MHD, gas physics and chemistry, radiation physics, destructive re-entry
- Numerical and experimental thermal studies incl. passive and active heat transfer, regenerative, transpiration, ablation, pyrolysis, endothermic decomposition...
- Advanced modelling & computational techniques: development and validation
- Multi-disciplinary techniques and models: fluid-structure interaction, conjugate heat transfer, CFD/flexible and rigid body dynamics

Testing & Evaluation covering:

- Ground and in-flight test facilities, flight test operations and simulations
- Diagnostics and data systems
- Scale limitations and facility effects
- Validation and verification
- Facility modelling & simulation

Operation and Environment including:

- Economic and market analysis incl. cost modelling
- Regulatory, certification, operation, maintenance, health & safety issues: on-ground and in-flight
- Environmental effects including sonic boom, noise and emissions
- Infrastructure and traffic management

Hypersonic Fundamentals and History including:

- Theoretical and analytical studies including aero-thermodynamics, stability-transition-turbulence, SWBLI, MHD, gas physics and chemistry, radiation physics, fluid-structure interaction and destructive re-entry
- Theoretical and analytical thermal studies incl. passive and active heat transfer, regenerative, transpiration, ablation, endothermic decomposition...
- Basic materials science for high temperature and aggressive environment, life-time predictions...
- Historical aspects, analyses and assessments and lessons learned
- Educational initiatives and workforce development activities

KOREA & BUSAN

Korea is one of the most spirited and colorful countries in the world. In the short time following its dramatic and impressive development, it has managed to maintain the delicate balance between preserving its impressive history and tradition whilst embracing all the conveniences and technology of the modern world.

Busan, the center of various cultural experiences, offers the visitor innumerable possibilities and merits. Here vitality and enthusiasm stand out and it is not surprising to find a unique coexistence and balance between nature and innovative technology.



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