MSAM 2026

The 9th International Conference on Material Strength and Applied Mechanics

July 15-18, 2026 | Matsue, Japan

Conference Program

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Part I Conference Committee

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Prof. Nao-Aki Noda, Kyushu Institute of Technology, Japan
Prof. Kazuhiro Oda, Oita University, Japan

Technical Committee Chairs

Prof. Guoxing Sun, University of Macau, China
Dr. Yuan Chen, Southern University of Science and Technology, China

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Prof. Hirshikesh Hirshikesh, Indian Institute of Technology Jodhpur, India
Prof. Klaus Holschemacher, Leipzig University of Applied Sciences (HTWK Leipzig), Germany
Prof. Qinghuan Huo, Central South University, China
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Prof. Hugo A. F. A. Santos, Polytechnic University of Lisbon, Portugal
Prof. Jesus Hernandez Saz, University of Seville, Spain
Prof. Magdalena Speicher, University of Applied Sciences Kempten, Germany
Dr. Tomasz Stasiak, National Centre for Nuclear Research, Poland
Prof. Tadeusz Szymczak, Motor Transport Institute, Poland
Prof. Diego Vergara-Rodríguez, Universidad Católica de Ávila, Spain
Dr. Cagri Yilmaz, Akdeniz University, Türkiye

*List in alphabetical order by Last Name from A to Z.

Part II Conference Schedule Summary

Wednesday July 15, 2026

Time	Activity
14:00-18:00	Registration

Thursday July 16, 2026

Time	Activity
09:00-09:05	Welcome Speech
09:05-09:45	Keynote Speech 1
09:45-10:25	Keynote Speech 2
10:25-11:00	**Group Photo** Coffee Break
11:00-11:40	Keynote Speech 3
11:40-12:20	Keynote Speech 4
12:20-14:00	Lunch Break
14:00-14:40	Keynote Speech 5
14:40-15:30	**Poster Presentation** Coffee Break
15:30-17:50	Invited & Oral Session 1

Friday July 17, 2026

Time	Activity
09:00-12:35	Invited & Oral Session 2
12:35-14:00	Lunch Break
14:00-17:25	Invited & Oral Session 3
17:40	Set off for the Awarding Banquet
18:15-20:30	Awarding Banquet

Saturday July 18, 2026

Time	Activity
09:00-15:00	One Day Tour in Matsue

Part III Conference Program in Details

DAY 1 | July 15, 2026

Location: Corridor outside Meeting Room 501, Kunibiki Messe

14:00-18:00	**Registration**

Note for registration:

* Please show us your name or abstract / paper number for registration.
* Please pick up all the conference materials at the registration desk (Name Tag, Conference Program, Lunch & Dinner Tickets etc.).

DAY 2 | July 16, 2026

Location: Meeting Room 501, Kunibiki Messe

09:00-09:05	**Opening Speech** **General Chair:** Prof. Nao-Aki Noda, Kyushu Institute of Technology, Japan
09:05-09:45	**Keynote Speech 1:** Graphene NEMS Technology for Extreme Sensing and Nanoscale Thermal Engineering **Prof. Hiroshi Mizuta,** Japan Advanced Institute of Science and Technology, Japan
09:45-10:25	**Keynote Speech 2:** Application of Polymer Nanocomposite in Construction Materials **Prof. Guoxing Sun,** University of Macau, China
10:25-10:45	GROUP PHOTO *@ Ground Entrance, Kunibiki Messe*
10:45-11:00	COFFEE BREAK *@ Corridor, Meeting Room 501*
11:00-11:40	**Keynote Speech 3:** Distributed Fibre Optic Sensing – An Innovative Technique for Monitoring of Building Structures **Prof. Klaus Holschemacher,** Leipzig University of Applied Sciences (HTWK Leipzig), Structural Concrete Institute (IfB), Germany
11:40-12:20	**Keynote Speech 4:** Master Curve Evaluation of Notch Strength in Polycarbonate-based Polymers over Wide Strain-rate and Temperature Ranges, with Reference to Ductile Cast Irons **Prof. Nao-Aki Noda,** Kyushu Institute of Technology, Japan
12:20-14:00	LUNCH BREAK
14:00-14:40	**Keynote Speech 5:** Adhesion Between 3D Printed Thermoplastic Objects and Textile Materials **Prof. Boris Mahltig,** Faculty of Textile and Clothing Technology, Hochschule Niederrhein, Germany
14:40-15:30	**Poster Presentation** *@ Meeting Room 501* COFFEE BREAK

List of Poster Presentations	
	MS2309: Inverse Reconstruction of Moving Contact Loads on an Elastic Half-space Using Prescribed Surface Displacement **Mr. Yosuke Mori,** Tokyo University of Agriculture and Technology, Japan
	MS2317: Buongiorno-Whitaker Model Extended with Adsorption/Desorption for Nanofluid-saturated Metal Foam **Prof. An-Cheng Ruo,** National United University
	MS2325: Mechanical, Corrosion and Electrical Conductivity Properties of TiCr and CrC Coatings with Different Element Ratios **Prof. Wen-Hsien Kao,** Chienkuo Technology University
	MS2340: Engineering Ag and Au–Ag Nanostructured Substrates for Enhanced SERS Sensitivity **Dr. Lara Mikac,** Ruđer Bošković Institute, Croatia
	MS2341: Development and Tribological Evaluation of Low-temperature Lubricants for High-speed Bearings **Dr. Shin-Yuh Chern,** National Formosa University
	MS2351: Structure Stiffness Studies on SUJ2 Steel Ball-screw Transmission Device with Pretension and Thermal Expansion **Prof. Chin-Chung Wei,** National Formosa University
	MS2353: Optimizing Methane Concentration for Enhanced Cutting Lifetime of Diamond-coated PCB Milling Cutters **Dr. Chi-Wen Liu,** Minghsin University of Science and Technology
	MS2356: Investigation of Deposition and its Removal in Electrochemical Machining of Ti-6Al-4V Using Neutral NaCl-$NaNO_3$ Electrolytes **Assoc. Prof. Feng-Che Tsai,** National Formosa University
	MS2399: Relationships Between Material Damage and Vibration Characteristics Change under Bending and Torsion-bending Vibrations **Dr. Junji Sakamoto,** Okayama University, Japan
Invited & Oral Session 1: Sustainable Engineering Materials	
15:30-15:50	**Invited Speech MS2332:** Simple Methods for Fabricating Free-standing Thermoelectric Flexible Films **Assoc. Prof. Ichiro Imae,** Hiroshima University, Japan
15:50-16:05	**MS2352:** Application of a Lac-Derived Lake Pigment as a Colorant for Polypropylene **Mr. Jesadaporn Taesamritphol,** Kasetsart University, Thailand
16:05-16:20	**MS2361:** Hybrid Natural Fiber Insulation: Enhancing Hemp-based Materials Through Banana Fiber Incorporation and Tamarind-seed Xyloglucan as a Binder **Mr. Greenati Chuancharoen,** Kasetsart University, Thailand
16:20-16:35	**MS2372:** Agent-based Deep Learning Method for Sustainable Solvent Design **Dr. Abdulelah S. Alshehri,** King Saud University, Saudi Arabia
16:35-16:50	**MS2400:** Bio-based Surface Coating on Silk Fabric via Textile Printing: A Study of Natural Pigment and Tamarind Xyloglucan System **Mr. Wiwat Prompoon,** Kasetsart University, Thailand

16:50-17:05	**MS2385:** Surface Chloride Adsorption of Layered Double Hydroxides: Critical Role of Cationic Ratio (M^{II}/M^{III}) **Dr. Qinglu Yu,** University of Macau, China
17:05-17:20	**MS2388:** Low-carbon Cementitious Composites with GO/SF Synergy: From Pore Refinement to Mechanical Enhancement **Ms. Weizhi Chen,** Macau University of Science and Technology, China
17:20-17:35	**MS2389:** Novel Cement-based Sandwich Composites Combining Nano SiO_2 Modified Foam Concrete and Polyacrylamide Toughened Cement Paste: Towards Lightweight, High-strength and High Toughness **Mr. Xinliang Qian,** Macau University of Science and Technology, China
17:35-17:50	**MS2397:** Application of Solid Waste in Foam Concrete **Dr. Xue Li,** University of Macau, China

DAY 3 | July 17, 2026

Location: Meeting Room 501, Kunibiki Messe

Invited & Oral Session 2: Applied Mechanics	
09:00-09:20	**Invited Speech MS2322:** A Hybrid Neural Network–genetic Algorithm Strategy for Elasto-plastic Shape and Size Optimization of Steel Trusses **Prof. Majid Movahedi Rad,** Széchenyi István University, Hungary
09:20-09:40	**Invited Speech MS2374:** Concurrent L-S Topology Optimisation for Continuous Fibre-reinforced Composite Meta-Structures with Customized Poisson's Ratio **Dr. Yuan Chen,** Southern University of Science and Technology, China
09:40-09:55	**MS2335:** Ultrasonic Measurement of the Thickness of 2-Layered Coatings on the Back Side of a Thick Steel Plate **Dr. Shuhei Fujimoto,** National Institute of Maritime, Port and Aviation Technology, Japan
09:55-10:10	**MS2358:** Seismic Performance Verification of Buildings Equipped with a Dual Damper System using Real-time Hybrid Simulation **Prof. Pei-Ching Chen,** National Taiwan University of Science and Technology
10:10-10:25	**MS2330:** Nonlinear Finite Element Analysis of Bamboo Culms Considering Tension-compression Asymmetry **Ms. Hsin-Yun Yeh,** National Taiwan University
10:25-10:40	**MS2375:** Rheological Characterization and CFD Modeling of Epoxy Underfills Containing Photocatalytically Depolymerized and Epoxidized Lignin **Prof. Leo Choe Peng,** Universiti Sains Malaysia, Malaysia
10:40-10:55	**COFFEE BREAK**
10:55-11:15	**Invited Speech MS2378:** Design Strategy for Material Properties of Multi-layered Ti/Au Micro-components by Electrodeposition Towards Ultra-high Sensitive MEMS Inertial Sensors **Prof. Masato Sone,** Institute of Science Tokyo, Japan

11:15-11:35	**Invited Speech MS2368:** Interface Engineering and Mechanical Design for Ultrathin Flexible Organic Optoelectronic Devices **Dr. Lulu Sun,** Thin-Film Device Laboratory, RIKEN, Japan
11:35-11:50	**MS2386:** Experimental and Molecular Dynamics Investigation of Early Cement Hydration Product Adsorption on Surfactant Monolayers **Mr. Tongyuan Liu,** University of Macau, China
11:50-12:05	**MS2350:** A Note on the Influence of Mechanical Stress on X-ray Emission Line Shapes **Dr. Abbas Alshehabi,** Bahrain Polytechnic, Kingdom of Bahrain
12:05-12:20	**MS2401:** Supersonic Transport Solutions of Biot's Equations and its Properties **Dr. G. K. Zakiryanova,** U. Joldasbekov Institute of Mechanics and Engineering, Kazakhstan
12:20-12:35	**MS2364:** A Variable-fidelity Aerodynamic Model Using Proper Orthogonal Decomposition **Dr. Michael J. Mifsud,** Continuum Research & Development, Malta
12:35-14:00	**LUNCH BREAK**
Invited & Oral Session 3: Strength of Materials	
14:00-14:20	**Invited Speech MS2308:** Grain Stresses and Mechanisms of Plastic Deformation in Two-phase Materials Studied Using Neutron Diffraction **Prof. Andrzej Baczmanski,** AGH University of Kraków, Poland
14:20-14:40	**Invited Speech MS2326:** Microstructural and Micromechanical Studies of Dual Phase High Entropy Boride/Carbide Composite Ceramics: Integrity of the Grains and Grain Boundaries **Prof. Pavol Hvizdoš,** Institute of Materials Research, Slovak Academy of Sciences, Slovakia
14:40-15:00	**Invited Speech MS2311:** Textures and Mechanical Properties of FCC Metals after Symmetric and Asymmetric Rolling with Flat and Tilted Material Entries **Prof. Krzysztof Wierzbanowski,** AGH University of Science and Technology Kraków, Poland
15:00-15:15	**MS2380:** Theoretical and Experimental Analysis of Micro- and Macro-scale Friction and Wear Properties of Plasma-nitrided AISI 4140 Steel **Prof. Hsiao-Yeh Chu,** Kun Shan University
15:15-15:30	**MS2360:** Effect of Crack Tip Plasticity on Fatigue Crack Growth in SCr420H Chromium Steel **Mr. Takeshi Matsuo,** Okayama University, Japan
15:30-15:45	COFFEE BREAK
15:45-16:05	**Invited Speech MS2362:** Strength Evaluation of Adhesive Joints with Different Edge Geometries Using an Edge Interface Crack Method and its Usefulness **Prof. Kazuhiro Oda,** Oita University, Japan
16:05-16:25	**Invited Speech MS2384:** Bridging the Nanoscale-to-Macroscale Gap in Carbon Nanotube Spun Yarns Toward Surpassing High-strength Carbon Fibers **Prof. Yasuhiko Hayashi,** Okayama University, Japan

16:25-16:40	**MS2396:** Nanostructure-induced Deformation and Damage Reduction Behavior of Mace-modified Single-crystal SiC **Ms. Pei-Yu Chen,** National Central University
16:40-16:55	**MS2395:** Predicting Compressive Strength of Foamed Concrete based on Anisotropy of Pore Structure with Influence of Pore Size and Shape using X-ray Computed Tomography **Ms. Yanru Chen,** University of Macau, China
16:55-17:10	**MS2369:** Material Informatics and Feature Engineering: A Study on the Thermal Softening Point of Polycrystalline Ni-superalloys **Dr. Archana Bora,** Gauhati University, India
17:10-17:25	**MS2402:** 3D-printed Continuous Carbon Fibre-reinforced Auxetic Meta-composites: Strain-rate-dependent Mechanical Responses and Path-dependent Failure Mechanisms **Mr. Zhi Han,** Southern University of Science and Technology, China

AWARDING BANQUET	***@YUUSHIEN Garden in Daikonshima***
17:30	Gathering at the entrance of Kunibiki Messe
17:40	Departure from the entrance of Kunibiki Messe by bus
18:15-18:45	Classical Garden Exploring
18:45-19:00	Awarding Ceremony
19:00-20:30	Japanese Traditional Performances & Cuisine

DAY 4 | July 18, 2026

ONE DAY TOUR IN MATSUE	
09:00	Departure from entrance of Kunibiki Messe
09:30-10:30	Visit Matsue Castle
10:40-11:40	Horikawa Sightseeing Boat Ride
11:50-12:40	Lunch Break
13:00-15:00	Matsue Vogel Park
15:45	Arrival at JR Matsue Station at 15:45 (Subject to no traffic delays)

Note: Please note that the itinerary, including the schedule and duration of each activity, is subject to change depending on actual circumstances.

Part IV Featured Speakers

Keynote Speakers

KEYNOTE SPEAKER: Prof. Hiroshi Mizuta
Japan Advanced Institute of Science and Technology, Japan
University of Southampton, UK

Keynote Speech 1

July 16, 2026
Time: 09:05-09:45
Speech Title: Graphene NEMS Technology for Extreme Sensing and Nanoscale Thermal Engineering

Abstract. An overview is presented for our recent study of graphene nanodevices for various challenging applications. Graphene nano-electro-mechanical (GNEM) device technology is first presented for low-power switching and ultra-sensitive chemical gas sensing applications. Three-terminal GNEM switches with heterogeneously stacked graphene / h-BN layers are developed, which achieve low-voltage and sub-thermal switching (S < 60 mV/dec). We then present nanoscale graphene chemical sensors, which detect either resistance or mass changes due to a small number of gas molecules physisorbed onto suspended graphene at room temperature. With the resistance detection method, we show quantized increments in the temporal resistance, signifying individual CO_2 molecule adsorption. As for the mass detection method, we demonstrate the resonance frequency shift of a doubly-clamped graphene resonator with the mass resolution of hundreds zeotpgram order. After that, state-of-the-art single-nanometer patterning technology of suspended graphene by using helium ion microscope (HIM) is introduced for nanoscale thermal engineering. The graphene nanomesh (GNM) structures with sub-10-nm pore diameter are patterned on large-area suspended graphene. A new Differential Thermal Leakage method is introduced to evaluate heat phonon transport in the asymmetric GNM channels. Remarkable thermal rectification is presented with the rectification ratio of over 80 % at 150 K and 60 % at 250 K along with preliminary discussion on physical mechanism behind the rectification phenomena.

Biography: Hiroshi Mizuta CPhys FInstP FJSAP, received the Ph.D. degree in electrical engineering from Osaka University, Japan, in 1993. He was the Laboratory Manager at the Hitachi Cambridge Laboratory, Cambridge, UK for 1997 – 2003. He was Associate Professor at Tokyo Institute of Technology for 2003 - 2007 and Professor of Nanoelectronics at University of Southampton for 2007 – 2016 (as part-time for 2011-2016) and served as Head of the NANO Group from 2009 - 2011. He is currently Distinguished Professor and Vice President (Special Missions) at Japan Advanced Institute of Science and Technology (JAIST) and Visiting Professor, School of Electronics and Computer Science, University of Southampton.

He has a strong track record in the research on silicon- and graphene-based nanoelectronic devices and nano-electro-mechanical-systems (NEMS). He has led a number of large research projects in the UK and Japan. He was awarded for 2018 Commendation for Science and Technology by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan for his research achievements on 'Hybrid Electro-Mechanical Functional Devices at Nanoscale'. He has published over 620 peer-reviewed scientific papers and filed over 55 patents. He has also authored books and chapters, including "Physics and Applications of Resonant Tunnelling Diodes", Cambridge University Press. Professor Mizuta is Fellow of the Japan Society of Applied Physics, Fellow of the Institute of Physics (IOP). For 2002-2016, he also served as a member of the International Advisory Board of the MacDiarmid Institute for Advanced Materials and Nanotechnology, New Zealand Centres of Research Excellences (CoREs).

KEYNOTE SPEAKER: Prof. Guoxing Sun

Institute of Applied Physics and Materials Engineering, Director of the Advanced Materials R&D Centre, Zhuhai UM Science & Technology Research Institute, University of Macau, China

Keynote Speech 2

July 16, 2026
Time: 09:45-10:25

Speech Title: Application of Polymer Nanocomposite in Construction Materials

Abstract. The speaker will use two examples of industrialized technology inventions to describe how to effectively combine and apply the two different disciplines of material chemistry and civil engineering, and talk about the stories of commercializing the research products. (1) Mixing cement with ice water to mass produce nanoparticles (size <5 nm), which could be used to prepare a series of hydrogels with super elasticity, adsorption and water swelling properties, applied in electronics, biological materials, agriculture, and civil engineering. (2) Low-cost, nanoparticle-stabilized foam that can keep stable for years, which could be used to mix with cement paste to prepare lightweight, high-strength, fire-resistant and thermally insulated foam concrete. The "nano-foam concrete" has been widely used in prefabricated building materials and cast-in-place construction projects.

Biography: Prof. Guoxing SUN received his Ph.D. degree in civil engineering from The Hongkong University of Science and Technology in 2015, and then worked for Nano and Advanced Materials Institute (NAMI), Hongkong. In 2017, he joined University of Macau, where he developed his career starting from assistant professor to associate professor, and was responsible for the industrialization of the new materials. He has conducted 20+ research grants of more than 4 million USD, and led a research group of more than 50 PhD students and Postdoctoral fellows, some of whom have been full professors in well-recognized universities.

Prof. Sun's research focuses on polymer nanocomposites and construction materials. He discovered a simple way for mass producing 5 nanometer particles by just using normal cement and ice water, and designed a series of high-performance polymer nanocomposite hydrogels enhanced by these cement-released nanoparticles. In 2024, the research work was personally awarded the First-Class Prize in Technological Invention by Mr. Sam Hou Fai, Chief Executive of the Macao SAR.

Contributed to industrialization, Prof. Sun invented a nanoparticle-stabilized foam, which can be simply mixed with cement slurry to fabricate strong light-weight foam concrete. The nano-foam concrete can be 2-5 times stronger or 40% lighter than the relevant market products. It has been widely used and saved 15-40% of cement usage in various construction projects of 15 cities all around the world, such as the largest land port of China, Zhuhai-Macao Hengqin Port Comprehensive Transportation Hub, and Macau Cross-Sea Bridge.

Prof. Sun was reported by China Central Television (CCTV-1, CCTV-4 and CCTV-13) for several times. He is also the recipient of the China National Excellent Young Scientists Fund (2021), Macau Science and Technology Award (2024 and 2022), Building Science and Technology Award issued by China Building Materials Federation (2018). He published over 150 papers in referred journals with total cited times over 7000, and was recognized as World's Top 2% Scientists in the past two years.

KEYNOTE SPEAKER: Prof. Klaus Holschemacher
Leipzig University of Applied Sciences (HTWK Leipzig)
Structural Concrete Institute (IfB), Germany

Keynote Speech 3

July 16, 2026
Time: 11:00-11:40
Speech Title: Distributed Fibre Optic Sensing – An Innovative Technique for Monitoring of Building Structures

Abstract. The preservation of existing buildings is a task whose importance is increasing worldwide. Through appropriate long-term monitoring, it is possible to obtain information about existing conditions of buildings. By analysing the collected data, significant changes can be detected in a timely manner offering the basis for development of effective maintenance or strengthening measures.

There are many different monitoring techniques available, differing in their technological basis. Distributed fibre optic measurement systems based on Rayleigh and Brillouin scattering offer many advantages in comparison to other monitoring technologies. They enable strain measurement in a maximum measurement range of up to 50 m to 100 m (Rayleigh scattering), respectively 50 km to 80 km (Brillouin scattering). In case of low measurement range, the spacing between neighboured measurement points is less than 1 mm, resulting in a quasi-continuous strain measurement over the entire sensor length.

Distributed fibre optic sensors (DFOS) consist of an optical fibre, mostly glass fibre, that is protected by cladding and coating. DFOS are usually fixed at the surface on construction members. But it is also possible to arrange DFOS inside of concrete members if they are set in position during the casting process of fresh concrete. The accuracy of the strain measurement is influenced by the bond between the DFOS and the contacted construction material. Therefore, a quality assurance concept was developed to ensure the effectiveness of DFOS. Furthermore, a research program was performed to investigate the influence of moisture on measurement results. With DFOS, a powerful tool for monitoring building structures is available. Numerous practical applications, for example in bridge construction or wide-span roofs, have already proven its suitability.

Biography: Klaus Holschemacher studied Civil Engineering at the Technical University of Leipzig (TH Leipzig) and has got PhD degree from this university in 1992. Since 1996 he is Professor for Structural Concrete at the Leipzig University of Applied Sciences (HTWK Leipzig). He is the founding director of the Structural Concrete Institute (IfB) and the head of this institution until now. In 2020 he founded the Carbon-reinforced Concrete Lab Germany, a research center for the investigation of automated production of concrete members with non-metallic reinforcement. Holschemacher has successfully applied for research funds with a total amount of more than 12 million €. His main research interests are carbon and textile reinforced concrete, fiber reinforced concrete, hybrid structures, and bond of reinforcement in cementitious materials.

Holschemacher is author, respectively co-author, of more than 400 research papers. He is member of numerous scientific organizations, e.g. fib, ACI, ASCE. Since 2018, he is board member of the German Carbon Concrete Composite e.V. Besides his activities in research, he is working as consulting engineer and as publicly appointed and sworn expert.

KEYNOTE SPEAKER: Prof. Nao-Aki Noda
Professor Emeritus, Kyushu Institute of Technology, Japan
China University of Petroleum, China

Keynote Speech 4

July 16, 2026
Time: 11:40-12:20
Speech Title: Master Curve Evaluation of Notch Strength in Polycarbonate-based Polymers over Wide Strain-rate and Temperature Ranges, with Reference to Ductile Cast Irons

Abstract. In previous studies, it was demonstrated that the notched strength of ductile cast iron (DCI), σ_B^{notch}, obtained from high-speed tensile tests can be represented by a single master curve as a function of the strain-rate–temperature parameter R. Furthermore, it was clarified that even under high loading rates or low-temperature conditions—where the Charpy absorbed energy E_t decreases and the fraction of ductile fracture surface f_D becomes 0%—the notched strength σ_B^{notch} obtained from high-speed tensile tests is, in many cases, higher than the smooth-specimen tensile strength at room temperature, $\sigma_{B,\text{RT}}^{\text{smooth}}$. These results demonstrate that high-silicon DCI possesses sufficient notched strength under structural design conditions typically required in practical applications. From the same perspective, an investigation was conducted for polycarbonate (PC) materials, and the following conclusions were obtained.

In the structural design of polycarbonate materials, it has been reported that the ductile–brittle transition can be evaluated using the fracture strain ε_B obtained from high-speed tensile tests of notched specimens. Specifically, ε_B can be represented by a single master curve as a function of the reduced strain rate at the notch root, $\dot{\varepsilon}_{notch}^{296\text{K}}$, irrespective of strain rate and temperature. In the present study, it is further demonstrated that the absorbed energy under these conditions, E_{notch}^T—which corresponds to the energy obtained from Charpy impact tests—can also be expressed by a single master curve as a function of $\dot{\varepsilon}_{notch}^{296\text{K}}$. For PC materials, both master curves of ε_B and E_{notch}^T indicate a transition to brittle fracture at $\dot{\varepsilon}_{notch}^{296K} > 1 \times 10^3 s^{-1}$. Here, the reduced strain rate $\dot{\varepsilon}_{notch}^{296\text{K}}$ is defined as the actual strain rate at the notch root, $\dot{\varepsilon}_{notch}$, converted to the equivalent strain rate at room temperature (296 K) according to $\dot{\varepsilon}_{notch}^{296K} = a_T \cdot \dot{\varepsilon}_{notch}$.

Not only the fracture strain ε_B and the absorbed energy E_{notch}^T, but also the notched strength $\sigma_B^{notch} = P_{max}/(bd)$ for a notch radius of ρ = 0.2 mm can be represented by a single master curve as a function of $\dot{\varepsilon}_{notch}^{296K}$, irrespective of strain rate and temperature. In addition, the strength of smooth specimens corresponding to $\rho \to \infty$, $\sigma_B^{smooth} = P_{max}/(bd)$, can also be expressed by a single master curve as a function of $\dot{\varepsilon}_{notch}^{296K}$. For $\dot{\varepsilon}_{notch}^{296K} \leq 1 \times 10^3 s^{-1}$, the fracture strength of PC, for both ρ = 0.2 mm and ρ → ∞, can be expressed as a single function $\sigma_B^{notch}(\dot{\varepsilon}_{notch}^{296\text{K}})$, independent of the notch radius.

When $\dot{\varepsilon}_{notch}^{296K} > 1 \times 10^3 s^{-1}$, the notched strength σ_B^{notch} of PC with ρ = 0.2 mm decreases due to the occurrence of brittle fracture. However, even in the high-strain-rate and low-temperature region where σ_B^{notch} decreases, the relationship σ_B^{notch} is maintained.

Biography: Nao-Aki Noda received his Ph.D. degree in Mechanical Engineering from Kyushu University, Japan in 1984. He has been doing research and teaching at Kyushu Inst. Tech., Kitakyushu, Japan, 1984-2022. He is an author of Theory of Elasticity useful for engineers and a co-author of Safety Engineering for Workers in Industry and other several books. He is a co-editor of Stress Intensity Factors Handbook, vol. 4 & 5, Advances in Finite Element Analysis for Computational Mechanics. He is a recipient of Outstanding Paper Medal of Japan Soc. Tech. Plasticity, Sokeizai Industry Technology award from the Materials Process Tech. Ctr., a fellow of JSME (Japan Soc. Mech. Engrs.) and a fellow of JSAE (Soc. Automotive Engrs. Japan), JSMS Award for Academic Contribution and JSME Materials and Mechanics Division Award. Nao-Aki Noda supervised more than 28 PhD students including 18 international students, most of whom are supported by MEXT. He also

supervised more than 30 international master students most of whom are working in Japanese companies. He invited more than 25 international researchers to Kyushu Tech for collaboration. For contributing to the development of excellent international students and foreign researchers, he received the Commendation of Consulate-General of China in Fukuoka. His achievements include research in stress analysis for notched material testing specimens, and development for large ceramics structures used for steel manufacturing machinery and special bolt-nut connection improving anti-loosening and fatigue strength. In 2025, he received the Society of Automotive Engineers of Japan's Best Paper Award and the International Society for Advanced Materials' Advanced Materials Scientist Medal.

KEYNOTE SPEAKER: **Prof. Boris Mahltig**

Faculty of Textile and Clothing Technology
Hochschule Niederrhein, Germany

Keynote Speech 5

July 16, 2026
Time: 14:00-14:40
Speech Title: Adhesion between 3D Printed Thermoplastic Objects and Textile Materials

Abstract. 3D-printing technology offers the chance to functionalize textiles in the third dimension. Possible applications can be printed buttons and locking systems, which are related to traditional fashion applications. Also, elements for mechanical protection can be printed on textile, e.g. for realization of protective sport clothing or for the defence sector. Finally, elements for decorative and design purposes can be realized by 3D-printing on textile, this is especially attractive due to the possible customer individualization. Crucial for such functional applications is the stability of the printed object onto the textile substrate, meaning it is absolutely necessary to guarantee a good rubbing and washing stability. The actual presentation describes a variation of parameters which are able to optimize the fixation of a 3D-printed object. These parameters are the chemical nature of the fiber, chemical pre-treatment of the substrate, the textile roughness and a plasma treatment. Different kind of textile materials as cotton, nylon and polyester are investigated. As chemical pre-treatments simple washing processes but also application of precursors can be used. Additionally, to the textile properties, also the parameters of printing process, as printing speed and temperature, are investigated. To evaluate the quality of 3D-prints onto textiles several testing procedures are developed specially to determine the adhesion force between the 3D-object and the textile substrate. Results of different washing- and abrasion procedures are presented. Altogether it can be concluded that the presented technique has a high potential to realize new, innovative and especially individualized textile products.

Biography: Prof. Boris Mahltig studied chemistry at the University of Bremen (Germany) and finally received the PhD at the university TU Dresden (Germany) in the field of polymers and surfaces. After several years working as project leader in the field of coatings & functionalization, he joined the Hochschule Niederrhein in 2011 as a full professor in the field of “Functionalization of Textiles”. With more than 100 publications and more than 10 patent applications, he contributes to several different fields of science, such as sol-gel technology, textile functionalization, UV protection, 3D printing, optical modification, functional pigments and high-performance fibers.

Invited Speakers

Prof. Majid Movahedi Rad
Széchenyi István University
Hungary

Prof. Kazuhiro Oda
Oita University
Japan

Prof. Andrzej Baczmański
AGH University of Krakow
Poland

Prof. Krzysztof Wierzbanowski
AGH University of Science and
Technology, Poland

Assoc. Prof. Ichiro Imae
Hiroshima University
Japan

Dr. Lulu Sun
Thin-Film Device Laboratory,
RIKEN, Japan

Dr. Yuan Chen
Southern University of Science
and Technology, China

Prof. Masato Sone
Institute of Science Tokyo
Japan

Prof. Yasuhiko Hayashi
Okayama University
Japan

Part V Presentation Guideline

Oral Presentation Guidelines

Devices Provided by the Conference Organizer:

- Laptops (with MS-Office & Adobe Reader)
- Projectors & Screen: Ratio 16:9
- Laser Sticks
- Microphones

Materials Provided by the Oral Presenters:

- PowerPoint (Note: Please show your paper ID as **MS***** on the last page.)

For presenters who don't send the PowerPoint to the Conference Secretary before the conference, please have your presentation ready in a memory stick, and save it on the laptop of your corresponding session about **15 minutes** before session starts.

Duration of Each Presentation

- Keynote Speech: 40 minutes of presentation, including 3-5 minutes of Q&A
- Invited Speech: 20 minutes of presentation, including 3-5 minutes of Q&A
- Oral Presentation: 15 minutes of presentation, including 3-5 minutes of Q&A

Poster Presentation Guidelines

Materials Provided by the Conference Organizer:

- X Racks & Base Fabric Canvases
- Adhesive Tapes or Clamps

Materials Provided by the Presenters:

- Home-Made Posters
- Posters Printed by MSAM 2026 Committee

Requirements for the Posters:

- Material: not limited
- Poster panel size: 120 cm (W) × 210 cm (H)
  Recommended poster size: 85 cm (W) ×140 cm (H).

Poster Board

Part VI Awards

MSAM 2026 Excellent Young Scientist Awards

The **Excellent Young Scientist Award** grants the most excellent young researchers in the fields of Material Strength and Applied Mechanics all over the world. The **MSAM 2026 Excellent Young Scientist Award** is given in both areas (Material Strength or Applied Mechanics), and consists of a cash prize of 500 USD, a certificate and a plaque.

Best Oral Presentation Awards

During the conference, an assessment sheet will be delivered to listeners before the session. ONE Best Oral Presentation in **EACH** session will be selected based on the ranking of votes.
The awards consist of a certificate and free registration for the next MSAM conference.

Best Poster Awards

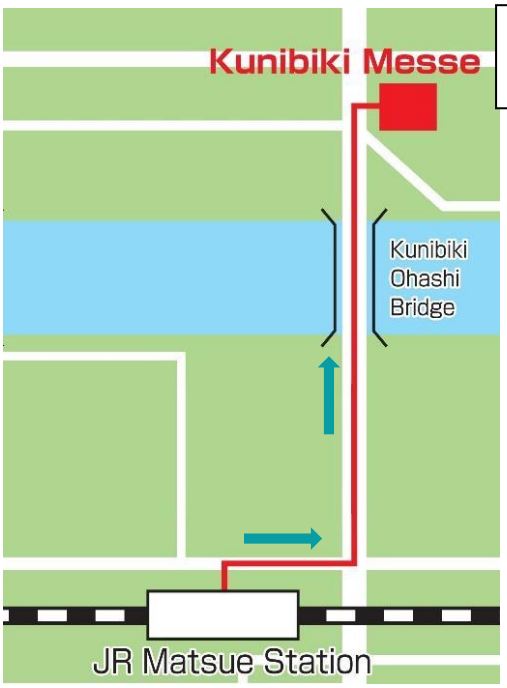
ONE Best Poster Presentation will be selected during the conference. Judges (who have no conflict of interest with the presenters) will be invited by the Conference Chair to evaluate the posters.
The award consists of a certificate and free registration for the next MSAM Conference.

- ✓ **The winners will be presented at the Awarding Banquet and the results released on the MSAM 2026 official website.**

Part VII Conference Venue

Kunibiki Messe (Shimane Prefectural Convention Center)

The biggest convention center in Shimane prefecture, Kunibiki Messe, is located in the center of Matsue City. There are Exhibition Hall (4,018 sqm), Multipurpose Hall (686 sqm), International Conference Hall (510 sheets), and 19 meeting rooms.
Free Wi-Fi is available in building.



It takes only 7 minutes on foot from JR Matsue Station to Kunibiki Messe

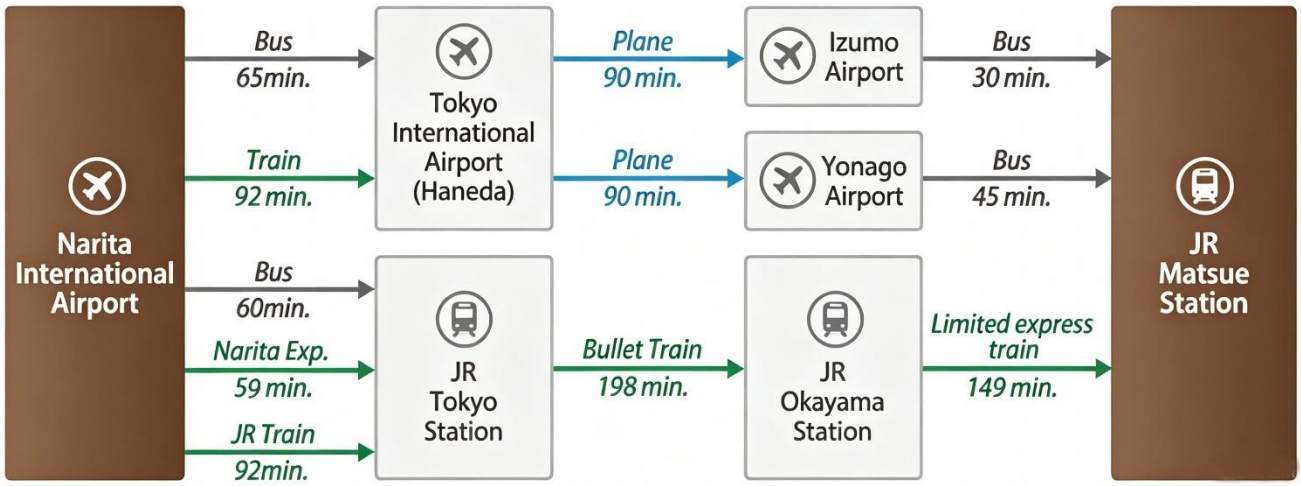
Kunibiki Messe

Address: 1-2-1 Gakuen Minami Matsue City, Shimane, JAPAN 690-0826
Tel: +81+852-24-1111
Fax: +81+852-22-9219
E-mail: kunibiki@kunibikimesse.jp

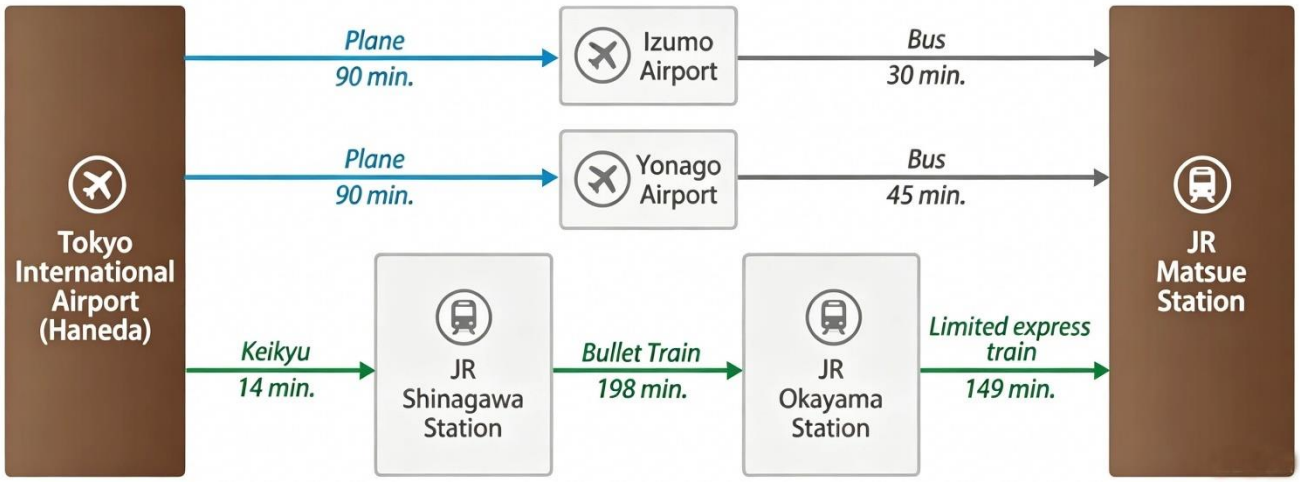
Access to JR Matsue Station

Train → Bus → Plane

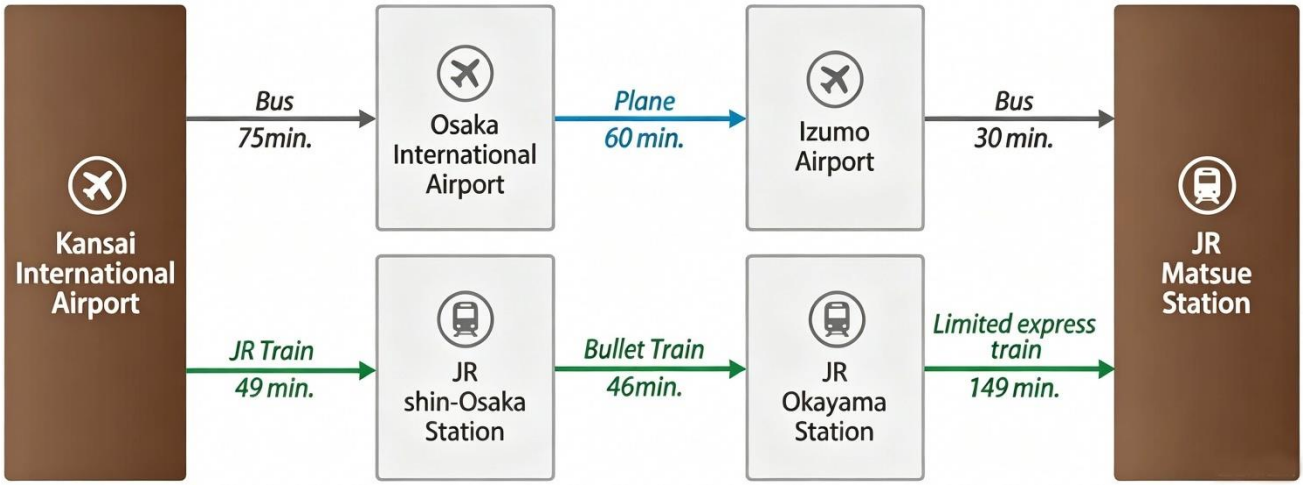
1. From Narita International Airport



2. From Tokyo International Airport



3. From Kansai International Airport



Memo

Website

Contact Us

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