

**ATEM-iDICs '23**  
**Program (Draft version)**

September 16

# Room assignment

## Oct. 10 Tuesday

	Honjin 7F		Honjin 3F					Gyoen 3F	
	A	B	C	D	E	F	G	H	I
Early morning	OS1-1	-	OS8-1	OS10-1	OS1-2	OS3-1	OS19	OS7-1	OS4-1
Late morning	OS2-1	-	OS8-2	OS10-2	OS21-1	OS3-2	OS18-1	OS7-2	OS4-2
	Poster 1								
	Plenary 1								
Afternoon	OS4-3	OS8-3	OS1-3	OS10-3	OS1-4	OS3-3	OS18-2	OS7-3	OS13-1

## Oct. 11 Wednesday

	Honjin 7F		Honjin 3F					Gyoen 3F	
	A	B	C	D	E	F	G	H	I
Early morning	OS6-1	OS7-4	OS1-5	OS1-6	OS10-4	OS13-2	OS5-1	OS8-4	OS4-4
Late morning	OS6-2	-	OS2-2	OS21-2	OS10-5	OS13-3	OS9-1	OS4-5	OS16-1
	Poster 2								
	Plenary 2, 3								
Afternoon	OS12-1	OS21-3	OS1-7	OS1-8	-	OS13-4	OS9-2	OS15	-

## Oct. 12 Thursday

	Honjin 7F		Honjin 3F					Gyoen 3F	
	A	B	C	D	E	F	G	H	I
Early morning	OS9-3	OS12-2	OS1-9	OS1-10	OS20-1	OS14-1	OS6-3	OS17-1	-
Late morning	OS9-4	OS12-3	OS2-3	OS21-4	OS20-2	OS14-2	OS6-4	OS17-2	-

# Organized session list

OS1	Digital Image Correlation
OS2	Optical Methods: from the Frontier to Practical Application
OS3	Nondestructive Testing, Monitoring and Healing
OS4	Fracture and Strength
OS5	Time-dependent Materials
OS6	Dynamic Behavior
OS7	Biomechanics and the Related Topics
OS8	Quantum Beam Techniques and Their Applications
OS9	Micro and Nano Mechanics
OS10	Composite Materials
OS12	Additive Manufacturing
OS13	Smart Materials
OS14	Reliability and Design of Electronic Packaging
OS15	Self-healing Materials/Self-healing Systems
OS16	High Temperature and Extreme Environments
OS17	Soft Materials
OS18	Thermal Methods
OS19	Recent Advancements in Hexagonal Close-packed Metals and Alloys
OS20	New Aspects of the Study on Shape Memory Materials in Use
OS21	Stress and Strain Measurement

# Plenary

## Room A

**Oct. 10 Tuesday**

13:10- 13:20		Greeting	
		Chair	
13:20- 14:10	<b>Plenary 1</b>	Digital Image Correlation (DIC): from practical applications for model calibration/validation to pushing the frontier for extreme environments	<b>Dr. Elizabeth JONES</b> (Sandia National Laboratories)

## Room A

**Oct. 11 Wednesday**

		Chair	Motoharu FUJIGAKI (University of Fukui)
13:30- 14:20	<b>Plenary 2</b>	Multimodal holography for challenging applications: from medical instrumentation, to advanced additive manufacturing, to industrial and art-conservation	<b>Prof. Cosme FURLONG-VAZQUEZ</b> (Worcester Polytechnic Institute)  Authors: Cosme FURLONG, Jeffrey T. CHENG, John J. ROSOWSKI, Daniel RUIZ-CADALSO, Anthony SALERNI, Howard ZHENG, Anahita ALIPANAHI, Jonathan O. LUIZ (Worcester Polytechnic Institute)
14:20- 15:10	<b>Plenary 3</b>	Development of nondestructive testing and condition monitoring technologies based on infrared measurement in various wavelength ranges	<b>Prof. Takahide SAKAGAMI</b> (Kobe University)

# Poster session

## Poster 1

Oct. 10 Tuesday

	Chair		
11:40-13:00	<b>P01</b>	Bending stiffness evaluation of honeycomb panel with helical cell structure	Kohei SAKITA (Osaka Sangyo University) Akihiro WADA (Osaka Sangyo University)
	<b>P02</b>	Combining synchrotron X-ray tomography and diffraction to investigate structure and strain across the intervertebral disc-endplate soft-hard tissue boundary	Alissa PARMENTER (University College London) Catherine DISNEY (Diamond Light Source) Elis NEWHAM (Queen Mary University of London) Hans DEYHLE (Diamond Light Source) Himadri GUPTA (Queen Mary University of London) Brian BAY (Oregon State University) Federico BOSI (University College London) Peter LEE (University College London)
	<b>P03</b>	Influence of Mg composition on tensile mechanical characteristics of sputtered AlSiMg films at intermediate temperatures	Michiko SHINDO (Kyoto University of Advanced Science) Hiroya SAEGUSA (Kyoto University of Advanced Science) Hiroki TSUMA (MIRISE Technologies) Tsuyoshi NISHIWAKI (MIRISE Technologies) Takahiro NAMAZU (Kyoto University of Advanced Science)
	<b>P04</b>	Investigation of table compression method used in 3D shape measurement using Whole-Space Tabulation Method	Hiiro SONE (University of Fukui) Motoharu FUJIGAKI (University of Fukui)
	<b>P05</b>	Fundamental study on the effects of shock wave interaction on structures	Kiyonobu OHTANI (Institute of Fluid Science, Tohoku University) Toshihiro OGAWA (Institute of Fluid Science, Tohoku University) Daiju NUMATA (Tokai University) Tetsu OZAWA (Tokai University) Atsuhiko NAKAGAWA (Tokai University Hospital)
	<b>P06</b>	Multiple wavelengths photoelastic constant determination by a hyperspectral camera	Terry Yuan-Fang CHEN (National Cheng Kung University) Tsai-Hsing CHANG (National Cheng Kung University)
	<b>P07</b>	Effect of sound velocity in magnetorheological fluids on pressure attenuation	Takuma SUGIMOTO (Ritsumeikan University) Kohei TATEYAMA (Muroran Institute of Technology) Masato KIUCHI (Ritsumeikan University) Keiko WATANABE (Ritsumeikan University)
	<b>P08</b>	3D printing of lightweight composite using filaments containing hollow particles	Yuto KANETAKA (Osaka Sangyo University) Akihiro WADA (Osaka Sangyo University) Kazuyoshi WASEDA (Kobe City College of Technology)
	<b>P09</b>	Potential of Pineapple Leaf Fiber (PALF) as an alternative to glass fiber for FRP ~Extraction of fibers by water jetting~	Ai HAYASHI (Doshisha University) Toru FUJII (Kanagawa University) Masataka KAWAGUCHI (Doshisha University) Kimitaka WATANABE (Doshisha University) Kazuto TANAKA (Doshisha University)
	<b>P10</b>	Evaluation of ultrasonic propagation characteristics of CFRP/Aluminum laminates based on wavefront visualization	Shogo KAMBE (Osaka Sangyo University) Akihiro WADA (Osaka Sangyo University)
	<b>P11</b>	Correlation between phase structure and mechanical anisotropy of injection molded PP/PS polymer blends	Rin SHIBAZAKI (Yamagata University) Tetsuo TAKAYAMA (Yamagata University)
	<b>P13</b>	Latent heat storage capacity of Nickel Titanium shape memory alloys and its application in solid-state heat storage	Kenshin ASANO (Hokkaido U) Yuta NAITO (Hokkaido U) Hiroyuki KATO (Hokkaido U)
	<b>P14</b>	Evaluation of harmless crack size of SCM440 Steel with induction hardened	Gum-Hwa LEE (Pukyong National University) Jong-Kyu PARK (Pukyong National University) Ki-Woo NAM (Pukyong National University)
	<b>P15</b>	DIC analysis on meso-scale nuclear material specimens	Zhouyao WANG (Canadian Nuclear Laboratories) Sterling St LAWRENCE (Canadian Nuclear Laboratories) Vineet BHAKHRI (Canadian Nuclear Laboratories) Yuqing DING (Canadian Nuclear Laboratories)

## Poster 2

## Oct. 11 Wednesday

		Chair	
12:00-13:20	P21	Estimation of Carbon fiber types in CFRP by TG/DTA	Haruna MARUKO (University of Fukui, Miraikasei Inc) Hideyuki UEMATSU (University of Fukui) Shuichi TANOUE (University of Fukui)
	P22	Detection of position and size of magnetic contamination in a complex shape conductive material	Tomoo NAKAI (Industrial Technology Institute, Miyagi Prefectural Government)
	P23	Full-field deformation measurement of moist human amnion membrane in uniaxial tensile tests using digital image correlation with methylene blue speckle patterns	Fujia LIU (University of Science and Technology Beijing) Jianhong YANG (University of Science and Technology Beijing) Tong ZHANG (Beihang University) Yan ZHANG (Peking University Third Hospital)
	P24	Comparison of experimental and FEM results for low-velocity impact response behavior of CFRP/Steel hybrid plates	Hyoung-Soo KIM (Nihon University) Yoshio AOKI (Nihon University) Goichi BEN (Nihon University)
	P25	Effect of solution treatment temperature on tensile deformation behavior in cold-rolled and aged Al-Cu-Mg alloys	Yuki ISHII (Ibaraki University) Junya KOBAYASHI (Ibaraki University) Equo KOBAYASHI (Tokyo Institute of Technology) Masato OHNUMA (Hokkaido University) Shigeru KURAMOTO (Ibaraki University) Goroh ITOH (Ibaraki University)
	P26	Proposal of a new method for the evaluation of the surface shear strength of thermoplastics and its validity	Tetsuo TAKAYAMA (Yamagata University) Kazuto TAKAHASHI (Yamagata University)
	P27	Effect of geometric shape on compressive behavior of cellular structures	Keita MAEBARA (Ritsumeikan University) Kohei TATEYAMA (Muroran Institute of Technology) Masato KIUCHI (Ritsumeikan University) Keiko WATANABE (Ritsumeikan University)
	P28	Prevention of hydrogen embrittlement by separation of load support point and hydrogen generation point	Sora OHNUMA (Tokyo Denki University) Hiroyuki SAITO (Tokyo Denki University)
	P29	Fiber pull-out model for notched impact strength prediction of fiber-reinforced thermoplastics	Quan JIANG (Yamagata University) Tetsuo TAKAYAMA (Yamagata University) Akihiro NISHIOKA (Yamagata University)
	P30	Topology optimization of 3D printed s-CFRP perforated tensile specimen	Shun YAMAZAKI (Chiba Institute of Technology) Ryo ARAI (Chiba Institute of Technology) Koji SUZUKI (Chiba Institute of Technology)
	P31	An animal trial on heart displacement using fluorescent digital image correlation method	Chi Hung HWANG (TIRI, NARLabs) Chun-Wei LAI (PME, National Tsing Hua University) RongQing QIU (TIRI, NARLabs) Wei-Chung WANG (PME, National Tsing Hua University) Yen-Pei LU (TIRI, NARLabs) Rui-Cian WENG (TIRI, NARLabs)
	P32	Development of a virtual reality appreciation system for Japanese swords	Hironori MURAKAMI (Graduate School of Kanazawa Institute of Technology) Michio UNEDA (Kanazawa Institute of Technology) Kyoka KOKUBU (Kanazawa Institute of Technology) Ken-ichi ISHIKAWA (Kanazawa Institute of Technology)
	P33	Development of high-brightness and high-speed line LED device for three-dimensional measurement and evaluation of its high-speed performance	ZHU SIYAN (University of Fukui) Shunsuke HIBINO (University of Fukui) Daniel JOSEPH (University of Fukui) Motoharu FUJIGAKI (University of Fukui)

# Room A

# Oct. 10 Tuesday

## OS1-1 Digital Image Correlation

## Materials Characterization

Oct. 10		Chair	Lauren REID (Airbus)
9:00	01-A01	Using DIC for quantifying load induced in elastomers at cryogenic temperature	Matlock MENNU (NASA LaRC/AS&M)
9:20	01-A02	DIC measurements on node optimized mechanical metamaterial structures	Mark A. IADICOLA (National Institute of Standards and Technology) Louise Ahure POWELL (National Institute of Standards and Technology) Marcos REYES-MARTINEZ (National Institute of Standards and Technology) Edwin CHAN (National Institute of Standards and Technology) Christopher SOLES (National Institute of Standards and Technology) Juan J. DE PABLO (University of Chicago)
9:40	01-A03	Measuring oxide strain to failure using digital image correlation	Peter M. BECK (Los Alamos National Laboratory, Oregon State University) Samuel A. BRIGGS (Oregon State University) Tarik A. SALEH (Los Alamos National Laboratory) Benjamin EFTINK (Los Alamos National Laboratory)
10:00	01-A04	In situ monitoring technology utilizing DIC method for measuring material properties at weld area in resin solidification process of injection molded products	Takuhei TSUKADA (POLYPLASTICS CO LTD.)

## OS2-1 Optical Methods: from the Frontier to Practical Application

Oct. 10		Chair	Shien RI (AIST), Satoru Yoneyama (Aoyama Gakuin University)
10:40-11:20	02-A05 Invited	High-speed imaging of dynamic object by parallel phase-shifting digital holography	Yasuhiro AWATSUJI (Kyoto Institute of Technology) Peng XIA (National Institute of Advanced Industrial Science and Technology) Tomoyoshi INOUE (Kyoto Institute of Technology) Sudheesh K. RAJPUT (Kyoto Institute of Technology) Takashi KAKUE (Chiba University) Osamu MATOBA (Kobe University)
11:20	02-A06	Research and development of integral model of global modulus of elasticity of wood	Wei-Chung WANG (National Tsing Hua University) Chin-Hsiang HSU (National Tsing Hua University) Yen-Hsuan HUANG (National Tsing Hua University)
11:40	02-A07	Application of sampling moiré technique in strain measurement of CFRP laminates with ply discontinuities	M. J. Mohammad FIKRY (Tokyo University of Science) Keiichiroh ARISHIMA (Tokyo University of Science) Masaru IRITA (Tokyo University of Science) Shien RI (National Institute of Advanced Industrial and Science and Technology) Vladimir VINOGRADOV (Newcastle University) Shinji OGIHARA (Tokyo University of Science)

13:10- Greeting, Plenary 1

## OS4-3 Fracture and Strength

Oct. 10		Chair	Tomoyuki FUJII (Shizuoka University) Kotaro MORI (Ibaraki University)
14:40	04-A08	Evaluation of strength of surface modifying layer of austenitic stainless steel using X-Ray diffraction method	Tomoyuki HAYASE (Aoyama Gakuin University) Naoki UKITSU (Graduate school of Science and Engineering, Aoyama Gakuin University) Shota HASUNUMA, (Aoyama Gakuin University)
15:00	04-A09	Study on dynamic fracture toughness of interface of bonded dissimilar materials using digital image correlation method	Shun HATTORI (Meiji University) Shuichi ARIKAWA (Meiji University)
15:20	04-A10	Data assimilation of phase-field crack propagation simulation and full-field measurement using digital image correlation	Akinori YAMANAKA, Ryuki Funamoto, Michihiko SUDA, Kengo SASAKI (Tokyo University of Agriculture and Technology)
15:40	04-A11	High strain measurement by Digital Image Correlation and ductile fracture evaluation of Ni-based superalloy in high temperature	Hiroshi FUKAZAWA (IHI Corporaion) Yuta KITAMURA (IHI Corporaion) Koji SACHIMOTO (IHI Corporaion) Naoya KANNO (IHI Corporaion)

# Room B

# Oct. 10 Tuesday

## OS8-3 Quantum Beam Techniques and Their Applications

Oct. 10		Chair	Daiki SHIOZAWA (Kobe University)
14:40	08-B01	Detection of small internal fatigue cracks in 17-4PH stainless steel via synchrotron radiation computed tomography	Takashi NAKAMURA (Hokkaido University) Nao FUJIMURA (Hokkaido University) Gaoge XUE (Hokkaido University) Gen IGARASHI (Hokkaido University) Kosuke TAKAHASHI (Hokkaido University) Akihisa TAKEUCHI (Japan Synchrotron Radiation Research Institute) Masayuki UESUGI (Japan Synchrotron Radiation Research Institute) Kentaro UESUGI (Japan Synchrotron Radiation Research Institute)
15:00	08-B02	A study of the significance of fractographic features on internal fatigue fracture in titanium alloys via synchrotron radiation computed tomography.	Gaoge XUE (Hokkaido University) Nao FUJIMURA (Hokkaido University) Takashi NAKAMURA (Hokkaido University) Hiroyuki OGUMA (National Institute of Material Science) Kosuke TAKAHASHI (Hokkaido University) Akihisa TAKEUCHI (Japan Synchrotron Radiation Research Institute) Masayuki UESUGI (Japan Synchrotron Radiation Research Institute) Kentaro UESUGI (Japan Synchrotron Radiation Research Institute)
15:20	08-B03	Deformation and fracture behavior of T-Phase precipitated Al-Zn-Mg alloys under Hydrogen influence using synchrotron imaging	Kazuyuki SHIMIZU (Iwate university) Shota TSUCHIYA (Iwate university) Hiroyuki TODA (Kyushu university) Hiro FUJIHARA (Kyushu university) Masayuki UESUGI (JASRI) Akihisa TAKEUCHI (JASRI) Yasuhiro KAMADA (Iwate university)
15:40	08-B04	Influence of crystal plasticity and hydrogen diffusion under stress on intergranular crack propagation in Al-Zn-Mg alloy	Ryota HIGA (Kyushu University) Hiro FUJIHARA (Kyushu University) Hiroyuki TODA (Kyushu University) Kenichi EBIHARA (Japan Atomic Energy Agency) Masakazu KOBAYASHI (Toyohashi University of Technology)



# Room C

# Oct. 10 Tuesday

## OS8-1 Quantum Beam Techniques and Their Applications

Oct. 10		Chair	Takashi NAKAMURA (Hokkaido University) Hiroyuki TODA (Kyushu University)
9:00-9:40	08-C01 Invited	Long term in-situ SAXS measurements of Aluminum alloys using high energy laboratory system.	Masato OHNUMA (Hokkaido University) Shin FUKUDA (Hokkaido University) Tomomi SUZUKI (Hokkaido University) Shigeru KURAMOTO (Ibaraki University) Goro ITO (Ibaraki University) Jun'ya KOBAYASHI (Ibaraki University) Iquo KOBAYASHI (Tokyo Institute of technology)
9:40-10:20	08-C02 Invited	Nano- to macroscale in situ observation of cracking and deformation in structural materials using X-ray microscopy	Masao KIMURA (KEK)

## OS8-2 Quantum Beam Techniques and Their Applications

Oct. 10		Chair	Kazuyuki SHIMIZU (Iwate university)
10:40	08-C03	Assessment of nanostructure and hardness in Al-Zn-Mg composite material by combined small-angle and wide-angle scattering tomography	Kyosuke HIRAYAMA (Kyoto University) Tomoki MIYABE (Kyoto University) Shan LIN (Kyoto University) Hiroshi OKUDA (Kyoto University) Hiroyasu MASUNAGA (JASRI) Taizo KAB (JASRI)
11:00	08-C04	Multi-modal measurements of 3D crystallographic transformation behaviour in TRIP steel	Hiroyuki TODA (Kyushu University) Chiharu KOGA (Kyushu University) Hiro FUJIHARA (Kyushu University) Akihisa TAKEUCHI (SPring-8) Masayuki UESUGI (SPring-8) Kyohei ISHIKAWA (Nippon Steel)
11:20	08-C05	Observation of misorientation behavior in austenitic stainless steel with harmonic structure by synchrotron DCT under tensile and cyclic loading	Daiki SHIOZAWA (Kobe University) Issei NAKAZAWA (Kobe University) Shoichi KIKUCHI (Shizuoka University) Yoshikazu NALAI (Kobe University) Mie O. KAWABATA (Ritsumeikan University) Kei AMEYAMA (Ritsumeikan University)
11:40	08-C06	Assessment of hydrogen embrittlement behavior in Al-Zn-Mg alloy via multi-modal 3D image-based analysis	Hiro FUJIHARA (Kyushu University) Hiroyuki TODA (Kyushu University) Ken-ichi EBIHARA (Japan Atomic Energy Agency) Masakazu KOBAYASHI (Toyohashi University of Technology) Masayuki UESUGI (Japan Synchrotron Radiation Research Institute) Akihisa TAKEUCHI (Japan Synchrotron Radiation Research Institute)

## OS1-3 Digital Image Correlation

## Digital Volumetric Correlation

Oct. 10		Chair	Thomas JAILIN (Universite Clermont Auvergne)
14:40	01-C01	Resolving DVC dislocations caused by repetitive patterns in 3D woven composites	Jan NEGGERS (LMPS) Arturo Mendoza QUISPE (Safran Tech) Julien SCHNEIDER (SAFRAN AIRCRAFT ENGINES) Stéphane ROUX (LMPS)
15:00	01-C02	Measuring residual stresses in 3D woven composite fan blades	Leonard TURPIN (LMPS) Yannick YASOTHAN (LMPS) Jan NEGGERS (LMPS) Arturo Mendoza QUISPE (Safran Tech) Julien SCHNEIDER (SAFRAN AIRCRAFT ENGINES) Stéphane ROUX (LMPS)
15:20	01-C03	Research on a power window weighted digital volume correlation and a three-dimensional local weighted average method	Xiangfan SONG (Nanjing University of Aeronautics and Astronautics) Ke XIONG (Nanjing University of Aeronautics and Astronautics)
15:40	01-C04	The impact of metrics in digital image correlation	Ahmed CHABIB (Centrale Lille/CNRS) Jean-François WITZ (Centrale Lille/CNRS) Pierre GOSSELET (Lille University/CNRS) Vincent MAGNIER (Lille University/CNRS)

# Room D

# Oct. 10 Tuesday

## OS10-1 Composite Materials

Oct. 10		Chair	Tetsuya MATSUDA (University of Tsukuba)
9:00	10-D01 Invited	3D printing of Carbon fiber reinforced metamaterials: Stiff lightweight structures for reduction of noise and vibration	Koichi MIZUKAMI (Ehime University)
9:40	10-D02	Evaluation of the performance of Finite Element digital image correlation to characterize textile reinforcements	Taiwei XU (Clement Ader Institute) Rebecca BONNAIRE (Clement Ader Institute) Jean-Noel PERIE (Clement Ader Institute)
10:00	10-D03	Synchrotron radiation X-ray multiscale-CT for observation of fatigue crack initiation and propagation of a cross-ply laminate	Kosuke TAKAHASHI (Hokkaido University) Ryuto HIGASHIYAMA (Hokkaido University) Nao FUJIMURA (Hokkaido University) Takashi NAKAMURA (Hokkaido University)

## OS10-2 Composite Materials

Oct. 10		Chair	Yoshinobu SHIMAMURA (Shizuoka University)
10:40	10-D04	Visualization of interfacial crack propagation along Carbon fibers in epoxy matrix using synchrotron radiation X-ray nano CT	Alok Kumar MAURYA (Hokkaido University) Ryuto HIGASHIYAMA (Hokkaido University) Katsuma WAKABAYASHI (Hokkaido University) Kosuke TAKAHASHI (Hokkaido University) Nao FUJIMURA (Hokkaido University) Takashi NAKAMURA (Hokkaido University)
11:00	10-D05	Fatigue damage growth behavior of quasi-isotropic CFRP laminates by ultrasonic fatigue testing	Hikari SAITOH (Waseda University) Atsushi HOSOI (Waseda University) Yuki NISHI (Waseda University) Hiroyuki KAWADA (Waseda University) Takahiro SEKIGAWA (Mitsubishi Heavy Industries Aero Engines, Ltd.)
11:20	10-D06	Interlaminar fatigue life of CFRP: experiments using flatwise specimens and prediction based on inelastic two-scale analysis	Ryo KOZAKAI (University of Tsukuba) Masayoshi AKAZA (University of Tsukuba) Tetsuya MATSUDA (University of Tsukuba) Gai KUBO (Japan Aerospace Exploration Agency) Masahiro HOJO (Japan Aerospace Exploration Agency) Naoki MORITA (University of Tsukuba) Nobuhiro YOSHIKAWA (The University of Tokyo)
11:40	10-D07	Butterfly hinge elastic metamaterial reinforced by continuous and short Carbon fibers	Kota NAKAMURA (Ehime University) Koichi MIZUKAMI (Ehime University)

## OS10-3 Composite Materials

Oct. 10		Chair	Kosuke TAKAHASHI (Hokkaido University)
14:40	10-D08	Experimental and numerical evaluations of composite overwrapped pressure vessels subjected to low-velocity impact with considering the effect of stacking sequences and winding angles	Mustafa AKBAR (Tokyo Metropolitan University) Satoshi KOBAYASHI (Tokyo Metropolitan University)
15:00	10-D09	Multiscale damage development/strength analysis of FW-CFRP for FCV hydrogen tanks	Akito TAMURA (University of Tsukuba) Tetsuya MATSUDA (University of Tsukuba) Naoki MORITA (University of Tsukuba) Tomohiro YOKOZEKI (The University of Tokyo) Ryoma AOKI (The University of Tokyo) Masahito UEDA (Nihon University) Wataru IWASE (Yachiyo Industry CO., LTD.)
15:20	10-D10	Enhancing mechanical properties and heat resistance of polypropylene/polyamide 6 blends by addition of small amounts of cellulose nanofibers	Fumihiko OZAKI (Toyama Prefectural University) Kazuya NAGATA (Toyama Prefectural University) Kazuaki SANADA (Toyama Prefectural University) Yuki MORIMOTO (Sugino Machine Limited) Kota OGURA (Sugino Machine Limited) Nobutada TAKAHASHI (TAKAGISEIKO CO.)
15:40	10-D11	Effect of the shape of cross section of wet-spun cellulose nanofiber yarn on resin impregnation	Higuchi YUDAI (Shizuoka University) Yoshinobu SHIMAMURA (Shizuoka University) Tomoyuki FUJII (Shizuoka University)

# Room E

# Oct. 10 Tuesday

## OS1-2 Digital Image Correlation

## Finite Element - DIC

Oct. 10		Chair	Phillip REU (Sandia National Laboratories)
9:00	01-E01	Validation of unstructured mesh in global DIC platform using Kirsch displacement functions around a circular opening	Tushar BHANDARI (Indian Institute of Technology Kharagpur) Debasis DEB (Indian Institute of Technology Kharagpur) Chamanth Sai Reddy VEMULAPATI (Indian Institute of Technology Kharagpur)
9:20	01-E02	Deep learning-based digital image correlation to extract visual measurement	Mehrdad Shafiei DIZAJI (University of Virginia) Devin K. HARRIS (University of Virginia) Zahra ZHIYANPOUR (University of Virginia) Aya YEHIA (University of Virginia)
9:40	01-E03	Estimation of creep constitutive equation by digital image correlation and FEM using a notched specimen	Yu KUROKAWA (Tokyo Institute of Technology) Koki YAMANAKA (Tokyo Institute of Technology) Motoki SAKAGUCHI (Tokyo Institute of Technology)
10:00	01-E04	FIB-DIC method for the residual stress measurement of multilayer thin films	Zhen Yi ZENG (National Chung Hsing University) Yu HUANG (National Chung Hsing University) Terry Yuan-Fang CHEN (National Cheng Kung University) Ming-Tzer LIN (National Chung Hsing University)

## OS21-1 Stress and Strain Measurement

Oct. 10		Chair	Yuichi ONO (Tottori University)
10:40	21-E01	Portevin-Le Chatelier effect under biaxial tension in a 5052 aluminum alloy sheet	Sho SATO (Kyoto University) Maya TUKAMOTO (Kyoto University) Yasuhiro MAEDA (KOBE STEEL. Ltd.) Yasushi MAEDA (KOBE STEEL. Ltd.) Takayuki HAMA (Kyoto University)
11:00	21-E02	Effect of strain rate on fatigue life and inelastic strain energy density of AZ31 Magnesium alloy	Kenshin MATSUOKA (Meiji University) Shuichi ARIKAWA (Meiji University)
11:20	21-E03	Analysis of plasticity in compression precracking	Mohamed Amine FAHAM (University of Lille) Jean François WITZ (University of Lille) Jérôme HOSDEZ (University of Lille) Nathalie LIMODIN (University of Lille) Amina TANDJAOUI (University of Lille)

## OS1-4 Digital Image Correlation

## Biomedical Applications of DIC

Oct. 10		Chair	Daniel TURNER (Sandia National Laboratories)
14:40	01-E05	High-accuracy optical coherence elastography digital volume correlation methods to measure depth regions with low correlation	Jinlong CHEN (Tianjin University)
15:00	01-E06	Approximating in-plane stress field on stretched chicken achilles tendons using digital image correlation measurements	H.M. NGWANGWA (University of South Africa) D. MODUNGWA (Council of Scientific and Industrial Research - South Africa) T. PANDELANI (University of South Africa) F.J. NEMAVHOLA (Durban University of Technology)
15:20	01-E07	Digital volume correlation of the intervertebral disc: a multiple tissue type analysis	Alissa PARMENTER (University College London) Catherine DISNEY (Diamond Light Source) Brian BAY (Oregon State University) Federico BOSI (University College London) Peter LEE (University College London)

# Room F

# Oct. 10 Tuesday

## OS3-1 Nondestructive Testing, Monitoring and Healing

Oct. 10		Chair	Yuhki TOKU (Nagoya University)
9:00	03-F01	Inhibiting fatigue crack initiation in Nickel-based superalloys gtd-111 by high-density pulsed electric current treatment	Xinming YAN (Nagoya University) Sungmin YOON (Nagoya University) Shaojie GU (Nagoya University) Yasuhiro KIMURA (Nagoya University) Yuhki TOKU (Nagoya University) Yang JU (Zhejiang University)
9:20	03-F02	Detection of restrained shrinkage cracking in concrete overlays using DIC	Gregor FISCHER (Technical University of Denmark) Pablo ALBERDI-PAGOLA (Technical University of Denmark) Eduardo PEREIRA (University of Minho) Petr KABELE (Czech Technical University)
9:40	03-F03	Effect of coating conditions on the quality of photoresist films investigated by acoustic resonant imaging technique	Hyelin KIM (Tohoku University) Hironori TOHMYOH (Tohoku University)

## OS3-2 Nondestructive Testing, Monitoring and Healing

Oct. 10		Chair	Hironori TOHMYOH (Tohoku University)
10:40	03-F04	A fundamental study on a nondestructive estimation of three-dimensional creep strain using surface displacement	Satoshi FUJII (Kogakuin University) Masaru OGAWA (Kogakuin University)
11:00	03-F05	Nondestructive observation of the change of micro texture of Ni-base superalloys under creep-fatigue loading at elevated temperature in the atmosphere	Hayato MATSUDA (Tohoku University) Ken SUZUKI (Tohoku University) Hideo MIURA (Tohoku University)
11:20	03-F06	Non-contact and quantitative evaluation of plastic strain in SUS 316L using microwave	Guodong WANG (Nagoya University) Yasuhiro KIMURA (Nagoya University) Yuhki TOKU (Nagoya University) Yang JU (Zhejiang University)

## OS3-3 Nondestructive Testing, Monitoring and Healing

Oct. 10		Chair	Masaru OGAWA (Kogakuin University)
14:40	03-F07	Damage analysis of thin film under external disturbance	Y. C. LEE (National Taiwan University of Science and Technology) Y. W. CHEN (Southern Taiwan University of Science and Technology)
15:00	03-F08	Exploring the healing effects of electric current treatment on cracks: A comprehensive analysis of crack-scale factors	Shaojie GU (Nagoya University) Sungmin YOON (Nagoya University) Yasuhiro KIMURA (Nagoya University) Yuhki TOKU (Nagoya University) Yang JU (Zhejiang University)
15:20	03-F09	Solution sensors based on copper oxide nanowires formed by stress-induced migration	Yoshinari KIMURA (Tohoku University) Hironori TOHMYOH (Tohoku University)
15:40	03-F10	Damage-healing induced enhancement of fatigue properties of austenitic stainless steel by high-density pulsed electric current: A continuum damage mechanics-based assessment	Sungmin YOON (Nagoya University) Yasuhiro KIMURA (Nagoya University) Shaojie GU (Nagoya University) Yuhki TOKU (Nagoya University) Yang JU (Nagoya University)

# Room G

# Oct. 10 Tuesday

## OS19-1 Recent Advancements in Hexagonal Close-packed Metals and Alloys

Oct. 10		Chair	Yoshiki KAWANO (Kitami Institute of Technology) Takeshi UEMORI (Okayama University)
9:00	19-G01	Three-dimensional strain localization mechanism in polycrystalline $\alpha$ titanium	Yoshiki KAWANO (Kitami Institute of Technology) Tsuyoshi MAYAMA (Kumamoto University) Masatoshi MITSUHARA (Kyushu University)
9:20	19-G02	Crystal plasticity simulations of room-temperature cup drawing of a ZX10 Magnesium alloy sheet	Takayuki HAMA (Kyoto University) Koichi HIGUCHI (Kyoto University) Yuto NAKATA (Kyoto University)
9:40	19-G03	Surface modification of extruded magnesium alloy using cyclically compression loading	Nao FUJIMURA (Hokkaido University) Takashi NAKAMURA (Hokkaido University) Kosuke TAKAHASHI (Hokkaido University) Tatsuki WAJIMA (HyBridge Co. Ltd.)
10:00	19-G04	Effect of artificial defect on tensile properties of thin titanium alloy wire	Koyo OISHI (Okayama University) Junji SAKAMOTO (Okayama University) Naoya TADA (Okayama University) Takeshi UEMORI (Okayama University)
10:20	19-G05	Prediction of active slip system for commercially pure titanium sheet by crystal plasticity Finite Element Analysis	Takeshi UEMORI (Okayama University) Naoya TADA (Okayama University) Junji SAKAMOTO (Okayama University) Masatoshi DOI (Okayama University)

## OS18-1 Thermal Methods

Oct. 10		Chair	Hirotsugu INOUE (Tokyo Institute of Technology) Nagahisa OGASAWARA (National Defence Academy)
11:00-11:40	18-G01 Invited	Infrared emissivity measurement using polarized reflection characteristics of the material	Nagahisa OGASAWARA (National Defense Academy) Junya SAITO (National Defense Academy) Hiroyuki YAMADA (National Defense Academy)
11:40	18-G02	Relationship between Poisson's ratio and temperature change of rubber dumbbell specimen under uniaxial tension	Weiyao YANG (Tokyo Institute of Technology) Teruaki KATO (Tokyo Institute of Technology) Hirotsugu INOUE (Tokyo Institute of Technology)

## OS18-2 Thermal Methods

Oct. 10		Chair	Nagahisa OGASAWARA (National Defence Academy) Hirotsugu INOUE (Tokyo Institute of Technology)
14:40	18-G03	Thermal image super-resolution using visible-infrared synchronous measurement	Jeongwoon WANG (Kobe University) Tomohiro MATSUMOTO (Kobe University) Daiki SHIOZAWA (Kobe University) Yuki OGAWA (Kobe University) Shiro KUBO (Kobe University) Takahide SAKAGAMI (Kobe University)
15:00	18-G04	Thermographic evaluation of thermal diffusivity and delamination depth inside the wall by laser spot heating	Shun TOMIZAWA (Tokyo Institute of Technology) Yu KUROKAWA (Tokyo Institute of Technology) Yousuke IRIE (Panasonic Connect Corporation) Hirotsugu INOUE (Tokyo Institute of Technology)
15:20	18-G05	Fatigue crack detection in steel structure by active thermography method	Yuki KATO (Kobe University) Daisuke IMANISHI (JFE Steel) Daiki SHIOZAWA (Kobe University) Yuki OGAWA (Kobe University) Takahide SAKAGAMI (Kobe University)

# Room H

# Oct. 10 Tuesday

## OS7-1 Biomechanics and the Related Top Computational biomechanics

Oct. 10		Chair	Hiroshi YAMADA (Kyushu Institute of Technology)
9:00	07-H01	Contact pressure distribution on the porcine tibiofemoral joint after total meniscectomy with a floating-ring implant	Koki UTSUMI (University of Miyazaki) Taegyung KHANG (University of Miyazaki) Izumi SATO (University of Miyazaki) T. D. I. UDAYANGA (University of Miyazaki) Etsuo CHOSA (University of Miyazaki) Go YAMAKO (University of Miyazaki)
9:20	07-H02	Exploring the potential of float ring implant: Finite Element Analysis of contact pressure distribution in the knee joint	T. D. I. UDAYANGA (University of Miyazaki) Izumi SATO (University of Miyazaki) Koki UTSUMI (University of Miyazaki) Etsuo CHOSA (University of Miyazaki) Go YAMAKO (University of Miyazaki)
9:40	07-H03	Finite Element Analysis of distal radius fractures validated against cadaver tests	Jonas A. PRAMUDITA (Nihon University) Yuto OHKI (Nihon University) Kisen TAKAHASHI (Nihon University) Hayato SOETA (Nihon University) Shun TODA (Nihon University) Yu TAKAHASHI (Nihon University)
10:00	07-H04	Development of a head Finite Element Model for predicting head injuries	Ayu KUMAGAI (Sophia University) Shigeto HAYASHI (Junshin Kobe Hospital) Yuelin ZHANG (Sophia University)

## OS7-2 Biomechanics and the Related Top Cell biomechanics

Oct. 10		Chair	Masahiro TODOH (Hokkaido University)
11:00	07-H05	Experimental study on physical characteristics of extracellular matrix surrounding a cancer spheroid at early stage of cancer invasion.	Keisuke MAEDA (Kumamoto University) Seiji OMATA (Kumamoto University) Fumikazu KOTAKE (Kumamoto University) Kenoki OHUCHIDA (Kyushu University) Yasuyuki MORITA (Kumamoto University)
11:20	07-H06	Understanding the biomechanics of cellular adaptation based on systems biology approach	Eiji MATSUMOTO (Osaka University) Daiki MATSUNAGA (Osaka University) Shinji DEGUCHI (Osaka University)
11:40	07-H07	Effect of bioactivation through chemical treatment on mechanical properties and osteogenesis for 3Y-TZP	Takumi SEKINE (Tokyo Metropolitan University) Satoshi KOBAYASHI (Tokyo Metropolitan University)

## OS7-3 Biomechanics and the Related Top Experimental biomechanics 1

Oct. 10		Chair	Ei YAMAMOTO (Kindai University)
15:00-15:40	07-H09 Invited	In Vivo assessment of anterior oblique ligament stiffness at the elbow angle using strain ultrasound elastography	Makoto SAKAMOTO (Niigata University) Yuto TAKANEZAWA (Niigata University) Takuya SUGAWARA (Niigata University) Kei ITOH (Niigata University) Koichi KOBAYASHI (Niigata University) Kazuhiko HIRAMOTO (Niigata University) Tomohiro SASAKI (Niigata University)

# Room I

# Oct. 10 Tuesday

## OS4-1 Fracture and Strength

Oct. 10		Chair	Hiroataka TANABE (The University of Shiga Prefecture) Tomoyuki HAYASE (Aoyama Gakuin University)
9:00	04-I01	Flow stress curve evaluation in post-necking large strain region for ultra-high-strength steel sheets	Takashi MATSUNO (Tottori University) Takayuki HAMA (Kyoto University) Tadashi NAITO (Honda Motor Co., Ltd.) Yoshitaka OKITSU (Honda R&D Co., Ltd.) Seiji HAYASHI (Honda Motor Co., Ltd.) Kenji TAKADA (Honda Motor Co., Ltd.)
9:20	04-I02	Estimation of ultimate tensile strength of steels with two types of material's hardness	Haru FUJISHIMA (Fukuoka University) Keiji YANASE (Fukuoka University)
9:40	04-I03	Engineering of the deformation properties of submicron-sized graphite cantilevers by modifying the surface layer	Kiyohiko KAJIYAMA (Kyoto University) Wataru MATSUNAGA (Kyoto University) Hiroyuki HIRAKATA (Kyoto University)
10:00	04-I04	Size effects consideration on material properties evaluated by using indentation technique	Tomoki SAKAI (Ibaraki University) Takashi WAKUI (Japan Atomic Energy Agency) Kotaro MORI (Ibaraki University) Shigeru SAITO (Japan Atomic Energy Agency) Masatoshi FUTAKAWA (Japan Atomic Energy Agency)

## OS4-2 Fracture and Strength

Oct. 10		Chair	Hiroyuki HIRAKATA (Kyoto University) Hiroataka TANABE (The University of Shiga Prefecture)
10:40	04-I05	Stress-criterion evaluation for delayed fracture on sheared thin ultra-high-strength steel sheets by a in-plane bending test with simultaneous cathodic hydrogen charge	Yuya UEDA (Tottori University) Takashi MATSUNO (Tottori University) Takayuki HAMA (Tottori University) Tomohiko HOJO (Tohoku University) Yoshitaka OKITSU (Honda Motor R&D) Masato TAKAMURA (Riken)
11:00	04-I06	Investigation of fracture mechanisms in Ti fiber reinforced porous Ti fabricated via space holder technique by bend testing	Tomoyuki FUJII (Shizuoka University) Naoto KOBAYASHI (Shizuoka University) Yoshinobu SHIMAMURA (Shizuoka University)
11:20	04-I07	Rewritable high fracture toughness of silica glass by injection and removal of electrostatic charge	Wataru MATSUNAGA (Kyoto University) Seiya SHICHINO (Kyoto University) Hiroyuki HIRAKATA (Kyoto University)
11:40	04-I08	Evaluation of the fracture strength of three-dimensional lattice structures with a crack	Takumi MATSUMOTO (Tokyo University of Science) Kuniharu USHIJIMA (Tokyo University of Science)

## OS13-1 Smart Materials

Oct. 10		Chair	Go MURASAWA (Yamagata University)
14:40	13-I01	Effect of the curvature of the cross-section on buckling characteristics of convex-tape-shaped Cu-Al-Mn shape memory alloy elements.	Shuto NAKASHIMA (Graduate student of The University of Kitakyushu) Hiroki CHO (The University of Kitakyushu) Takumi SASAKI (The university of Kitakyushu) Sumio KISE (Furukawa Techno Material Co., Ltd.)
15:00	13-I02	Batteryless and wireless design of magnetostrictive Fe-Co/Ni clad film for coronavirus monitoring	Hiroki KURITA (Tohoku University) Tsuyoki TAYAMA (TOHOKU STEEL Co., Ltd.) Fumio NARITA (Tohoku University)
15:20	13-I03	3D printing of ICN magnetic gel for contraction-type actuator	Yuma SAKURAI (Yamagata University) Yosuke WATANABE (Yamagata University) Jun OGAWA (Yamagata University) MD Nahin Islam SHIBLEE (Yamagata University) Hidemitsu FURUKAWA (Yamagata University)
15:40	13-I04	Programmable shape memory composites and 4D Printing: from aerospace to biomedical applications	Jinsong LENG (Harbin Institute of Technology) Yanju LIU (Harbin Institute of Technology) Wei ZHAO (Harbin Institute of Technology)

# Room A

# Oct. 11 Wednesday

## OS6-1 Dynamic Behavior

Oct. 11		Chair	Masahiro NISHIDA (Nagoya Institute of Technology)
9:00	06-A21	Development and application of a high-speed stereo microscope measurement system	Junbeom KWON (Korea Institute of Materials Science) Minki KIM (Korea Institute of Industrial Technology) Young Cheol LEE (FAMTECH Co. Ltd.)
9:20	06-A22	Measurement of unsteady vibration using compressive sensing and digital image correlation	Yuki KATO (National Institute of Technology, Hiroshima College) Soma WATAHIKI (Kouzo Keikaku Engineering Inc.)
9:40	06-A23	Material testing 2.0: From uncertainty quantification of DIC fields to identification of viscoplastic parameters with VFM	Youssef AMANI (onera/dmas) Thomas FOUREST (onera/dmas) Bertrand LANGRAND (onera/dmas) Patricio ALMEIDA (safran helicopter engines)
10:00	06-A24	Operational modal analysis on rotating structures by using DIC	Davide MASTRODICASA, Siemens Industry Software NV, Vrije Universiteit Brussel; Emilio Di LORENZO, Siemens Industry Software NV; Bart PEETERS, Siemens Industry Software NV; Patrick GUILLAUME, Vrije Universiteit Brussel;

## OS6-2 Dynamic Behavior

Oct. 11		Chair	Hiroyuki YAMADA (National Defense Academy)
10:40	06-A25	Performance evaluation of head and neck protectors using epoxy foam	Yuma TOZUKA (Graduate School of Natural Science and Technology, Kanazawa University) Masahiro HIGUCHI (Kanazawa University) Ryoyu SHIMONO (Graduate School of Natural Science and Technology, Kanazawa University) Hiroshi TACHIYA (Kanazawa University)
11:00	06-A26	Effect of artificial defect on deformation behavior of cell structures	Takashi ORI (Muroran Institute of Technology) Kohei TATEYAMA (Muroran Institute of Technology) Hiroyuki FUJIKI (Muroran Institute of Technology)
11:20	06-A27	Effects of strain rate on flow stress and fracture strain of aluminum alloy 2024 plates using stepwise modeling method	Slim DJEBIEN (Nagoya Institute of Technology) Masahiro NISHIDA (Nagoya Institute of Technology) Shinsuke NOHARA (Nagoya Institute of Technology) Stefan MARTH (Luleå University of Technology) Hans-Åke HÄGGBLAD (Luleå University of Technology)

## OS12-1 Additive Manufacturing

Oct. 11		Chair	Ryosuke MATSUZAKI (Tokyo University of Science)
15:40-16:20	12-A28 Invited	Tension and compaction force improve mechanical performance of 3D printed continuous Carbon fiber reinforced thermoplastics	Naruki ICHIHARA (Nihon University) Masahito UEDA (Nihon University)
16:20	12-A29	Quantitative evaluation of the effect of fiber breakage on elastic modulus of 3D-printed thin CFRP	Takumi ITO (Aoyama Gakuin University) Keisuke IIZUKA (Aoyama Gakuin University) Satoru YONEYAMA (Aoyama Gakuin University)



# Room B

# Oct. 11 Wednesday

## OS7-4 Biomechanics and the Related Topics

### Experimental biomechanics 2

Oct. 11		Chair	Yasuyuki MORITA (Kumamoto University)
9:00	07-B21	Analysis of shear deformation of forearm soft tissue with an embedded cephalic vein and a mat with layered polymer and polyurethane foam	Hiroshi YAMADA (Kyushu Institute of Technology) Yuki TANOUE (Kyushu Institute of Technology) Shuhei SHIMOIDE (Kyushu Institute of Technology) Yasuyuki MORITA (Kumamoto University)
9:20	07-B22	Mechanical and morphological properties in human dentin	Duha ALMALLAHI (Hokkaido University) Masahiro TODOH (Hokkaido University)
9:40	07-B23	In vivo evaluation of rotational behavior of ACL deficient knee	Koichi KOBAYASHI (Niigata University) Yuya TAKAHASHI (Niigata University) Makoto SAKAMOTO (Niigata University) Satoshi WATANABE (Niigata Medical Center)
10:00	07-B24	Mechanical properties of biological soft tissues treated by enzymes	Ei YAMAMOTO (Kindai University) Kumiko TAKEMORI (Kindai University) Yuki KAWAMURA (Morinomiya University of Medical Sciences)

## OS21-3 Stress and Strain Measurement

Oct. 11		Chair	Makoto UCHIDA (Osaka Metropolitan University)
15:40	21-B21	Considerations for the identification of Elasto-plastic material model parameters	Samuel FAYAD (University of Illinois) Elizabeth JONES (Sandia National Laboratories) D. Tom SEIDL (Sandia National Laboratories) Phillip REU (Sandia National Laboratories) John LAMBROS (University of Illinois)
16:00	21-B22	Estimation of Three-dimensional residual stresses in a spot-welded plate using the Eigenstrain theory and X-ray diffraction	Kensei MIYOSHI (Kogakuin University) Toshinori TANAKA (Kogakuin University) Masaru OGAWA (Kogakuin University)
16:20	21-B23	Fundamental Elastic-plastic behavior using single crystalline Micro-pillar testing of Aluminum alloy for determination of constitutive parameters of Crystal plasticity	Nobuhisa OCHI (JSOL Joint Research Chair for Next-generation CAE) Toshiro AMAISHI (JSOL Joint Research Chair for Next-generation CAE) Tei HIRASHIMA (JSOL Joint Research Chair for Next-generation CAE) Yoji SHIBUTANI (Graduate School of Engineering Osaka University, Vietnam Japan University)
16:40	21-B24	Evaluation of mechanical work during shape recovery process of shape memory polymers	Saki SHIBUYA (Meiji University) Shuichi ARIKAWA (Meiji University)

# Room C

# Oct. 11 Wednesday

## OS1-5 Digital Image Correlation

## DIC Optimization & Improved Techniques Part 1

Oct. 11		Chair	Matlock MENNU (NASA LaRC)
9:00	01-C21	Artificial neural network for dynamic subset selection and displacement error prediction	Devan ATKINSON (Stellenbosch University) Melody van ROOYEN (Stellenbosch University) Thorsten H. BECKER (University of Cape Town)
9:20	01-C22	Evaluation of the relation between optimal subset size and systematic errors in digital image correlation	Kei UENO (Aoyama Gakuin University) Keisuke IIZUKA (Aoyama Gakuin University) Satoru YONEYAMA (Aoyama Gakuin University)
9:40	01-C23	A three-camera digital image correlation system for full-field 3D shape and motion measurement	LiKang LUAN (Dantec Dynamics) Yoshiyasu FUTAWATARI (Dantec Dynamics)
10:00	01-C24	DIC measurements: In situ methodology for evaluating bias errors	Nicolas SWIERGIEL (ARIANEGROUP) Pierre BAUDOIN (EIKOSIM) Florent MATHIEU (EIKOSIM)
10:20	01-C25	Effect of porosity and geometry misalignments on full-field deformation of laser welds	Amanda JONES (Sandia National Laboratories) Mark FOSTER (Sandia National Laboratories) Kyle KARLSON (Sandia National Laboratories) Andrew POLONSKY (Sandia National Laboratories)

## OS2-2 Optical Methods: from the Frontier to Practical Application

Oct. 11		Chair	Satoru YONEYAMA (Aoyama Gakuin University), Yohsuke Tanaka (Kyoto Institute of Technology)
11:00	02-C21	Evaluation of surface roughness of a grinding wheel surface by using a laser speckle pattern	Yohsuke TANAKA (Kyoto Institute of Technology) Dai NAKAI (Kyoto Institute of Technology) Keishi YAMAGUCHI (Kyoto Institute of Technology)
11:20	02-C23	Accurate dynamic phase measurement of transparent objects by the spatiotemporal phase-shifting method with a polarized sensor	Shien RI (AIST) Peng XIA (AIST)
11:40	02-C24	Applications of advanced photoelastic measurement techniques	Po-Chi SUNG (National Tsing Hua University) Wei-Chung WANG (National Tsing Hua University)

## OS1-7 Digital Image Correlation

## High-speed DIC

Oct. 11		Chair	Brian BAY (Oregon State University)
15:40	01-C26	Ultra-high speed 3D digital image experimental techniques capturing 3d full field non-contact surface strain of composite & ceramic materials during brittle fracture	Michael FORSEY (RMIT)
16:00	01-C27	Practical considerations for high-speed digital image correlation	Phillip JANNOTTI (U.S. Army Research Laboratory) Nicholas LORENZO (U.S. Army Research Laboratory) Samantha CUNNINGHAM (U.S. Army Research Laboratory)
16:20	01-C28	Vibration and deformation measurement using digital image correlation and compressive sensing	Soma WATAHIKI (KOZO KEIKAKU ENGINEERING Inc.) Yuki KATO (National Institute of Technology Hiroshima College)

# Room D

# Oct. 11 Wednesday

## OS1-6 Digital Image Correlation

## DIC Optimization & Improved Techniques Part 2

Oct. 11		Chair	
9:00	01-D21	Open-source module to access stereoscopic strain fields measurements	Harry M. NGWANGWA (University of South Africa) Eddy CARON (University of Lille) Jean-Francois WITZ (University of Lille) Christophe CUVIER (University of Lille) Arnaud BEAURAIN (University of Lille) Vincent MAGNIER (University of Lille) Ahmed EL BARTALI (University of Lille)
9:20	01-D22	Open-source multi-camera calibration library and novel designed speckle target	Zhuoyi YIN (Southeast University) Kang WEI (Southeast University) Xiangyun REN (1. Chongqing Changan Automobile Co., Ltd; 2. Chongqing University) Fang YUAN (Suzhou University of Science and Technology) Rui CHEN (State Grid Nanjing Power Supply Company) Xiaoyuan HE (Southeast University)
9:40	01-D23	Digital Image Correlation (DIC) challenge image sets for benchmarking DIC codes	Elizabeth M.C. JONES (Sandia) Amanda R. JONES (Sandia)
10:00	01-D24	Automatic measurement of crack length using full-field strain obtained from digital image correlation	Vipin CHANDRA (Indian Institute of Technology Kanpur) Pritam CHAKRABORTY (Indian Institute of Technology Kanpur)

## OS21-2 Stress and Strain Measurement

Oct. 11		Chair	
11:00	21-D21	The development of intelligent grinding process system using AI-IoT techniques	Shuichi ARIKAWA (Meiji University) Chia-Pang HUNG (National Changhua University of Education) Kuan-Jung CHUNG (National Changhua University of Education)
11:20	21-D22	Simultaneous measurement of 3D deformation and strain evaluation using the Tri-wavelength and 3-sensor camera	Fujun YANG (Southeast University) Minyang WU (Southeast University) Boshuo YANG (National University of Singapore) Hanyang JIANG (Zhejiang University of Technology)
11:40	21-D23	Principal stress measurement method using grain growth of electrodeposited Nickel foil	Ke CHENG (Tottori University) Yuta YAMAMOTO (Tottori University) Takumi TANIMURA (Tottori University) Seiya FUKUDA (Tottori University) Yuichi ONO (Tottori University)

## OS1-8 Digital Image Correlation

## DIC Optimization & Improved Techniques Part 3

Oct. 11		Chair	
15:40	01-D25	Coupling computer generated imagery with optimization to improve optical experiments such as digital image correlation	Sarvi GHAFARI (University of Texas at Arlington) Daniel TURNER (Sandia National Laboratories) Bart Van Bloemen WAANDERS (Sandia National Laboratories) Tim SHEAD (Sandia National Laboratories)
16:00	01-D26	Stereo-measurements on optimal patterns based on spectral analysis	Thomas JAILIN (Université Clermont Auvergne) Benoît BLAYSAT (Université Clermont Auvergne) Raphaël LANGLOIS (Université Clermont Auvergne) Michel GRÉDIAC (Université Clermont Auvergne)
16:20	01-D27	A novel encoded-semantic speckle pattern for DIC measurement	Xiangyun REN (1. Chongqing Changan Automobile Co., Ltd 2. Chongqing University) Zhuoyi YIN (Southeast University) Yi LUO (Chongqing Changan Automobile Co., Ltd) Yifei KANG (Chongqing Changan Automobile Co., Ltd) Xiaoyuan HE (Southeast University)

# Room E

# Oct. 11 Wednesday

## OS10-4 Composite Materials

Oct. 11		Chair	Koichi MIZUKAMI (Ehime University)
9:00	10-E21	Effect of laminate configuration on dome-shaped deep drawability of Carbon fiber reinforced thermoplastics	Kosuke SHIMIZU (Tokyo Metropolitan University) Satoshi KOBAYASHI (Tokyo Metropolitan University)
9:20	10-E22	Evaluation of the effect of weave structure on permeability based on differences in void distribution	Masahiro FUWASAKI (Kanazawa Institute of Technology) Hiroshi SAITO (Kanazawa Institute of Technology)
9:40	10-E23	Experimental and analytical evaluation of stress distribution in bolted joints in CFRP laminates considering viscoelasticity	Syunya TAMURA (Kanazawa Institute of Technology) Hiroshi SAITO (Kanazawa Institute of Technology)
10:00	10-E24	Resistance welding of Carbon fiber reinforced thermoplastic laminates by using Carbon Nanotube sheet as heating element	Keisuke SANO ( Shizuoka University ) Yoshinobu SHIMAMURA ( Shizuoka University ) Tomoyuki FUJII ( Shizuoka University ) Yoku INOUE ( Shizuoka University )

## OS10-5 Composite Materials

Oct. 11		Chair	Hideyuki UEMATSU (University of Fukui)
11:00	10-E25	Development of a model for accelerated testing methodology for durability of CFRP strand	Haru FUJII (Kanazawa Institute of Technology) Hiroshi SAITO (Kanazawa Institute of Technology)
11:20	10-E26	Investigation of bending fracture behavior of CFRTP laminates with fiber discontinuities	Ryo NAKAO (Aoyama Gakuin University) Keisuke IIZUKA (Aoyama Gakuin University) Akira TODOROKI (Tokyo Institute of Technology) Yoshiki OHTA (Hokkaido University of Science) Satoru YONEYAMA (Aoyama Gakuin University)
11:40	10-E27	Evaluation of mechanical properties of Carbon fiber using cruciform test	Kota AMASAKA (Kanazawa Institute of Technology) Hiroshi SAITO (Kanazawa Institute of Technology)
12:00	10-E28	Effect of constraint conditions around Carbon single fibers on compressive strength evaluation using Cruciform test Method	Kazuya TAKAHASHI (Kanazawa Institute of Technology) Hiroshi SAITO (Kanazawa Institute of Technology)

# Room F

# Oct. 11 Wednesday

## OS13-2 Smart Materials

Oct. 11		Chair	Hiroki KURITA (Tohoku University)
9:00	13-F21	Multiscale characterization and design of movable cross-links polymer-based cellulose composites	Chao LUO (Osaka Institute of Technology) Yusei FUJIWARA (Osaka Institute of Technology) Juri HONDA (Osaka Institute of Technology) Ryohei IKURA (Osaka University) Yoshinori TAKASHIMA (Osaka University) Yasutomo UETSUJI (Osaka Institute of Technology)
9:20	13-F22	Development of multi-method Additive Manufacturing platform (GelPiPer multi) for Hydrogel composite materials	Tsubasa HONMA (Yamagata University) Yosuke WATANABE (Yamagata University) Jun OGAWA (Yamagata University) MD Nahin Islam SHIBLEE (Yamagata University) Hidemitsu FURUKAWA (Yamagata University)
9:40	13-F23	Improvement of bending motion of natural rubber/metal bi-composite driven by light irradiation	Kenta KAWABATA (Meiji University) Shuichi ARIKAWA (Meiji University)

## OS13-3 Smart Materials

Oct. 11		Chair	Hiroki CHO (The University of Kitakyushu)
10:40	13-F24	A multi-mode auxetic piezoelectric energy harvester for low-frequency vibration	Longfei HE (Tohoku University) Hiroki KURITA (Tohoku University) Fumio NARITA (Tohoku University)
11:00	13-F25	Piezoelectric properties improvement of potassium sodium niobate (KNN) dispersed epoxy resin matrix composite film filled with Carbon black particles	Ziwen ZHAO (Tohoku University) Yaonan YU (Tohoku University) Zhenjin WANG (Tohoku University) Hiroki KURITA (Tohoku University) Fumio NARITA (Tohoku University)
11:20	13-F26	Novel energy harvesting device using FeCo/AlSi composite plate	Yudai ISHIGAMI (Yamagata University) Koshi IKI (Yamagata University) Daisuke KUMAOKA (Yamagata University) Tadaaki SATAKE (Yamagata University) Fumio NARITA (Tohoku University) Go MURASAWA (Yamagata University)

## OS13-4 Smart Materials

Oct. 11		Chair	Zhenjin WANG (Tohoku University)
15:40	13-F27	Development of pouchd gel application containing anisotropic structure that allows surface deformation	Komi SUZUKI (Yamagata University) Jun OGAWA (Yamagata University) Yosuke WATANABE (Yamagata University) MD Nahin Islam SHIBLEE (Yamagata University) Hidemitsu FURUKAWA (Yamagata University)
16:00	13-F28	Improvement of expansion width of the structure expanded by sound waves	Mizuki NARITA (Meiji University) Shuichi ARIKAWA (Meiji University)
16:20	13-F29	3D printing of hydrogel for application to surgical models and establishment of its evaluation method	Daisuke SAKASHITA (Yamagata University) Yosuke WATANABE (Yamagata University) Jun OGAWA (Yamagata University) MD Nahin Islam SHIBLEE (Yamagata University) Hidemitsu FURUKAWA (Yamagata University)

# Room G

# Oct. 11 Wednesday

## OS5-1 Time-dependent Materials

Oct. 11		Chair	Takenobu SAKAI (Saitama University)
9:00	05-G21	Identifying viscoelastic constitutive parameters using the stress sensitivity based virtual fields method	Sun DINGSI (Aoyama Gakuin University) Keisuke IIZUKA (Aoyama Gakuin University) Satoru YONEYAMA (Aoyama Gakuin University)
9:20	05-G22	Effect of crystallinity of matrix on long-term creep life of unidirectional CF/PP tape	Masayuki NAKADA (Kanazawa Institute of Technology) Yasushi MIYANO (Kanazawa Institute of Technology) Yoko MORISAWA (Kanazawa Institute of Technology) Takeharu ISAKI (Mitsui Chemicals, Inc.) Taiki HIRANO (Mitsui Chemicals, Inc.) Kiyoshi UZAWA (Kanazawa Institute of Technology)
9:40	05-G23	Evaluation of compressive strength of short glass fiber reinforced polybutylene terephthalate	Atsuko FUKUO (Shibaura Institute of Technology) Kenichi SAKAUE (Shibaura Institute of Technology)
10:00	05-G24	Verification of the effect of temperature in the time-temperature superposition principle by MD simulation	YUAN SHIHONG (Saitama University) Takenobu SAKAI (Saitama University)
10:20	05-G25	Effect of interfilament bonding strength on notched strength of 3D-printed UD CFRTP	Mototsugu TANAKA (Kanazawa Institute of Technology) Yusuke KINOSHITA (Kanazawa Institute of Technology) Kuniaki SHINDO (Kanazawa Institute of Technology)

## OS9-1 Micro and Nano Mechanics

Oct. 11		Chair	Ryosuke MATSUMOTO (Kyoto University of Advanced Science)
11:00	09-G21	Effect of CuO nanoparticles inclusion on mechanical reliability of sintered Ag die attach assemblies	Ryota FUKUDA (Kyoto University of Advanced Science) Daisuke YASUGI (Kyoto University of Advanced Science) Takahiro NAMAZU (Kyoto University of Advanced Science)
11:20	09-G22	Tensile mechanical characteristics of CuO nanoparticles contained sintered Ag films at intermediate temperatures	Ryoma TAKEISHIMA (Kyoto University of Advanced Science) Yuga KUMAKIRI (Kyoto University of Advanced Science) Takahiro NAMAZU (Kyoto University of Advanced Science)
11:40	09-G23	Application of Al/Ni heat treatment to sintered Ag die attach assemblies for reliability of power devices	Hiroya SAEGUSA (Kyoto University of Advanced Science) Daisuke YASUGI (Kyoto University of Advanced Science) Takahiro NAMAZU (Kyoto University of Advanced Science)
12:00	09-G24	Correcting STEM artefacts thanks to dedicated spectral analysis	Benoît BLAYSAT (UCA/IP) Jan NEGGERS (Centrale Supélec/LMPS) Maxime VALLET (Centrale Supélec/LMPS) Thomas JAILIN (UCA/IP) Michel GRÉDIAC (UCA/IP)

## OS9-2 Micro and Nano Mechanics

Oct. 11		Chair	Takahiro NAMAZU (Kyoto University of Advanced Science)
15:40	09-G25	The effect of normal strain on $\gamma$ -surface for prismatic slip systems in Magnesium	Suraj SINGHANEKA (Kyoto University of Advanced Science) Sunday T. OYINBO (Kyoto University of Advanced Science) Naoki UEMURA (Kyoto University of Advanced Science) Ryosuke MATSUMOTO (Kyoto University of Advanced Science)
16:00	09-G26	Effects of excess electrons/holes on elastic properties of van der Waals stacked materials	Atsuki KIYONAGA (Kyoto University) Wataru MATSUNAGA (Kyoto University) Hiroyuki HIRAKATA (Kyoto University)
16:20	09-G27	Thermal annealing effect on mechanical characteristics of FIB processed Si nanowires	Masao TORII (Kyoto University of Advanced Science) Hiromichi ANDO (Kyoto University of Advanced Science) Takahiro NAMAZU (Kyoto University of Advanced Science)
16:40	09-G28	Practical closed loop DIC strain control	Alex ARZOUMANIDIS (Psylotech, Inc.)

# Room H

# Oct. 11 Wednesday

## OS8-4 Quantum Beam Techniques and Their Applications

Oct. 11		Chair	Kyosuke HIRAYAMA (Kyoto University)
9:00	08-H21	Understanding crack initiation and growing process in sintered iron during tensile tests by applying the 0th persistent homology on the snapshots of pore images using X-ray laminography	Yukiko OZAKI (Kyushu University) Isshin ANDO (Kyushu University, Present affiliation: Proterial, Ltd.) Yasutaka MUGITA (Kyushu University, Present affiliation: JFE Steel) Kyosuke HIRAYAMA (Kyoto University) Masatoshi ARAMAKI (Kyushu University) Fei JIANG (Yamaguchi University) Takeshi TSUJI (University of Tokyo) Akihisa TAKEUCHI (JASRI) Masayuki UESUGI (JASRI) Kosuke ASHIZUKA (JFE Steel)
9:20	08-H22	Stress corrosion cracking of high strength Al-Zn-Mg-Cu Alloy with Mn-rich dispersoid and T Phase	Jianwei TANG (Kyushu University) Yafei WANG (Kyushu University) Hiro FUJIHARA (Kyushu University) Kyosuke HIRAYAMA (Kyoto University) Kazuyuki SHIMIZU (Iwate University) Hiroyuki TODA (Kyushu University)
9:40	08-H23	Observation of impact fracture on metallic materials by using synchrotron radiation	Masakazu KOBAYASHI (Toyohashi University of Technology) Yojiro OBA (Toyohashi University of Technology) Hiromi MIURA (Toyohashi University of Technology) Chihiro WATANABE (Kanazawa University) Shogo FURUTA (Toyohashi University of Technology)
10:00	08-H24	3D measurement of internal microstructures of Al-Zn-Mg based alloy with Ni-P plating by means of synchrotron X-ray CT	Keitaro HORIKAWA (Osaka University) Makoto HINO (Hiroshima Institute of Technology) Kazuyuki SHIMIZU (Iwate University) Hiroyuki TODA (Kyushu University) Masato HOSHINO (JASRI) Kentaro UESUGI (JASRI)
10:20	08-H25	Hydrogen embrittlement of ultra-fine-grained Al-Zn-Mg-Cu alloys processed by high pressure torsion	Yafei WANG (Kyushu University) Jianwei TANG (Kyushu University) Hiro FUJIHARA (Kyushu University) Nozomu ADACHI (Toyohashi University of Technology) Yoshikazu TODAKA (Toyohashi University of Technology) Akihisa TAKEUCHI (Japan Synchrotron Radiation Research Institute) Masayuki UESUGI (Japan Synchrotron Radiation Research Institute) Hiroyuki TODA (Kyushu University)

## OS4-5 Fracture and Strength

Oct. 11		Chair	Hiroataka TANABE (The University of Shiga Prefecture) Hiroyuki HIRAKATA (Kyoto University)
11:00	04-H21	Damage on solid-liquid interface due to multiple bubble interaction under strong pressure waves	Hiroyuki KOGAWA (Japan Atomic Energy Agency) Masatoshi FUTAKAWA (Japan Atomic Energy Agency) Hiroyuki KAWASHIMA (Ibaraki University) Takashi WAKUI (Japan Atomic Energy Agency)
11:20	04-H22	Study on impact damage caused by cavitation bubble collapse	Hiroyuki KAWASHIMA (University of Ibaraki) Hiroyuki KOGAWA (JAEA) Nobuatsu TANAKA (University of Ibaraki) Masatoshi FUTAKAWA (JAEA)
11:40	04-H22	Strengthening of Molybdenum alloy produced by spark plasma sintering	Yukio MIYASHITA (Nagaoka University of Technology) Kazunori KONDO (Graduate school of Engineering, Nagaoka University of Technology) Tomu SHIMIZU (Graduate school of Engineering, Nagaoka University of Technology) Shinichi YAMAMOTO (Toshiba Material Co.Ltd.) Yusuke SAWAI (Toshiba Material Co.Ltd.)
12:00	04-H23	Laser correction of deformation of Carbon steel plate by laser quenching	Mitsuhiro GOTO (The University of Shiga Prefecture) Hiroataka TANABE (The University of Shiga Prefecture) Keiji OGAWA (Ryukoku University) Yuta HIRATANI (The University of Shiga Prefecture) Yui IZUMI (The University of Shiga Prefecture)

## OS15-1 Self-healing Materials/Self-healing Systems

Oct. 11		Chair	Shingo OZAKI (Yokohama National University)
15:40-16:20	15-H21 Invited	Improvement of mechanical properties of self-healing Carbon fiber reinforced polymers with microcapsules by hybridization of spread Carbon fibers and woven Carbon fibers	Yasuka NASSHO (Toyama Prefectural University) Kazuaki SANADA (Toyama Prefectural University) Ryuichiro YAMADA (Toyama Prefectural University) Shinnosuke HIROOKA (Toyama Prefectural University)
16:20	15-H22	Finite Element Analysis methodology for guaranteeing reliability of structural ceramics by combining self-crack-healing with proof testing	Taiyo MAEDA (Yokohama National University) Toshio OSADA (National Institute for Materials Science) Shingo OZAKI (Yokohama National University)
16:40	15-H23	Study on kinetic parameters of alumina matrix-based self-healing ceramic composites	Mostafizur RAHMAN (Yokohama National University) Toshio OSADA (National Institute for Materials Science) Shingo OZAKI (Yokohama National University)
17:00	15-H24	Remanufacturing using by self-healing technology	Wataru NAKAO (Yokohama National University) Nobuhide SEKINE (Yokohama National University)



# Room I

# Oct. 11 Wednesday

## OS4-4 Fracture and Strength

Oct. 11		Chair	Yukio MIYASHITA (Nagaoka University of Technology) Hiroyuki HIRAKATA (Kyoto University)
9:00	04-I21	Very high cycle fretting fatigue property of chromium molybdenum steel in oil-lubricated environment	Shimpei OGAWA (Shizuoka University) Yoshinobu SHIMAMURA (Shizuoka University) Toru YAGASAKI (Honda Motor Co., Ltd.) Tomoyuki FUJII (Shizuoka University)
9:20	04-I22	Consideration of wire fatigue mechanism of wire rope	Masatoshi OGATA (National Institute of Occupational Safety and Health) Atsushi YAMAGUCHI (National Institute of Occupational Safety and Health) Naoya KURAHASHI (Kobe Material Testing Laboratory Group) Kenta YAMAGIWA (National Institute of Occupational Safety and Health) Satoshi IZUMI (The University of Tokyo)
9:40	04-I23	Evaluation of fatigue properties of anodized Aluminum alloy A6061	Atsuki KOMEYA (Hiroshima University) Takeshi ANDO (Hiroshima University) Miu HAYASHI (Hiroshima University) Hiroyuki AKEBONO (Hiroshima University) Atsushi SUGETA (Hiroshima University)

## OS16-1 High Temperature and Extreme Environments

Oct. 11		Chair	Yu KUROKAWA (Tokyo Institute of Technology)
10:40	16-I21	Evaluation of initiation rate and area growth rate of voids of TypeIV creep damage using history of area distribution measured by Image analysis	Fumiko KAWASHIMA (Kumamoto University) Yuki KOBAYASHI (Kumamoto University) Yusuke ODA (Kumamoto University) Hirotohi NAKANO (Kumamoto University) Takumi FUJIHARA (Kumamoto University) Kazuhiro FUJIWARA (Kumamoto University)
11:00	16-I22	Creep-induced microstructural changes in Nickel-based superalloys by nonlinear acoustics	Yutaka ISHII (Shonan institute of technology) Toshihiro OHTANI (Shonan institute of technology) Takayuki SAKAKIBARA (Chuo Spring Co. Ltd.) Masayuki KAMAYA (INSS) Yuutarou OHTA (IHI Coporation) Keiji KUBUSIRO (IHI Asia Pacific(Thailand) Co. Ltd.)
11:20	16-I23	Evolution of nonlinear acoustic characteristics in Ti-Al alloy during creep	Zeming QU (Shonan Insitiute of Technnology) Yutaka ISHII (Shonan Insitiute of Technnology) Toshihiro OHTANI (Shonan Insitiute of Technnology) Noritake HIYOSHI (Fukui University) Yasuhiro YAMAZAKI (Fukui Universit) Yutaro OHTA (IHI Corporation)
11:40	16-I24	Temperature variation associated with fatigue crack initiation in a single crystal material under anisotropic cyclic deformation	Putt THANAKUN (Tokyo Institute of Technology) Motoki SAKAGUCHI (Tokyo Institute of Technology) Akira KOSHIO (Tokyo Institute of Technology) Hirotsugu INOUE (Tokyo Institute of Technology)
12:00	16-I25	In situ high temperature behavior of porous ceramic coatings	Mahavir SINGH (IIT Bombay) Krishna N JONNALAGADDA (IIT Bombay)

# Room A

# Oct. 12 Thursday

## OS9-3 Micro and Nano Mechanics

Oct. 12	Chair	
9:00	09-A41	Emergent ferromagnetic properties in the three-dimensionally architected Fe nanofilms Azusa N. HATTORI (Osaka University) JUHARNI (NAIST) Liliany N. PAMASI (NAIST) Nobuyoshi HOSOITO (NAIST) Aydar IRMIKIMOV(NAIST) Ken HATTORI (NAIST) XiaoQian SHI (Dalian Jiaotong University) FangZhun GUO (Dalian Jiaotong University) Ai I. OSAKA (Osaka University) Hidekazu TANAKA (Osaka University)
9:20	09-A42	Light effects on the mechanical properties of wurtzite semiconductors Hiroyuki OGURI (Osaka University) Yan LI (Osaka University) Eita TOCHIGI (The University of Tokyo) Ryosuke KINOSHITA (Osaka University) Xufei FANG (TU Darmstadt) Kenichi TANIGAKI (Osaka Electro-Communication University) Yu OGURA (Nagoya University) Katsuyuki MATSUNAGA (Nagoya University) Atsutomo NAKAMURA (Osaka University)
9:40	09-A43	Effect of chemical treatment on strength of bundled single-walled Carbon nanotubes Ryunosuke KOBAYASHI (Kyoto University of Advanced Science) Tomohito KINO (Kyoto University of Advanced Science) Takahiro NAMAZU (Kyoto University of Advanced Science)
10:00	09-A44	Elucidation of formation mechanism of fatigue dislocation structures in micro-sized Ni single crystal under tension-compression cyclic load Kota SUGISAKA (Kyoto university) Yuki ANADA (Kyoto university) Satoshi TAKADA (Kyoto university) Masataka ABE (Kyoto university) Takashi SUMIGAWA (Kyoto university)

## OS9-4 Micro and Nano Mechanics

Oct. 12	Chair	
10:40	09-A45	The nucleation of nano-sized vacancy type prismatic dislocation loop from unstable spherical void in alpha-iron: a molecular dynamics study Mugilgeethan VIJENDRAN (Kyoto University of Advanced Science) Ryosuke MATSUMOTO (Kyoto University of Advanced Science)
11:00	09-A46	Atomic-scale analysis and modelling of pyramidal I and II $\langle c+a \rangle$ edge dislocation behaviour in Magnesium Sunday Temitope OYINBO (Kyoto University of Advanced Science) Ryosuke MATSUMOTO (Kyoto University of Advanced Science)
11:20	09-A47	DFT simulation on the prismatic slip of the 10H-type LPSO phase in Mg-Zn-Y alloys Naoki UEMURA (Kyoto University of Advanced Science) Singhaneka SURAJ (Kyoto University of Advanced Science) Ryosuke MATSUMOTO (Kyoto University of Advanced Science)
11:40	09-A48	Mechanical control of electro-mechanical response in two-dimensional materials Yang ZHANG (Kyoto University) Seita KATAYAMA (Kyoto University) Hidefumi TAKAHASHI (Kyoto University) Wataru MATSUNAGA (Kyoto University) Hiroyuki HIRAKATA (Kyoto University)

# Room B

# Oct. 12 Thursday

## OS12-2 Additive Manufacturing

Oct. 12		Chair	
9:00	12-B41	Effects of standoff distance in optical cavitation in hole finishing of Additively Manufactured component	Naruki ICHIHARA (Nihon University) S. H. YEO (Nanyang Technological University) Wayne W. E. ONG (Nanyang Technological University) S. MEDYA (Nanyang Technological University)
9:20	12-B42	Effect of overlap joint position on strength of composite interlaminar reinforcement for Fused Filament Fabrication 3D printer	Aiko FUJII (Tokyo University of Science) Jumpei KAJIMOTO (Tokyo University of Science) Jun KOYANAGI (Tokyo University of Science) Ryosuke MATSUZAKI (Tokyo University of Science)
9:40	12-B43	Investigating the mechanical behavior of 3D-printed formwork for concrete using DIC measurements	Zuffain HUSSAN (Technical University of Denmark) Gregor FISCHER (Technical University of Denmark)
10:00	12-B44	Evaluation of mechanical properties in 3D-printed CF/PPS composites using PPS-coated filaments	Sawane NORIMATSU (Tokyo University of Science) Rei SHUTO (Tokyo University of Science) Dwayne AROLA (University of Washington) Ryosuke MATSUZAKI (Tokyo University of Science)

## OS12-3 Additive Manufacturing

Oct. 12		Chair	
10:40	12-B45	Effect of water-soluble cutting fluid on mechanical properties of Nylon12 manufactured by SLS 3D printer	Keisuke IIZUKA (Aoyama Gakuin University) Sai MADOKORO (Yamamoto Metal Technos Co., Ltd.) Koji GOTOH (Kyushu University)
11:00	12-B46	Modeling of dysphagia diet using a 3D food printer capable of mixing food inks of different hardness	Izumi ICHIMORI (Yamagata University) Yosuke WATANABE (Yamagata University) MD Nahin Islam SHIBLEE (Yamagata University) Jun OGAWA (Yamagata University) Hidemitsu FURUKAWA (Yamagata University)
11:20	12-B47	3D printing of a recycled long Carbon fiber twisted yarn reinforced polyamide	Keigo SATO (Nihon University) Masahito UEDA (Nihon University)

# Room C

# Oct. 12 Thursday

## OS1-9 Digital Image Correlation

## Large-scale DIC testing

Oct. 12		Chair	Alissa PARMENTER (University College London)
9:00	01-C41	Advanced measurement technologies for smarter testing	Lauren REID (Airbus UK)
9:20	01-C42	Validation of an FEM for a wind turbine blade using a VIC-2D digital image correlation system	Harry M. NGWANGWA (University of South Africa)
9:40	01-C43	Digital image correlation measurements on snow	Abhishek G (Pyrodynamics) S RAVIPRAKASH (Pyrodynamics)

## OS2-3 Optical Methods: from the Frontier to Practical Application

Oct. 12		Chair	Yohsuke TANAKA (Kyoto Institute of Technology), Shien RI (AIST)
10:40	02-C41	A novel coherent gradient sensing phase-shifting technique and its application in residual deformation analysis of directed energy deposited components	Qixian ZHONG (Tsinghua University) Jiaqiang LI (Tsinghua University) Huimin XIE (Tsinghua University)
11:00	02-C42	Stress distribution evaluation at localized necking area using the virtual fields method with digital image correlation	Kotaro FUJITA (Aoyama Gakuin University) Keisuke IIZUKA (Aoyama Gakuin University) Satoru YONEYAMA (Aoyama Gakuin University) Kuniharu USHIJIMA (Tokyo University of Science) Shota CHINZEI (Kobe Steel, Ltd.)
11:20	02-C43	Development of displacement measurement method using the sampling moire method with image stabilization	Hiroto OOUCHI (Tokyo University of Science) Shien RI (AIST) Jiaxing YE (AIST) M. J. Mohammad FIKRY (Tokyo University of Science) Shinji OGIHARA (Tokyo University of Science)
11:40	02-C44	Deformation measurement method using mixed observed values obtained from phase difference distribution	Motoharu FUJIGAKI (University of Fukui) Wei JIANG (University of Fukui)

# Room D

# Oct. 12 Thursday

## OS1-10 Digital Image Correlation

## Microscale Testing using DIC

Oct. 12	Chair	Mark IADICOLA (NIST)
9:00	01-D41	Structure-property correlations in spin-coated polymer films using full-field rheo-optical experiments Karthek PILLA (IIT Bombay) Krishna JONNALAGADDA (IIT Bombay)
9:20	01-D42	Study on fatigue crack growth mechanism based on strain distribution measured by in-situ SEM-DIC method in low Carbon steel Yusaku HASHIMOTO (Nagaoka University of Technology) Bui Phuong THAO (Nagaoka University of Technology) Yukio MIYASHITA (Nagaoka University of Technology) Yuichi OTSUKA (Nagaoka University of Technology)
9:40	01-D43	Using incremental FIB-DIC ring-core method for the residual stress measurement of duplex coatings on light metal alloy Nhat Minh DANG (National Chung Hsing University) Tra Nguyen Anh KHOA (National Chung Hsing University) Vinh Phoi NGUYEN (Pham Van Dong University, Quang Ngai, Vietnam) Thien Ngon DANG (Ho Chi Minh City University of Technology and Education, Ho Chi Minh, Vietnam) Terry Yuan-Fang CHEN (National Cheng Kung University) Ming-Tzer LIN (National Chung Hsing University)
10:00	01-D44	DIC at high speed and high magnification Thorsten SIEBERT (LaVision GmbH) Richard PREVOST (LaVision Inc.)

## OS21-4 Stress and Strain Measurement

Oct. 12	Chair	Masaru Ogawa (Kogakuin University)
10:40	21-D41	Investigation of simultaneous measurement method of stress distribution and strain distribution in bending test Shota HASUNUMA (Aoyama Gakuin University) Tomoyuki HAYASE (Aoyama Gakuin University)
11:00	21-D42	Evaluation of the development of plastic deformation field during uniaxial tension of polyamides obtained from different thermal treatments Toyoshi YOSHIDA (Osaka Metropolitan University) Eito OKADA (Osaka Metropolitan University) Mei TOJI (Osaka Metropolitan University) Makoto UCHIDA (Osaka Metropolitan University) Yoshihisa KANEKO (Osaka Metropolitan University)
11:20	21-D43	Broad-band light source polariscope capable of assessing whole-field retardation and principal angle of photo-elastic samples Shyh-Tsong LIN (Department of Electro-optical Engineering, National Taipei University of Technology, Taipei, Taiwan) Hoang-Quy LE (Department of Electro-optical Engineering, National Taipei University of Technology, Taipei, Taiwan) Ming-Jui HUANG (Department of Mechanical Engineering, National Chung Hsing University, Taichung, Taiwan)
11:40	21-D43	Ranking performance of material models in material testing 2.0 Pascal LAVA (MatchID) Fabrice PIERRON (MatchID) Amar PESHAVE (MatchID)

# Room E

# Oct. 12 Thursday

## OS20-1 New Aspects of the Study on Shape Memory Materials in Use

Oct. 12		Chair	Kohei TAKEDA (Aichi Institute of Technology)
9:00	20-E41	Nonlinear deflection of NiTi shape memory alloy helical spring	Hiroyuki KATO (Hokkaido University) Hitoshi SUZUKI (Hokkaido University)
9:20	20-E42	Effect of soft particle peening treatment on fatigue strength of shape memory alloy thin wire under rotating bending	Koichiro NAMBU (OSAKA SANGYO UNIVERSITY) Yang Ming DONG (OSAKA SANGYO UNIVERSITY)
9:40	20-E43	Fatigue properties of TiNi shape memory alloy in corrosive environments	Hiwa HASHIMOTO (Graduate School of Aichi Institute of Technology) Ryosuke MATSUI (Aichi Institute of Technology)
10:00	20-E44	Bending fatigue properties of TiNi shape memory alloy	Tatsuki MATSUDA (Graduate School of Aichi Institute of Technology) Ryosuke MATSUI (Aichi Institute of Technology)

## OS20-2 New Aspects of the Study on Shape Memory Materials in Use

Oct. 12		Chair	Hiroyuki KATO (Hokkaido University)
10:40	20-E45	Effect of R-phase on shape recovery speed of Ti-Ni shape memory alloy wire for variable-stiffness mechanism using jamming transition phenomenon.	Naoki MATSUMOTO (The University of Kitakyusyu) Hiroki CHO (The University of Kitakyusyu) Kazuto TAKASHIMA (Kyusyu Institute of Technology)
11:00	20-E46	Martensitic transformation behavior and microstructure of Zr-Cu system alloys prepared by arc melting and gas atomization.	Nanami NOZAKI (Advanced Course of National Institute of Technology, Kagoshima College) Shunsuke KAWASAKI (Advanced Course of National Institute of Technology, Kagoshima College) Hitoo TOKUNAGA (National Institute of Technology, Kagoshima College)
11:20	20-E47	Deformation properties of SMP lattice structure made by FDM 3D printer	Kohei TAKEDA (Aichi Institute of Technology) Naotaka MATSUMOTO (Maspro Denkoh Corp.)

# Room F

# Oct. 12 Thursday

## OS14-1 Reliability and Design of Electronic Packaging

Oct. 12		Chair	Toru IKEDA (Kagoshima University)
9:00	14-F41	Degradation of integrity of thin-film interfaces in advanced electronic devices caused by point defects and strain	Hideo MIURA (Tohoku University) Kern SUZUKI (Tohoku University)
9:20	14-F42	Residual stress measurement in electronic packages by Sampling Moiré Method using X-Ray images	Masaaki KOGANEMARU (Kagoshima University) Masakazu UCHINO (Fukuoka Industrial Technology Center) Toru IKEDA (Kagoshima University)
9:40	14-F43	Effect of insulating layer on damage of flexible Ag nanoparticle line under high-density electric current	Taiga KUDO (Hirosaki University) Kazuhiko SASAGAWA (Hirosaki University) Kazuhiro FUJISAKI (Hirosaki University) Kotaro MIURA (Hirosaki University)

## OS14-2 Reliability and Design of Electronic Packaging

Oct. 12		Chair	Kazuhiko SASAGAWA (Hirosaki University)
10:40	14-F44	High aspect ratio TSV fabrication using nanosecond laser drilling	Karnam DILEEP (National Cheng Kung University) Yu-Lung LO (National Cheng Kung University) Chia-Hua YANG (National Cheng Kung University)
11:00	14-F45	Evaluation of crack propagation in solder joints of electronic parts under thermal cycle tests	Takahiro KINOSHITA (Toyama Prefectural University) Nobuyuki SHIRAIISHI (COSEL CO., LTD.) Yoshiyuki OKAMOTO (COSEL CO., LTD.) Hirofumi NABESAWA (Toyama Industrial Technology Research and Development Center) Hiroyuki TSURITANI (Toyama Industrial Technology Research and Development Center) Shintaro YOSHIE (Toyama Industrial Technology Research and Development Center) Arisa NOTO (Toyama Industrial Technology Research and Development Center)
11:20	14-F46	Improved Lead-free diffusion bonding process for power devices utilizing ZnAl eutectoid alloy	Toru IKEDA (Kagoshima University) Hiroaki YAMAMOTO (Kagoshima University) Tomoki KURAKAZU (Kagoshima University) Masaaki KOGANEMARU (Kagoshima University) Tetsuro NISHIMURA (Nihon Superior Co. Ltd.)

# Room G

# Oct. 12 Thursday

## OS6-3 Dynamic Behavior

Oct. 12		Chair	Hiroyuki YAMADA (National Defense Academy)
9:00	06-G41	Macroscopic and microscopic damages in polypropylenes by low-energy falling weight impact test	Ryohei IPPITSU (Kanazawa University) Asae ITO (Kanazawa University) Koh-hei NITTA (Kanazawa University) Yusuke HIEJIMA (Kanazawa University)
9:20	06-G42	Modal verification and strength analysis from wind-induced vibration data of solar ground-mounted photovoltaic systems	Chang-Sheng LIN (National Pingtung University of Science and Technology, NPUST) Yu-Jui HSU (National Pingtung University of Science and Technology, NPUST)
9:40	06-G43	Development of inline friction measurement system for textile fabrics	Tapan RAI (YKK Corporation) Katsuhiro NAKAGAKI (YKK Corporation) Masahiro HIGUCHI (Kanazawa University) Hiroshi TACHIYA (Kanazawa University)
10:00	06-G44	Data assimilation analysis of rate- and state-dependent friction based on the particle filter	Xing KAI (Yokohama National University) Shingo OZAKI (Yokohama National University)

## OS6-4 Dynamic Behavior

Oct. 12		Chair	Masahiro HIGUCHI (Kanazawa University)
10:40	06-G45	Impact applied to steel vehicle body model	Akitoshi TAKEI (National Defense Academy) Hiroyuki FUJIWARA (National Defense Academy)
11:00	06-G46	Strength evaluation and safety design of refrigerant circuit components against explosive impact	Ryosuke ABE (Mitsubishi Electric corp., Kumamoto University), Tomoyuki NAGAFUSA (Mitsubishi Electric corp.), Kazuhito FUJIWARA (Kumamoto University)
11:20	06-G47	Perforation hole and size distribution of fragments from 6000 series aluminum alloy plates	Masahiro NISHIDA (Nagoya Institute of Technology) Daichi KIMURA (Nagoya Institute of Technology) Ziyi SU (Nagoya Institute of Technology) Kyouko ASHIDA (Nagoya Institute of Technology)



# Room H

# Oct. 12 Thursday

## OS17-1 Soft Materials

Oct. 12		Chair	Takuya MORIMOTO (Shimane University)
9:20	17-H42	Development of Tension-Compression cyclic test of NBR and analysis of its hysteresis loop	Fumiko KAWASHIMA (Kumamoto University) Sota HIRAZUMI (Kumamoto University) Naoki SUGITA (Kumamoto University) Yosei SHINOTSUKA (Kumamoto University) Koichiro SATO (Kumamoto University) Kazuhito FUJIWARA (Kumamoto University) Hideki HAMASHIMA (Kumamoto Industrial Research Institute)
9:40	17-H43	Finite bending of hyperelastic beams by volumetric growth	Takuya MORIMOTO (Shimane University) Rikuto KOIKE

## OS17-2 Soft Materials

Oct. 12		Chair	Hiro TANAKA (University of Hyogo)
10:40	17-H44	Contact responses of a semi-circular rubber ring with variable stiffness by a rigid plane	Takumi NAGAISHI (Shimane University) Takuya MORIMOTO (Shimane University)
11:00	17-H45	Pneumatic soft actuator with a double helix airway	Takaki TANABE (Shimane University) Takuya MORIMOTO (Shimane University)
11:20	17-H46	Deformation and conformation of elastic loop structures without self-stress	Hiro TANAKA (University of Hyogo)