FINAL PROGRAM
(Revised Version)

THE SEVENTH JAPAN INTERNATIONAL SAMPE SYMPOSIUM AND EXHIBITION (JISSE-7)

Tokyo Big Sight, Tokyo, Japan
November 13-16, 2001

INFORMATION AND INNOVATION IN COMPOSITES TECHNOLOGIES

SOCIETY FOR THE ADVANCEMENT OF MATERIAL AND PROCESS ENGINEERING, JAPAN CHAPTER

Sponsored by
Asian Office of Aerospace Research and Development / Air Force Office of Scientific Research (AOARD/AFOSR)
Army Research Office – Far East (AROFE)
Office of Naval Research International Field Office (ONRIFO)
The Nikkan Kogyo Shimbun (The Business and Technology Daily News), Ltd

Final Program

November 13 (Tue.)

08:30 – 17:00
Registration

[ ] indicates the session chair.

Room 607 and 608
09:20 – 09:50
Opening Ceremony: *Organizer*

Room 607 and 608

Plenary Presentations

[I. Kimpara]

09:50 – 10:30
Structuring Knowledge Project in Nanotechnology Materials Program Launched in Japan
Hiroshi Komiyama (The University of Tokyo) and Yukio Yamaguchi

10:30 – 10:40 **BREAK**

[T. Tanimoto]

10:40 – 11:20
Comparison of Low Cost Composites
Manufacturing with Advanced Composites Processing Techniques
Scott W. Beckwith (BTG Composites LLC)

11:20 – 12:10
Expanded Horizon in Materials and Processing - Unlimited Frontier -
James C.I. Chang (U.S. Army Research Office), [Read by H.(Sean) Y. Yu]

12:10 – 13:20 **LUNCH**

Room 607 and 608

Satellite Workshop A: Smart Structures and Materials/ Eco-materials

[N. Takeda]

13:20 – 13:50
Recent Research on Fiber Optic Smart Structure in Italy and Future Trend in Europe
A. Paolozzi (Universita Degli Studi Di Roma) **(Keynote)**

13:50 – 14:20
Smart Materials and Structure at EADS CCR: An Overview
J. Saniger (Corporate Research Centre, EADS-CCR) and B. Petitjean **(Keynote)**

14:20 – 14:40
Improving the Vibration Damping of CFRP Beam Structures by use of Piezoelectric Polymer/Ceramic
T. Tanimoto (Shonan Institute of Technology)

14:40 – 15:00
Cyclic Mechanical Behavior of Composites Based on Shape Memory Polymer
Q. –Q. Ni (Kyoto Institute of Technology), T. Ohki, N. Ohsako and M. Iwamoto

15:00 – 15:20 **BREAK**

[Q. –Q. Ni]

15:20 – 15:40
Source Location in a CFRP Plate with Embedded PZT Sensors
R. Oishi (National Institute of Advanced Industrial Science and Technology), J.-H. Koo, N. Toyama and B. Wang

15:40 – 16:00
Effect of Stacking Sequence and Number of Electrodes on Detections of Delaminations of CFRP Using Electric Resistance Change
A. Todoroki (Tokyo Institute of Technology), Y. Tanaka, Y. Shimamura and H. Kobayashi

16:00 – 16:20
Impedance Change Method for Wireless Strain Measurement of Composite Materials
A. Todoroki, S. Miyatani (Tokyo Institute of Technology) and Y. Shimamura

16:20 – 16:40
Determination of Internal Conducting Network of CFRP Composites Using Anisotropy of Electrical Conductivity
J. –B. Park (The University of Tokyo), T. Okabe, A. Yoshimura, N. Takeda, M. Xia and W.A. Curtin

16:40 – 17:00
Smart Detection of Damage of Composite Structures Using Unsupervised Statistical Diagnosis
A. Iwasaki (Tokyo Institute of Technology), A. Todoroki, Y. Shimamura and H. Kobayashi

17:00 – 17:20
Monitoring Method of Resin Flow and Cure with Electromagnetic Wave Transmission Line Using Carbon Fiber as Conductive Elements
K. Urabe (National Institute of Advanced Industrial Science and Technology), T. Okabe, H. Tsuda and J. Takatsubo

17:20 – 17:40
Process Monitoring and Controlling with Dielectric Sensor for Thermoplastic Composite Vane
K. Yamagishi (Osaka City University), S. Kitade, S. Motogi and T. Fukuda

Room 605

Session J: Metal Matrix Composites and Related Materials

[T. Nakamura]

13:20 – 13:50
Corrosion Mechanisms of Metal-Matrix Composites
L.H. Hihara (University of Hawaii at Manoa) **(Keynote)**

13:50 – 14:10
The Properties of the Titanium Matrix Composites Manufactured by Spray-Winding Techniques
A. Kono (Mitsubishi Heavy Industries, Ltd.), T. Yamada, C. Fujiwara and M. Hirota

14:10 – 14:30
Development of Titanium Matrix Composite Rings
T. Yamada (Research Institute of Advanced Material Gas-Generator), A. Fukushima, C. Fujiwara, M. Hirota, Y. Kawachi and S. Yamamoto

14:30 – 14:50
Development of Aluminum MMCs Brake Rotor by Pressure-less Metal Infiltration Process
H. Takahashi (Taiheiyo Cement Co., Ltd.), H. Kamii, S. Chonabayashi and T. Inoue

14:50 – 15:20 **BREAK**

[Y. Yoshida]

15:20 – 15:40
Mechanical Properties and Microstructure of Squeeze Casting $Al_{18}B_4O_{33}$ w / Magnesium Alloy Composites
G. Sasaki (Hiroshima University), M. Yoshida and H. Fukunaga

15:40 – 16:00
High Strain Rate Superplasticity of TiN Particulate Reinforced Aluminum Composites
T. Imai (National Institute of Advanced Industrial Science and Technology), L. Zhen and M. Takagi

16:00 – 16:20
Application of Intermetallic Compounds Parts by Spark Plasma Sintering Process of Cu-Al Elemental Metal Powders
T. Nakamura (Shizuoka University), S. Tanaka, K. Hayakawa, H. Imaizumi and H. Kawaguchi

16:20 – 16:40
Fabrication of Nickel Based Active Composites
H. Asanuma (Chiba University) and G. Hakoda

16:40 – 17:00
Development of Active Materials Based on Continuous/Discontinuous SiC Fiber Reinforced Aluminum
G. Hakoda (Chiba University) and H. Asanuma

17:00 – 17:20
Fabrication of TiB_2/Cu Composites by Reaction between Cu, Ti and B
M. Kobashi (Nagoya University), S. Yamamoto and N. Kanetake

17:20 – 17:40
Surface Modification Technology for TiAl Alloys Using Reactive Plasma Process
M. Inoue (Osaka University), M. Nunogaki and K. Suganuma

Room 601

Session G: Composite Applications to Sport and Leisure Goods

[Z. Maekawa]

13:20 – 13:50
Designing of CFRP Baseball Bats
T. Nishiwaki (ASICS Corp.) **(Keynote)**

13:50 – 14:10
Dynamic Response of FRP Structure after Impact
N. Taniguchi (ASICS Corp.) and T. Nishiwaki

14:10 – 14:30
Prototype of a Finite Element Foot Model
T. Asai (Yamagata University), T. Nishiwaki and H. Nunome

14:30 – 14:50
A Kinetic Comparison Between Dominant and Non-dominant Legs during Soccer Full Kick
H. Nunome (Nagoya University), T. Asai, Y. Ikegami and S. Sakurai

14:50 – 15:20 **BREAK**

[T. Nishiwaki]

15:20 – 15:40
The Relationship between the Vertical Movement of Rotational Axis and Swing Speed on the Swing Movement
S. Inoue (Saga University), K. Saitou and R. Sanders

15:40 – 16:00
Angular Velocity of Upper Limb and Torso in Baseball Pitches Before and After Ball-Release
K. Saitou (Saga University), S. Inoue, Y. Ohgi, C. Miyaji and S. Takai

16:00 – 16:20
Properties of Bioabsorbable Ultra High Strength Poly-L-Lactid (PLLA) Device
T. Kawamoto (Okayama University) and T. Sugahara

16:20 – 16:40
Dynamic Response of a Snowboard Due to Snowboarder's Snowboard Control
S. Kawai, H. Otani and T. Sakata (Chubu University)

16:40 – 17:00
Identification of Equivalent Elastic Parameters for Snowboards
K. Hosokawa (Chubu University), S. Ando and T. Sakata

17:00 – 17:20
Vibration Properties of Adhesive Structure by Using Polymeric Composites
Y. Tanimoto (Nihon University) and Z. Maekawa

17:20 – 17:40
Amenity Evaluation of Flooring Structure in Walking Vibration
A. Goto (Osaka Sangyo University) and T. Nishiwaki

Room 606

Satellite Workshop B: Design and Manufacturing of Revolutionary Light Weight Aircraft Structures

[H. Kikukawa]

13:20 – 13:50
Integrating Research & Development Programs with FAA Certification to Expedite the Introduction of New Technology into Production Aircraft
M. Ashizawa (Pacific Rim Consilium, LLC) and A. Sato **(Keynote)**

13:50 – 14:10
NEDO's R&D Program on Revolutionary Low-Cost and Lightweight Aircraft
Y. Ito (New Energy and Industrial Technology Development Organization(NEDO))

14:10 – 14:30
R&D Program of Innovative Structural Technologies
A. Yahata (Japan Aircraft Development Corporation) and H. Kikukawa

14:30 – 14:50
Design, Manufacturing, and Certification Considerations for Modern Integrated Structures
R. Abbott (Raytheon Aircraft Company)

14:50 – 15:20 **BREAK**

[M. Ashizawa]

15:20 – 15:40
Development of Affordable Composite Wing Structure
Y. Toi (Fuji Heavy Industries, Ltd.), A. Harada, T. Kamiyama, T. Inoue, K. Amaoka and H. Kikukawa

15:40 – 16:00
Innovative Cockpit Structure - Molding Technology of Form Core
T. Ito (Kawasaki Heavy Industries, Ltd.), T. Sana, Y. Hirose, K. Araya and M. Nishitani

16:00 – 16:20
Microstructure and Mechanical Properties in the Friction – Stir - Welded Dissimilar Light Metals
N. Saito (National Institute of Advanced Industrial Science and Technology), I. Shigematsu and M. Nakamura

16:20 – 16:40
Innovative Cockpit Structure - Friction Stir Welding Technology of Al-Alloy
T. Sakanashi (Kawasaki Heavy Industries, Ltd.), S. Iio, Y. Hirose, K. Araya and K. Kosugi

16:40 – 17:00
Structural Development for Innovative Leading Edge of Wing
M. Matoba (Japan Aircraft Manufacturing, Ltd), S. Ohashi, M. Ochi, M. Motoike and A. Yahata

17:00 – 17:20
Large Size Aluminum Precision Sand Casting Technology Development for Aircraft Primary Structures
A. Shibata (Kobe Steel, Ltd.), M. Nakata, Y. Hirose and Y. Yoshino

17:20 – 17:40
On the Tensile Strength of Carbon Fiber Composites out of Various Resin Matrices
Y. Kanatani (Kyoto Institute of Technology), Y. Kobayashi, J. Matsui and Z. Maekawa

November 14 (Wed.)

09:00 – 17:00
Registration

Room 607 and 608

Plenary Presentations

[Y. Yamaguchi]

09:20 – 10:00
Advanced Composites Development for Aerospace Vehicle Applications
Darrel R. Tenney (NASA) and R. Byron Pipes

10:00 – 10:40
A380: Advanced Composite Structures Designed for the Flagship of the 21st Century
Jens Hinrichsen (Airbus Industrie)

10:40 – 10:50 **BREAK**

[Y. Miyano]

10:50 – 11:30
Experience of FRP Strengthening for Historic Structures
Hideo Katsumata (Obayashi Corporation) and Kozo Kimura

11:30 – 12:10
New Examples of Composites Research
Stephen W. Tsai (Stanford University), Akira Kuraishi, Sung-Kyu Ha and Jon Gosse (The Boeing Company)

12:10 – 13:20 **LUNCH**

Room 607 and 608

Satellite Workshop A: Smart Structures and Materials/ Eco-materials

[Y. Akimune]

13:20 – 13:40
Application of Small-Diameter FBG Sensors for Delamination Detection in CFRP Laminates
S. Takeda (The University of Tokyo), Y. Okabe and N. Takeda

13:40 – 14:00
Strain Measurement by the Smart Patch Using FBG Sensors
N. Tanaka (The University of Tokyo), Y. Okabe and N. Takeda

14:00 – 14:20
Internal Strain Monitoring of Molded Epoxy Using Embedded EFPI Optical Fiber Sensor during Molding
K. Osaka (Osaka City University), T. Kosaka, T. Fukuda, T. Naka, Y. Kurata and H. Miyagawa

14:20 – 14:40
Detection of Transverse Cracks in CFRP Quasi-Isotropic Laminates Using Small-Diameter FBG Sensors
T. Mizutani (The University of Tokyo), Y. Okabe and N. Takeda

14:40 – 15:00
Development of Smart Braided Composites by Using Fiberoptic Strain Sensors
T. Kosaka (Osaka City University), H. Kurimoto, K. Osaka, A. Nakai, T. Osada, H. Hamada and T. Fukuda

15:00 – 15:20 **BREAK**

[K. Osaka]

15:20 – 15:40
High Impact Polyethyleneterephthalate-Polyethylene Blockcopolymer from Recovered PET Bottles
T. Fujimaki (DJK Techno Science Laboratories INC.)

15:40 – 16:00
Mechanical Properties of Metallic Closed Cellular Materials Containing Organic Material for Smart Structures
S. Kishimoto (National Institute for Materials Science) and N. Shinya

16:00 – 16:20
Development of an Aluminum Based Smart Composite with Embedded Oxidized Titanium Fiber
H. Asanuma (Chiba University), T. Ishii and G. Hakoda

16:20 – 16:40
Spark Plasma Sintering of $Sr_{1.9}Ca_{0.1}NaNb_5O_{15}$ Piezoelectric Ceramics
R.-J. Xie (National Institute of Advanced Industrial Science and Technology), Y. Akimune, K. Matsuo, T. Sugiyama and N. Hirosaki

16:40 – 17:00
High Resistance to Fracture of Optical Fiber Reinforced Plastics
T. Toriyama, Y. Miyazawa and Y. Nishi (Tokai University)

17:00 – 17:20
Shape Memory Effect of NiMnGa Amorphous Thin Film
K. Akiyama, H. Yabe and Y. Nishi (Tokai University)

Room 605

Session J: Metal Matrix Composites and Related Materials

[Y. Nishi]

13:20 – 13:40
Strain Measurements with FBGs Embedded into Cast Metal Alloys
M.A. Caponero (ENEA Frascati Research Center), F. Felli and A. Paolozzi

13:40 – 14:00
Superconducting Shape Memory Effect (SSME)
N. Hagiwara, H. Yabe, T. Suzuki and Y. Nishi (Tokai University)

14:00 – 14:20
The Evaluation of Mechanical Properties of TiNi/Al Shape Memory Composites by Using Experimental and Finite Element Analysis
G. C. Lee (Research Institute of Industrial Science and Technology), J. H. Lee, D.S. Park and Y. C. Park

14:20 – 14:40
Particle Size Distributions in Al-Al_3Ni Functionally Grated Materials Fabricated by a Semisolid Forming
K. Matsuda (Shinshu University), Y. Watanabe, K. Yamagiwa and Y. Fukui

14:40 – 15:00
Microstructural Changes in an Al-Al_3Ti Composite by Equal Channel Angular Extrusion
S. Hosoda (Shinshu University) and Y. Watanabe

15:00 – 15:20 **BREAK**

[H. Asanuma]

15:20 – 15:40
Stress Relaxation Test for Spring Sheet of Tin Coated Cu-Ni-Sn Alloy Applied for Advanced Automobile Connecting Materials
K. Hayashi, K. Gemma, M. Nishihata, T. Kunimine and Y. Nishi (Tokai University)

15:40 – 16:00
Effects of Electron Beam and UV Light Irradiation on Clear Time from Misting for TiO_2 Thin Film
R. Fujii, K. Oguri, M. Tetsuka, A. Tonegawa, H. Uchida and Y. Nishi (Tokai University)

16:00 – 16:20
High Temperature Mechanical Characterization of Low Activation Materials for Fusion Reactor
S. Uchida, T. Sunamoto, H. Yabe, N. Inoue and Y. Nishi (Tokai University)

Room 601

Session G: Composite Applications to Sport and Leisure Goods

[Y. Kawazoe]

13:20 – 13:40
Eigenfrequency Analysis of HSP
T. Shiomi (Kyoto Institute of Technology), T. Nishiwaki and Z. Maekawa

13:40 – 14:00
Three-Dimensional Analysis of a New Golf-Swing Robot Model Emulating Skillful Golfers
S. Suzuki (Kitami Institute of Technology) and Y. Ozaki

14:00 – 14:20
New Matrix Resin for High Performance Golf Shafts
K. Goto (Mitsubishi Rayon Co. Ltd.,), M. Taguchi and A. Ito

14:20 – 14:40
Dynamic Characteristics of Triaxial Woven Fabric Composites for Golf Club Shafts
K. Matsumoto (Mie University), M. Zako and N. Matsumoto

14:40 – 15:00
The Designing of Vibration Property for Matrix Hybrid Laminates
T. Onita (Kyoto Institute of Technology), T. Nishiwaki and Z. Maekawa

15:00 – 15:20 **BREAK**

[K. Matsumoto]

15:20 – 15:40
Fabrication of Musical Instrument Using General Purposed Material
T. Matsubara (Kyoto Institute of Technology), T. Nishiwaki and Z. Maekawa

15:40 – 16:00
Prediction and Estimation of the Power of Thermoplastic Composite Tennis Racket
Y. Kawazoe (Saitama Institute of Technology)

16:00 – 16:20
Estimation of the Improvement of the Shock Vibrations at the Wrist Joint using the Thermoplastic Composite Tennis Racket
Y. Kawazoe (Saitama Institute of Technology)

Room 606

Satellite Workshop B: Design and Manufacturing of Revolutionary Light Weight Aircraft Structures

[H. Kikukawa]

13:20 – 13:50

An Integrated Approach to the Cost-Effective Design of a Composite Aircraft Control Surface (Keynote)

M. -Q. Nguyen, T. –M. Lee and M. L. Scott (Royal Melbourne Institute of Technology)

13:50 – 14:10

Low Cost Composite Design and Manufacturing Options

K. Masugi (Fuji Heavy Industries, Ltd.)

14:10 – 14:30

Development of Innovative Composite Control Surfaces

A. Harada (Fuji Heavy Industries, Ltd.), S. Maruyama and N. Takizawa

14:30 – 14:50

Low Cost Structural Concept for Composite Trailing Edge Flap

Y. Hirose (Kawasaki Heavy Industries, Ltd.), T. Taki, T. Yamamoto, Y. Mizusaki and T. Fujita

14:50 – 15:20 **BREAK**

[Y. Miyano]

15:20 – 15:40

Affordable Composite Fuselage Structure based on Dry Preform/RFI Technology

A. Tanaka and H. Kiriyama (Mitsubishi Heavy Industries, Ltd.)

15:40 – 16:00

Study of Al Investment Casting for Flight Control System

K. Nakamura (Mitsubishi Heavy Industries, Ltd.), S.Abe and M. Hirahara

16:00 – 16:20

Superplastic Forming of Aluminum Sheet with Welded Line

T. Jinishi (Japan Aircraft Manufacturing, Ltd.), T. Naganuma and N. Suzuki

16:20 – 16:40

Fatigue Evaluation on Composite Parts of Eurocopter Helicopters

H. Bansemir (Eurocopter Deutschland GmbH), G. Dreher and S. Emmerling

16:40 – 17:00

Methodology for Predicable Damage Growth Design of Aircraft Composite Structures

H. Kikukawa (Japan Aircraft Development Corporation)

17:00 – 17:20

Durability Analysis of Composite Structures Using the Accelerated Testing Methodology

A. Kuraishi (Stanford University) and S. W. Tsai

17:20 – 17:40

Fatigue Life Prediction of CFRP/Metal Bolted Joint under Temperature Condition

N. Sekine (Kanazawa Institute of Technology), M. Nakada, Y. Miyano and S. W. Tsai

Room 604

Session O: Student Session

[H. Fukuda]

13:20 – 13:40

The Effect of Bundle Size on Tow Impregnation during Liquid Molding Processes

M.E. Foley (University of Delaware), S.G. Advani, S.H. McKnight and J.W. Gillespie Jr. **(Invited by SAMPE HQ)**

13:40 – 13:55

Effect of Orthotropic Electric Resistance on Delamination Detection with Electric Resistance Change Method

A. Todoroki, M. Tanaka (Tokyo Institute of Technology), Y. Shimamura and H. Kobayashi

13:55 – 14:10

Damage Detection of Bolted Composite Laminates Using Electric Potential Method

Y. Shimamura, S. Mukai (Tokyo Institute of Technology), A. Todoroki and H. Kobayashi

14:10 – 14:25
Effect of Embedded SMA Foil on Mechanical Properties of CFRP Laminates
A. Kobayashi, S. Ogihara, Y. Shirai (Science University of Tokyo) and N. Takeda

14:25 – 14:40
Mechanical Properties of SMA Fiber/Epoxy Composite
A. Kobayashi, S. Ogihara, T. Uehara (Science University of Tokyo) and N. Takeda

14:40 – 14:55
Development of a High Power Shape Memory Materials Using Hydrogen Storage Alloy Dispersed in Polymer
B. Kim (Tokai University), H. Yabe, H. Uchida and Y. Nishi

14:55 – 15:15 **BREAK**

[S. Ogihara]

15:15 – 15:30
Formation of Sensors by Breaking Pre-notched Optical Fiber in Matrix and Their Evaluation
K. Kimura (Chiba University) and H. Asanuma

15:30 – 15:45
Damage Progress Behavior in CFRP Laminates under Thermal Cycle Loading

A. Kobayashi, S. Ogihara, T. Ishiguro (Science University of Tokyo) and N. Takeda

15:45 – 16:00
Evaluation Method for Initial Micro Fracture Behavior in Woven Fabric Composites
T. Shimizu (Kyoto Institute of Technology), T. Osada, A. Nakai and H. Hamada

16:00 – 16:15
Collision Fatigue Life Extension of PZT Irradiated by Sheet Electron Beam
K. Takashina (Kyoto Institute of Technology), K. Oguri, A. Tonegawa and Y. Nishi

16:15 – 16:30
Machinability of Heat Treated Silicon Powder Compacts
K. Tantikom (Chulalongkorn University), K. Sujirote and S. Danchaivichit

16:30 – 16:45
Tensile Strength of Carbon Fiber with Different Diameter
A. Hamasaki (Science University of Tokyo), Y. Kogo and T. Morimoto

16:45 – 17:00
Eccentric Compression Bending Test for CFRP Pipe
H. Fukuda, O. Watanabe (Science University of Tokyo), M. Itabashi and A. Wada

17:00 – 17:15
Effect of Cyclic Loading on the Monotonic Tensile Behavior of a 3-D Woven Si-Ti-C-O Fiber / Si-Ti-C-O Matrix Composite
T. Gomyou (University of Electro-Communications), S. Zhu, Y. Ochi, T. Ogasawara and T. Ishikawa

17:15 – 17:30
Damping Capacity of Ti-Ni and Ti-Ni-Cu Alloys Produced by Lamination Process
N. Urahashi (Science University of Tokyo), M. Sasaki, D. Imai, Y. Kogo, K. Hishitani and N. Igata

17:30 – 17:45
Development of Pultrusion Techniques of Phenol Foam Composite
O.- I. Byon (G. Ben), A. Shoji (Nihon University), T. Takimoto and Y. Aoki

[redacted]

November 15 (Thr.)

09:00 – 17:00
Registration

Room 607

Satellite Workshop C: Development of Low Cost Composite Structures

[Y. Yamaguchi]

09:20 – 09:50
Demonstration of Stitched/Resin Film Infused Composites in Primary Aircraft Wing Structures
D. Moon (The Boeing Company) **(Keynote)**

09:50 – 10:10
Stitch Parameter Effect on Impact Damage Resistance of a New RTM Composites
T. Osada, T. Kamiyama (Fuji Heavy Industries, Ltd.) and T. Yoshimura

10:10 – 10:30
Low Cost Fabrication of HOPE-X All Composite Prototype Structure
K. Uzawa (GH Craft Ltd.), K. Nishiwaki, M. Niitsu and T. Kamita

10:30 – 10:50 **BREAK**

[K. Hirano]

10:50 – 11:20
An Overview of EADS Research Activities on Low Cost CFRP Composites
D. Guedra-Degeorges (Corporate Research Center, EADS-CCR) and K. Drechsler **(Keynote)**

11:20 – 11:40
Development of Thermoplastic Polyimide (PIXA-MT3) Composite
Y. Honda (Fuji Heavy Industries, Ltd.), H. Nakamura, T. Kamiyama, H. Tamura, S. Tamai, Y. Endo and Y. Nagao

11:40 – 12:00
Study of Automatic Drilling and Fastening for Wing Box
T. Hiroe (Kawasaki Heavy Industries, Ltd.), T. Osawa, T. Hatakeyama, K. Kosugi and H. Tamura

12:00 – 13:20 **LUNCH**

[Y. Someya]

13:20 – 13:50
Current Status and Future Prospects of R&D on Constructions of Design Database for Advanced Composites and Structures in Japan
K. Hirano (National Institute of Advanced Industrial Science and Technology) **(Keynote)**

13:50 – 14:10
Establishment of Database of Carbon/ Epoxy Material Properties and Design Values on Durability and Environmental Resistance
S. Bandoh (Kawasaki Heavy Industries, Ltd.), Y. Nakayama, R. Asagumo and T. Yoshimura

14:10 – 14:30
Thermal Degradation of CFRP Laminates
T. Naruse (HITACHI, Ltd.) and T. Hattori

14:30 – 14:50
Folded Honeycomb Core Material for Automotive and Aerospace Applications
J. Pflug (Katholieke Universiteit Leuven), I. Verpoest and D. Vandepitte

14:50 – 15:20 **BREAK**

[S. Bandoh]

15:20 – 15:40
Advanced Pultrusion Process
K. Asari (JAMCO Corporation)

15:40 – 16:00
Well-processable Matrix Resins with Less-flammability for Vacuum-assisted Resin Transfer Molding
N. Miyoshi, N. Natsume (TORAY Industries, Inc.,), I. Endo and H. Kishi

16:00 – 16:20
Low Cost Resin Transfer Molding of Carbon Polyimide
H. Mizuno, H. Horizono, Y. Someya (The Yokohama Rubber Co., Ltd.), T. Ito and Y. Soeda

16:20 – 16:40
Fatigue Strength Evaluation of FRP/Metal Adhesive Joints at Low Temperature
M. Iwasa (HITACHI, Ltd.) and T. Hattori

Room 608

Satellite Workshop D: New Materials in Space Vehicles

[Y. Morino]

09:20 – 09:50
Fabrication of a Thin Unlined Reusable Filament Wound Composite Cryogenic Tank
T. D. Kim (Air Force Office of Scientific Research (AFOSR/NI)) **(Keynote)**

09:50 – 10:10
Study of CFRP Application to Cryogenic Fuel Tank for RLV
T. Shimoda (National Space Development Agency of Japan), Y. Morino, T. Ishikawa, T. Morimoto and S. Cantoni

10:10 – 10:30
Damage Evaluation of CFRP Concept Tank in Cryogenic Pressurization
T. Morimoto (National Aerospace Laboratory of Japan), T. Ishikawa, T. Yokozeki, Y. Hayashi, T. Shimoda and Y. Morino

10:30 – 11:00 **BREAK**

[K. Imagawa]

11:00 – 11:20
Leakage Evaluation of Propellant Tanks by CFRP Laminate Cruciform Specimens under Biaxial Loading
H. Kumazawa (National Aerospace Laboratory of Japan), T. Aoki and I. Susuki

11:20 – 11:40
A Study of Triaxial Woven Fabrics for the Space Inflatable Structure
A. Watanabe (Sakase Adtech Corporation), K. Kubomura, Y. Senbokuya and H. Tsunoda

11:40 – 12:00
Applying Thermoplastic Composite to Space Inflatable Structure
S. Matsuoka (Fuji Heavy Industries, Ltd.), H. Nakamura, Y. Senbokuya and H. Tsunoda

12:00 – 12:20
Research on Applicability of Shape Memory Polymers (SMPs) to Inflatable and Deployable Space Structure
J. Ishizawa (National Space Development Agency of Japan), K. Imagawa, J. Yoshikawa, S. Hayashi and N. Miwa

12:20 – **13:00** **LUNCH**

[T. Morimoto]

13:00 – 13:20
Light Sandwich Panels Utilizing Plastic Foam
K. Imagawa, J. Yoshikawa, J. Ishizawa, H. Mizuno K. Saito and M. Tojo (Mitsubishi Heavy Industries, Ltd.)

13:20 – 13:40
Development of Super-Lightweight Waveguide for MUSES-C XHGA and Horn Antennas for MUSES-C XMGA
O. Amano (NEC Engineering, Ltd.), T. Shibata, A. Watanabe and Y. Kamata

13:40 – 14:00
Development of Passive Damping Device for Spacecraft Structures
M. Takano (Mitsubishi Electric Corporation), S. Takada, S. Kabashima, T. Ozawa, K. Kojima, H. Seko and I. Masuda

14:00 – 14:20
Real Time Spectroscopic Observation of Degradation of Space Use Materials by Space Flyer Unit
T. Yokota (Ehime University), S. Sasaki, M. Ota and H. Yoshida

14:20 – 14:40
Development of HOPE-X All-Composite Prototype Structure
M. Niitsu (Mitsubishi Heavy Industries, Ltd.), T. Kamita and K. Uzawa

14:40 – 15:00
Structural Testing of a Full-Scale Composite Structure for an Aerospace Vehicle
H. Murayama (National Space Development Agency of Japan), T. Kamita and H. Igawa

15:00 – 15:20 **BREAK**

[Y. Kogo]

15:20 – 15:40
Low Pressure Plasma Sprayed Yttrium-Silicates for Oxidation Protection of C/C-SiC Composite Structures
T. Ullmann (DLR: German Aerospace Center), M. Schmücker, H. Hald, R. Henne and H. Schneider

15:40 – 16:00
Erosion Phenomena of High Purity CVD-SiC under High Temperatures
T. Yoshinaka (National Space Development Agency of Japan) and Y. Morino

16:00 – 16:20
Development of C/C Ion Optics for Spacecraft Ion Engine
I. Funaki (The Institute of Space and Astronautical Science), K. Goto, H. Kuninaka, Y. Shimizu, K. Nishiyama and K. Toki

16:20 – 16:40
Development of Titanium Matrix Composite Rings
T. Yamada (The Institute of Space and Astronautical Science), A. Fukushima, C. Fujiwara, M. Hirota, Y. Kawachi and S. Yamamoto

16:40 – 17:00
Multiaxial Weibull Analysis of Graphite - from the Launch Failure of M-V-4 Rocket -
E. Sato (The Institute of Space and Astronautical Science) and J. Onoda

17:00 – 17:20
Thermal Characteristics of a High-Thermal-Conductivity Graphite Sheet for Spacecraft Thermal Control
H. Nagano (The Institute of Space and Astronautical Science), A. Ohnishi and Y. Nagasaka

17:20 – 17:40
Design and Test Results of a Variable Emittance Radiator Device
S. Tachikawa (The Institute of Space and Astronautical Science), A. Ohnishi, A. Okamoto, Y. Nakamura, Y. Shimakawa, T. Mori and A. Ochi

Room 606

Satellite Workshop K: Textile Composites

[H. Hamada]

09:20 – 09:50
Textile Composites Models: Integration Strategies
I. Verpoest (Katholieke Universiteit Leuven), S. Lomov, E. Belov, R. Parnas and A. Prodromou **(Keynote)**

09:50 – 10:20
Cost-Effective Manufacturing Technology for Knitted Fabric Composites
K. Nishiyabu (Osaka Prefectural College of Technology) **(Keynote)**

10:20 – 10:40
Braiding Technologies for Airplane Applications Using RTM Process
T. Uozumi (MURATA Machinery, Ltd.), Y. Iwahori, S. Iwasawa and T. Yamamoto

10:40 – 11:00 **BREAK**

[N. Takano]

11:00 – 11:20
Mechanical Behaviors of Braids Under Tensile Loading
M. Hanada (Aoba Gakuen Junior College), T. Nishiwaki, H. Hamada, A. Nakai and T. Ishii

11:20 – 11:40
Deformation Mechanism of Textile under Uni and Bi-axial Tensile Load
K. Sakakibara, A. Yokoyama (Kyoto Institute of Technology) and H. Hamada

11:40 – 12:00
Strain Distribution in Deep-Drawing of Knitted Fabric Thermoplastic Composites
K. Nishiyabu (Osaka Prefectural College of Technology), N. Takano, M. Zako and R. Fujitsu

12:00 – 12:20
Mechanical Properties of Square Braided Fabric
T. Ueda (Kyoto Institute of Technology), A. Otani, A. Nakai and Y. Fujii

12:20 – 13:20 **LUNCH**

[K. Nishiyabu]

13:20 – 13:40
Mechanical Properties of Weft Knitted Fabric Composites
S.D. Pandita (Katholieke Universiteit Leuven), G. Huysmans and I. Verpoest

13:40 – 14:00
Mechanical Properties of Knitted Fabric Composite with Hybrid Matrix Layer
A. Nakai (Kyoto Institute of Technology), A. Otani, T. Ishida and S. Gotoh

14:00 – 14:20
Local and Microscopic Analysis of Woven Fabric Composite Material under Bending by Finite Element Mesh Superposition Method
N. Takano (Osaka University), M. Zako and T. Okazaki

14:20 – 14:40
Non-Constitutive Numerical Modeling for Plain-Weave Fabrics
O. Kuwazuru (The University of Tokyo) and N. Yoshikawa

14:40 – 15:00
Initial Fracture Behavior of Knitted Composites
A. Nakai (Kyoto Institute of Technology), T. Osada, T. Fukui and M. Inoda

15:00 – 15:20 **BREAK**

[S. Ogihara]

15:20 – 15:40
Effect of Processing Conditions on the Mechanical Properties of a 2-D Braided SiC/SiC Composite
A. Ohtani, I.J. Davies (Kyoto Institute of Technology), T. Inoue, A. Nakai and H. Hamada

15:40 – 16:00
Stitching of 3-Dimensional Preforms for the Production of High Performance Composite Parts
Y.-S. Sun (Altin Naehtechnik GmbH) and J. Wittig

16:00 – 16:20
Novel Hybrid Textiles for Tough Composites Using Vacuum Inflation
P. Hogg (University of London), F.C. Smith, D.H. Woolstencroft and A. Taylor

16:20 – 16:40
Modeling of Inter-fiber Sliding in Fabric Shaping Process
Y. Arimitsu (Ehime University), S. Takahashi and T.-W. Chou

16:40 – 17:00
Fabrication and Mechanical Behavior of Textile Reinforced SMC
A. Nakai and T. Ohkawa (Kyoto Institute of Technology)

17:00 – 17:20
Ironing Assisted Deep-Drawing of Thermoplastics Reinforced with Continuous Carbon Fiber and Characteristics of the Products
T. Machida, T. Okai, K. Yoshimatsu (Molex Japan Co., Ltd.) and M. Okada

17:20 – 17:40
Information on Pattern Figure in Textiles of Cultural Property
A. Goto (Osaka Sangyo University), K. Goto, A. Nakai, Z. Maekawa and M. Sato

Room 605

Session M: Modeling and Simulation in Composite Mechanics

[H. Suemasu]

09:20 – 09:40
Influence of Element Size on Damage Growth Simulation Based on FEM
Y. Shimamura (Tokyo Institute of Technology), Y. Yamamura, A. Todoroki and H. Kobayashi

09:40 – 10:00
Experimental and Analytical Characterization of Microscopic Damage Progress in CFRP Angle-Ply Laminates
A. Tanaka (Tokyo Metropolitan University), S. Kobayashi, S. Wakayama, Y. Shigenari, K. Miyagawa and S. Suzuki

10:00 – 10:20
Analytical Prediction and Experiment of

Transverse Lamina Cracking in Multi-Directionally Reinforced Symmetric Laminates
S. Abe (The University of Tokyo), K. Kageyama, I. Ohsawa, M. Kanai and T. Kato

10:20 – 10:40
Statistical Strength Prediction of CFRP Cross-ply Laminates
J. Noda (Keio University), T. Okabe, N. Takeda and M. Shimizu

10:40 – 11:00 **BREAK**

[M. Kawai]

11:00 – 11:20
Design and Analysis of Reduced Thickness Solar Panels
S. Hahn (Mitsubishi Electric Corporation) and T. Ozaki

11:20 – 11:40
Detailed Analysis of the Solar-B SOT Main Mirror Support Structure
H. Ishii (Mitsubishi Electric Corporation) and T. Ozaki

11:40 – 12:00
Buckling of Composite Structures with Higher-order Shear Deformation
Q. -Q. Ni (Kyoto Institute of Technology), J. Xie and Z. Maekawa

12:00 – 13:20 **LUNCH**

[S. Yamamoto]

13:20 – 13:40
Damage Accumulation in Composite Laminates under Quasi-Static Transverse Loading
Y. Aoki and H. Suemasu (Sophia University)

13:40 – 14:00
A Phenomenological Constitutive Model for Off-Axis Viscoplastic Behavior of Unidirectional CFRP
M. Kawai (University of Tsukuba) and Y. Masuko

14:00 – 14:20
Modeling of Bearing Failure in Bolted Composite Joints
Y. Xiao (National Aerospace Laboratory of Japan) and T. Ishikawa

14:20 – 14:40
Rate Dependence of Linear and Nonlinear Behaviors of Unidirectional CFRP under Off-Axis Loading at High Temperature
M. Kawai (University of Tsukuba), Y. Masuko and M. Kohashi

14:40 – 15:00
Evaluation of Crack Closure in Epoxy Resin Plates with Embedded SMA Wires by Finite-Element Analysis
E. Umezaki (Nippon Institute of Technology) and T. Ichikawa

15:00 – 15:20 **BREAK**

[K. Kageyama]

15:20 – 15:40
Numerical Prediction of Permeability Tensor for Sheared Woven Fabric by Asymptotic Homogenization Theory
N. Takano (Osaka University), M. Zako and T. Okazaki

15:40 – 16:00
A Study of Bridging the Gap between Atomistic and Mesoscopic Simulation for Materials Design
S. Yamamoto (Toyota Central R&D Labs., Inc.) and S. Hyodo

16:00 – 16:20
Image-Based Modeling of Microstructures of Porous Ceramics to Study the Micro-Macro Coupling Effect
N. Takano (Osaka University), F. Kubo, M. Zako and K. Kimura

16:20 – 16:40
Fracture Behavior of Micro Structure in Tibial Plateau under External Loading - The Effect of Aging on the Stress Wave Propagation -
T. Hirai, A. Yokoyama (Kyoto Institute of Technology) and Y. Watanabe

Room 601

Session L: Interface in Composites

[H. Kawada]

09:20 – 09:40

Fundamental Study on Flexural Fatigue Properties in Flexible Printed Circuit Properties of Phenoxy/Epoxy Resin with Mixing Ratio

H. Kawada, K. Nakaya and A. Kobiki (Waseda University)

09:40 – 10:00

Fatigue Properties of Quasi-Isotropic Alumina-Fiber Reinforced Plastic Laminates

H. Kawada, N. Kobayashi and Y. Koshikiya (Waseda University)

10:00 – 10:20

Effect of Interphase on Hydrothermal Aging of Glass Fiber Reinforced Unsaturated Polyester Composite

T. Morii (Shonan Institute of Technology) and S. Seino

10:20 – 10:40

Interfacial Properties of Braided Composites

T. Osada (Kyoto Institute of Technology), A. Nakai and H. Hamada

10:40 – 11:00 **BREAK**

[T. Morii]

11:00 – 11:20

Effect of Surface Treatment on Glass Fiber in PP Injection Moldings

Y. Kobayashi (Kyoto Institute of Technology)

11:20 – 11:40

Novel Functional Polymer/YBCO Superconductor Ceramic Composites for Thermistor, Electromagnetic Shielding Effectiveness and Electrostatic Charge Dissipation

F. El-Tantawy (Niigata University)

11:40 – 12:00

Excimer Laser Irradiation onto PET Materials

K. Mizoguchi, A. Yamamoto (Shizuoka University), M. Ishikawa, A. Ohuchi and T. Ohie

12:00 – 12:20

Effect of Fiber Sizing Treatment on Mechanical Properties of PE/Epoxy

Y. Higuchi (Kyoto Institute of Technology), T. Shimizu, M. Mizoguchi and H. Hamada

12:20 – 13:20 **LUNCH**

Room 601

Session E: Composite Applications to Infrastructure

[Z. -S. Wu]

13:20 – 13:50

JSCE Recommendations for Upgrading of Concrete Structures with Use of Continuous Fiber Sheets

K. Maruyama (Nagaoka University of Technology) and T. Ueda **(Keynote)**

13:50 – 14:20

Development and Application of Carbon Fiber Composites for Large-span Structures

K. Sugizaki (Shimizu Corporation) **(Keynote)**

14:20 – 14:40

Strength Evaluation on Bolt Joints of Pultruded GFRP Members

I. Chou (Ishikawajima-Harima Heavy Industries Ltd.), K. Kamada and T. Kimura

14:40 – 15:00

Investigation on the Buckling Strength of the Steel Square Pipe Filled with the Urethane Resin Foam

N. Yamamoto (Ishikawajima-Harima Heavy Industries Ltd.), N. Uno, K. Inose, K. Kamada and T. Kimura

15:00 – 15:20 **BREAK**

[K. Maruyama]

15:20 – 15:40

Bending Response of Thick-Walled Laminated Composite Pipes

M. Xia (National Institute of Advanced Industrial Science and Technology), H. Takayanagi, H. Tsuda, K. Urabe and K. Kemmochi

15:40 – 16:00
Dynamic Properties of Laminated Fiber Reinforced Rubber as a Shock Absorber for Bridge Restrainer System
Y. Nishimoto (National Institute of Advanced Industrial Science and Technology), Y. Kajita, N. Ishikawa, S. Nishikawa and N. Ikoma

16:00 – 16:20
Experimental Study on Effects of Resins on Bond Force Transfer of Carbon Fiber Sheet-Concrete Interface
J. Dai (Hokkaidou University), Y. Sato and T. Ueda

16:20 – 16:40
Retrofitting RC Beams with Innovative Hybrid Fiber Sheets
Z. -S. Wu (Ibaraki University), K. Sakamoto, H. Niu and T. Kurokawa

16:40 – 17:00
A Sensitivity Analysis for Shear Capacity of RC Member Retrofitted with Continuous Fiber Sheet
A. Kamiharako (Hirosaki University), T. Shimomura, K. Maruyama and T. Shinbo

17:00 – 17:20
Ductility Evaluation of RC Member Retrofitted with Continuous Fiber Sheet
F. Katsuki (Shibaura Institute of Technology), K. Maruyama and H. Mutsuyoshi

17:20 – 17:40
Strengthening Behavior of Carbon Fiber Sheet Using Flexible Layer
H. Komaki (Shibaura Institute of Technology), Y. Sohda, T. Maeda and K. Tsubouchi

Exhibition Close
17:00

Banquet
18:00- 19:45
at Restaurant New Tokyo

November 16 (Fri.)

09:00 – 12:00
Registration

Room 607

Session H: New Trends in Polymer Composites and Their Fibers

[Y. Sohda]

09:20 – 09:50
New Trends in Polymer Composites and Their Fibers
M. E. Tuttle (University of Washington) **(Keynote)**

09:50 – 10:10
Processing and Properties of Carbon Fiber Reinforced Composites with New Amorphous, Asymmetric, Addition Type Polyimides (Triple A -PI)
T. Ogasawara (National Aerospace Laboratory of Japan), R. Yokota, Y. Shigenari, K. Miyagawa, H. Ozawa, M. Taguchi and T. Ishikawa

10:10 – 10:30
Cyanate Ester Resin Formulations for Aerospace Applications
A. Oshima, H. Ihara, T. Watanabe (Nippon Mitsubishi Oil Corporation), M. Shinagawa and H. Onoda

10:30 – 11:00 **BREAK**

[K. Ogi]

11:00 – 11:20
A Low Temperature Cure Material for Large Scale Prototype Model Construction
K. Mitani (Mitsubishi Rayon Co. Ltd.,), S. Hayashi and K. Wakabayashi

11:20 – 11:40
Effect of Thermal Cycling and Aging on the Mechanical Properties of Carbon/BMI Composites for the Next-Generation SST Structures
H. Katoh (National Aerospace Laboratory of Japan), T. Shimokawa and C. Marais

11:40 – 12:00
Strengthening of Short Fiber Reinforced Polyimide Composites in Space Environment
Y. Ozawa (Fukushima University)

12:00 – 12:20
Thermal Properties of New Continuous Amorphous Pitch-based Carbon Fiber for Space Applications
N. Kiuchi (Nippon Mitsubishi Oil Corporation), T. Kihara, T. Matsumoto and G. Ishikawa

12:20 – 13:20 **LUNCH**

[T. Katayama]

13:20 – 13:40
Evaluation of the Burst Strength of FW-FRP Composite Pipes with Low-Modulus Carbon Fiber after Impact
S. Wakayama, T. Takekusa, S. Kobayashi (Tokyo Metropolitan University), N. Kiuchi and T. Matsumoto

13:40 – 14:00
Interply Hybrid Laminates with Improved Flexural Impact Resistance
S. Takemura (Nippon Mitsubishi Oil Corporation), H. Ohno and A.S. Kobayashi

14:00 – 14:20
Curing Process in SMC Roll Forming -Effects on Characteristics and Formability
T. Katayama, M. Shinohara (Maizuru National College of Technology), M. Hakotani, G. Kamada and K. Nishi

14:20 – 14:40
Comparison of Strength and Damage for Notched FRP Plates Made by Injection Molding with that of Machining
T. Yamamoto (Fukuoka University) and H. Hyakutake

14:40 – 15:00
Effect of Thermal Treatment on Mechanical Properties of a Carbon/Epoxy Composite
K. Ogi (Ehime University), T. Shiraishi and T. Tokunaga

15:00 – 15:20 **BREAK**

[S. Wakayama]

15:20 – 15:40
Electro-Conductive Plastic Compounds Filled with Stainless Steel Micro Fiber
K. Yoshino (Kawasaki Steel Techno-research Corporation) and R. Sakamoto

15:40 – 16:00
Silver Coated Carbon Black Epoxy Composites: PTC Effect and Electric Wave Shielding Effectiveness
H. Ohnabe (Niigata University), K. Kamada and F. El-Tantawy

Room 608

Satellite Workshop I: Ceramic Matrix Composites and Carbon/Carbon Composites

[H. Hatta]

09:20 – 09:50
Long-Term Multi-Physics Performance of Functional Ceramic Composite Material Systems
K. Reifsnider (Virginia Tech.), X. Huang and N. Olson **(Keynote)**

09:50 – 10:20
Fibre/Matrix Interface Shear Strength Measured *in situ* for SiC/SiC Composites with Different Matrices and Interfaces
I.J. Davies (Kyoto Institute of Technology), T. Ogasawara and T. Ishikawa **(Keynote)**

10:20 – 10:40
High Temperature Behavior of Sintered SiC Fiber-bonded Ceramics
S. Kajii (Ube Industries, Ltd.), M. Sato, K. Matsunaga, T. Hogami and T. Ishikawa

10:40 – 11:00 **BREAK**

[I. J. Davies]

11:00 – 11:20
High Temperature Creep Deformation and Thermal Stability of 3-D Woven Tyranno ZMI Fiber / Si-Ti-C-O Matrix Composite
Y. Ohsawa (University of Electro-Communications), S. Zhu, T. Ogasawara, T. Ishikawa and Y. Ochi

11:20 – 11:40
Distribution of Fibre/Matrix Interface Shear Strength within a Single Fibre Bundle for a 3-D Woven SiC/SiC Composite Tested at 1100℃ in Air
I.J. Davies (Kyoto Institute of Technology), T. Ogasawara and T. Ishikawa

11:40 – 12:00
Shear Modulus of 3-D Woven Ceramic Matrix Composite
T. Shiraishi (Tokyo Metropolitan Institute of Technology), T. Ogasawara, T. Ishikawa and N. Watanabe

12:00 – 12:20
Characterization of Thermal Shock Fracture Behavior in Ceramic Materials by Disk-on-Rod Tests
S. Wakayama (Tokyo Metropolitan University), K. Nishino and S. Arai

12:20 – 13:20 **LUNCH**

[T. Ogasawara]

13:20 – 13:40
Development Study of Carbon-Carbon Turbine Disk for ATREX Engine
K. Goto (The Institute of Space and Astronautical Science), H. Hatta, T. Sato and N. Tanatsugu

13:40 – 14:00
Ceramic Coatings for Oxidation Protection of C/C Composites
T. Aoki (National Aerospace Laboratory of Japan), H. Hatta and H. Fukuda

14:00 – 14:20
Effect of Interfacial Morphology Formed by Conversion Pretreatment of CVD-SiC Coating on C/C Composites
D. Maruyama (The Institute of Space and Astronautical Science), H. Hatta and Y. Kogo

14:20 – 14:40
Fatigue Behavior of C/C Composite Impregnated with Si
H.N. Ko (Nakanihon Automotive College), S. Hanzawa and K. Nakano

14:40 – 15:00
The Role of Three Dimensional Reinforcement on Fracture Behavior of Carbon-Carbon Composites
M. S. Aly-Hassan (The Institute of Space and Astronautical Science),H. Hatta, S. Wakayama, E. Miyazaki, K. Goto and K. Miyagawa

15:00 – 15:20 **BREAK**

[K. Goto]

15:20 – 15:40
Thermal Shock Damage in Carbon-Carbon Composites
Y. Kogo (Science University of Tokyo), K. Nakazaki, T. Katagiri and H. Hatta

15:40 – 16:00
Compressive Stress Enhancement by EB Treatment of C/C Composite Spring
A. Kimura, T. Toriyama, A. Mizutani, K. Oguri, A. Tonegawa and Y. Nishi (Tokai University)

16:00 – 16:20
Tensile Failure Mechanisms of C/C Composites
T. Aoi (The Institute of Space and Astronautical Science), H. Hatta and Y. Kogo

Room 606

Satellite Workshop K: Textile Composites

[S. Kobayashi]

10:00 – 10:20
Interfacial Properties of EB Cured Composite
T. Osada (Kyoto Institute of Technology), M. Mizoguchi, A. Nakai and H. Hamada

10:20 – 10:40
Investigation of Interfacial Properties Using Compact Tension Tests of Glass Cloth Reinforced Vinylester Composite -Fractographic Approach -
H. Hamada, Y. Fujii, M. Mizoguchi (Kyoto Institute of Technology) and Y. Koyama

10:40 – 11:00 **BREAK**

[T. Ishikawa]

11:00 – 11:20

Mechanical Properties of Plain Woven Fabric Composites with Flexible Interphase

S. Kobayashi (Tokyo Metropolitan University), T. Osada and A. Nakai

11:20 – 11:40

Initial Micro Fracture Behavior of Woven Fabric Composites

T. Osada (Kyoto Institute of Technology), T. Shimizu, A. Nakai and H. Hamada

11:40 – 12:00

Experimental Characterization of Off-axis Properties of Woven Fabric Composites

H. Hamada, A. Nakai and S. Ogihara (Science University of Tokyo)

12:00 – 13:20 **LUNCH**

Room 606

Session F: Composite/ Plastic Applications to Transportation Vehicles

[N. Mifune]

13:20 – 13:40

Crushing Properties of FRP Pipe Bolted Joint to Steel Component - Integrated Crush Experiments -

H. Saito (Kyoto Institute of Technology), R. Inai, T. Nakatani, A. Yokoyama and H. Hamada

13:40 – 14:00

Numerical Simulation for Crashing Behavior of FRP Tube under Impact Loading

M. Tateishi, A. Yokoyama (Kyoto Institute of Technology) and H. Hamada

14:00 – 14:20

Development of Lightweight and High Stiffness "New KP-Sheet" for Automotive Headliners by Controlling of Glass Fiber Arrangement

Y. Araki (Kawasaki Steel Corporation), S. Takano, S. Hanatani, M. Ito and H.Kubo

14:20 – 14:40

Investigation of Durability and Reasonable Design Method for Elastic Chain

K. Tokubuchi (Shibata Industrial Co., Ltd), Y. Nishino and N. Ikoma

14:40 – 15:00

Synthesis and Properties of Polyethylene-Clay Hybrids

M. Kato (Toyota Central R&D Labs., Inc.) and A. Usuki

15:00 – 15:20 **BREAK**

[N. Sato]

15:20 – 15:40

Development of New Type High Performance Potassium Titanate for Friction Material Use

H. Konnai (Kawatetsu Mining Co., Ltd) and Y. Aso

15:40 – 16:00

Advanced Seat Fabrics with Deodorization Function for Vehicles

T. M. Suzuki (Toyota Central R&D Labs., Inc.), K. Fukumoto, N. Sato, Y. Yamada, M. Owaki, M. Maekawa, S. Miura, O. Araki, A. Matsuyama and M. Furuta

16:00 – 16:20

Development of the Thermoplastic Elastomer Based on a Waste Rubber

H. Okamoto (Toyota Central R&D Labs., Inc.), K. Fukumori, M. Matsushita, N. Sato, Y. Tanaka, T. Okita, S. Otsuka and Y. Suzuki

Room 605

Satellite Workshop N: New Trends in Damage Identification and NDI

[G. Ben (O.-I. Byon)]

09:20 – 09:50

The New Progress and Developing Tendency of NDT for Advanced Composite Materials and Structures

K. Xu (Beijing Institute of Aeronautical Materials) **(Keynote)**

09:50 – 10:10
Nondestructive Inspection for Metal Matrix Composite
N. Higuchi (Mitsubishi Heavy Industries, Ltd.), M. Uematsu, A. Kohno, T. Yamada, Y. Kawachi and S. Yamamoto

10:10 – 10:30
Correlation between Damage and Electrical Resistance Change in Composites with Carbon Particle and Carbon Fiber
D.-Y. Song (The University of Tokyo), Y. Hirata and N. Takeda

10:30 – 11:00 **BREAK**

[H. Fukunaga]

11:00 – 11:20
Electric Impedance Change Method for Monitoring of Sandwich Plate Damage
A. Todoroki, S. Murase (Tokyo Institute of Technology), Y. Shimamura and H. Kobayashi

11:20 – 11:40
Ballistic Impact Behavior and Properties of Structural Ceramic Materials
H. Kasano (Takushoku University) and O. Hasegawa

11:40 – 12:00
Acoustic Emission Analysis of Corrosion Resistance of Glass Fiber/Vinylester Composites under Acid Environment
M. Mizoguchi, H. Hamada, T. Morii (Shonan Institute of Technology) and Y. Fujii

12:00 – 12:20
On the Detection of Fatigue Damage in CFRP by Measuring Poisson's Ratio
S. Bandoh (Kawasaki Heavy Industries, Ltd.), M. Zako, T. Shiino, T. Kurashiki and K. Matsumura

12:20 – 13:20 **LUNCH**

[H. Kasano]

13:20 – 13:50
Adaptive Vibration Control of Composite Beams Using Neural Network Controller
I. Lee (Korea Advanced Institute of Science and Technology), S.-M. Yang, J.-H. Han and S.-H. Youn **(Keynote)**

13:50 – 14:10
Delamination Detection Using Curvature Vibration Modes
H. Fukunaga (Tohoku University), N. Hu, M. Kameyama and F. -K. Chang

14:10 – 14:30
Strain Sensor Output-based Health Monitoring of CFRP Structures by Using Localized Flexibility Method
Y. Aoki (Nihon University) and O.- I. Byon (G. Ben)

14:30 – 14:50
Delaminated Area Identification of Composite Laminated Beams Based on Resonance and Anti-resonance Frequency Change
T. Inada (Tokyo Institute of Technology), Y. Shimamura, A. Todoroki and H. Kobayashi

14:50 – 15:10
An Analytical Study of Thermal Conductivity Affecting Thermoelastic Stress Measurement of Laminate Composites
S. Sugimoto (National Aerospace Laboratory of Japan), R.E. Rowlands and T. Ishikawa