

PROGRAM SCHEDULE

Day 1 (Sunday, Sept. 17)		
Lobby	Aix la Chapelle 1	Aix la Chapelle 2
14:00–19:00 Registration	14:00–19:00 For Secretariat	14:00–19:00 Exhibition & Poster

Day 2 (Monday, Sept. 18)		
Lobby	Aix la Chapelle 1	Aix la Chapelle 2
9:00–18:15 Registration	9:00–18:15 For Secretariat	9:30–18:15 Exhibition & Poster

Aachen 1	Aachen 2	Aachen 3
9:30–10:00 Opening		
10:00–10:45 Special lecture Dr. -Ing. Sebastian FELDMANN: Chances and Risks for Smart Connected Automotive Applications in the Age of Industry 4.0		
10:45–11:15 Break		

11:15–12:20 Session 1–1		11:15–12:20 Session 2–1		11:15–12:20 Session 3–1	
Machine Element and Tribology (1)		Robotics (1)		Human Interface	
Chair/Co–chair:	Kohei NAKASHIMA/Toshitake TATENO	Chair/Co–chair:	Yusuke OTA/Takeo KATO	Chair/Co–chair:	Toshiharu KAZAMA/Kazuyuki KOJIMA
111	Influence of External Vibration in Radial Direction for Damage of Small Ball Bearings (In Case of Giving Radial Vibration up to 10m/s²)	211	Motion Analysis of Turning Mechanism Toward Developing a Butterfly–style Flapping Robot	311	Skin Color Evaluation under LED Light System Controlling Color Rendering Property
Authors:	Tohru KANADA, Shoji NOGUCHI, Norifumi MIYANAGA and Tomoya HOTTA	Authors:	Yuta OZAWA, Taro FUJIKAWA and Koki KIKUCHI	Authors:	Keiichi MURAMATSU, Keiichi WATANUKI and Hiroshi SHINODA
112	Calculations of Bearing Performance by using the Cavitation Algorithm	212	Development of a Butterfly–style Flapping Robot with a Different Ratio of Down and Up Stroke Times	312	Resisting Torque Display System for Operating Lever Joystick Based on Perceptive Model
Authors:	Norifumi MIYANAGA and Jun TOMIOKA	Authors:	Taro FUJIKAWA and Koki KIKUCHI	Authors:	Kazunori KAEDE, Keiichi WATANUKI and Keiichi MURAMATSU
113	Elastohydrodynamic Lubrication Analysis of Journal Bearing Considering Deformations of Bearing and Journal Using CAD	213	A Study on Glide Characteristics of a Small Flapping Robot	313	Research Related to Psychological Estimation for Design of Badminton Racket
Authors:	Nariaki UOI, Mana KUROKAWA,Yuji HIROSE and Toshihiro OZASA	Authors:	Ayato HOSOI, Shinya SATO, Yuta OZAWA, Yuka TAKAHARA,Koki KIKUCHI and Taro FUJIKAWA	Authors:	So KASAMATSU, Shoichiro TAKEHARA and Taiki KAWANO
12:20–13:50	Lunch				

13:50–15:35 Session 1–2		13:50–15:35 Session 2–2		13:50–15:35 Session 3–3	
Structural Mechanics and Design		Medical and Welfare Design		Thermal Design	
Chair/Co–chair:	Jun TOMIOKA/Tohru KANADA	Chair/Co–chair:	Takeo KATO/Keiji SONODA	Chair/Co–chair:	Kenichi P. KOBAYASHI/Toshiyuki HIRANO
121	Experimental Verification of Bending Stiffness Analysis Model of Sandwich Structure Specimen with Adhesive	221	Optimum Design of Columella for Sound Conduction Reconstruction of Human Middle Ear	321	Thermal Deformation Prediction in Machine Tools
Authors:	Shuichi NAGAOKA, Nur Amalina Izzati TAJUDIN and Zenichi MIYAGI	Authors:	Takao HIGASHIMACHI, Yang LIU, Yoshihisa KANAFUSA and Ryuzo TORIYA	Authors:	Hiroki KAWASAKI, Masahiro KAN, Fumihiro SUZUMURA and Gonjo KATAYAMA
122	Study on Deformation Evaluation of Bracket in Design of Adjustment Hinge	222	Relation between Tibiofemoral Design of an Artificial Knee Joint and Patellofemoral Statics	322	Effect of Structural Parameters on Temperature Distribution of Organic Light Emitting Diode Panels
Authors:	Morio FUJIMOTO, Takuji MORIGUCHI, Tadahiro WADA and Shinichi ENOKI	Authors:	Michihiko FUKUNAGA, Kuniyuki ITO, Tomoko KAJIWARA, Mitsugu TODO and Ryuji NAGAMINE	Authors:	Toshiro KOBAYASHI, Taizo UCHIDA, Yuichi UTSUMI, Hideyuki KANEMATSU and Tsuyoshi MASUDA
123	Study on Fabrication and Structural Design of Vacuum Insulation Bottle	223	Development of a Walking Assistance Apparatus for Promotion of Exercise	323	Cooling Characteristics of Air–Cooled Cylinder with Fins with Slits
Authors:	Kousei ITO and Tatsuya TANAKA	Authors:	Eiichiro TANAKA, Keiichi MURAMATSU, Yusuke OSAWA, Keiichi WATANUKI, Shozo SAEGUSA and Louis YUGE	Authors:	Kohei NAKASHIMA, Hiroshi YAMADA, Kai ISHIKO and Masao YOSHIDA
124	Connecting Rod Design Using a Stress Analysis of 3D CAD (Automatic computation of Compliance Matrix)	224	Basic Design of a Powered Sit–to–stand Chair with Multi–link System	324	Influence of Combustion Design Based on Oxygen Addition to Gas Oil (Experimental Study on Combustion Improvement by Oxygen Additional Gas Oil)
Authors:	Toshiaki KANDA, Masatoshi NIIZEKI, Nariaki UOI and Toshihiro OZASA	Authors:	Hiro ONISHI, Takao MUROMAKI, Atsushi SUDA, Nick TYLER and Tatsuo SUZUKI	Authors:	Kenta SUGAWARA, Atsuyoshi UETA, Kazuhiko ITO and Katsuhiko TAKEDA
125	Numerical Evaluation of Impact Energy Absorption Characteristics of Truss Core Panels	225	Development of Nursing Bed Considering of Patient Transfer to Wheelchair (Experimental Validation for Repositioning Patient in Bed Using Miniature Model)	325	Experimental Study on the Fuel Design for Waste Plastic Decomposition Oil (Influence of Waste Edible Oil blending to Waste Plastic Decomposition Oil)
Authors:	Sota INOUE and Sachiko ISHIDA	Authors:	Kazuyuki KOJIMA and Takahiro OKUMURA	Authors:	Toshiki KAMINAGA, Ryo YAMAIZUMI, Keiichiro SANO and Katsuhiko TAKEDA
15:35–15:50	Break				

15:50–16:55 Session 1–3		15:50–16:55 Session 2–3		15:50–16:55 Session 3–3	
Machine Element and Tribology (2)		Robotics (2)		Geometric Design	
Chair/Co–chair:	Tohru KANADA/Jun TOMIOKA	Chair/Co–chair:	Taro FUJIKAWA/Kazunori KAEDE	Chair/Co–chair:	Toshitake TATENO/Toshiharu KAZAMA
131	CFD Analysis of Journal Bearing with Oil Supply Groove Considering Two–Phase Flow	231	A Study on Autonomous Operation System of Caisson Shovels in High Air Pressure and Narrow Underground Space (Terrain Mapping by RGB – and Depth–sensing Camera Mounted on the Shovel)	331	Quantitative Representation Method of Complexity on Three Dimensional Shape
Authors:	Fuma SAKAI, Masayuki OCHIAI and Hiromu HASHIMOTO	Authors:	Akira KAMEI, Koki KIKUCHI, Tetsuya KOYO and Toshihiro KONDO	Authors:	Taishi MATSUMOTO, Takeo KATO and Yoshiyuki MATSUOKA
132	Fatigue Fracture Behavior of Injection Molded Plastic Gear Reinforced by Carbon Particle made from Rice Hull	232	A Study on an Autonomous Operation System of Caisson Shovels in High Air Pressure and Narrow Underground Space (Development of a 1/10–scale Test Platform and its Demonstration)	332	Considerations on Digital Modeling of Double Curved Surface (Generation of Digital Model of Circular–Arc Tooth–Trace Gear)
Authors:	Takayoshi ITAGAKI, Mikio TAKAHASHI, Hideo TAKAHASHI, Hiroshi IIZUKA and Ryozo NEMOTO	Authors:	Toshitaka TSUNEKI, Naoto NEGISHI, Ryota TSUCHIYA, Koki KIKUCHI, Toshihiro KONDO, Tetsuya KOYO, Akira KAMEI and Keigo HAYAKAWA	Authors:	Kazuki TAKENOUCHI, Keiji SONODA, Yoshiaki KUBOTA and Shoko KAWATA
133	Contact Stress State of Crossed Helical Gears	233	A Study on Autonomous Operation System of Caisson Shovels in High Air Pressure and Narrow Underground Space (Demonstration of Trajectory Tracking Control)	333	Study on Optimum Design Method for Small Axial Fan
Authors:	Ema TAMURA, Ryozo NEMOTO, Natsuhiko SEYAMA and Eiichiro TANAKA	Authors:	Naoto NEGISHI, Toshitaka TSUNEKI, Koki KIKUCHI, Toshihiro KONDO, Tetsuya KOYO, Akira KAMEI and Keigo HAYAKAWA	Authors:	Toshiyuki HIRANO, Toshio OTAKA and Gaku MINORIKAWA
16:55–17:10	Break				

17:10–18:15 Session 1–4		17:10–18:15 Session 2–4		17:10–18:15 Session 3–4	
Design Education (1)		Robotics (3)		Additive Manufacturing	
Chair/Co–chair:	Keiichi WATANUKI/Kohei NAKASHIMA	Chair/Co–chair:	Kazunori KAEDE/Taro FUJIKAWA	Chair/Co–chair:	Toshiyuki HIRANO/Tamotsu MURAKAMI
141	Hands–on Teaching Materials for Use in Mechanical Engineering Classrooms (A Case Study of Undergraduate Courses on Machine Design and Fluid Power)	241	Soft Landing Condition for Stair–climbing Robot with Hopping Mechanism (Feasibility Discussion for Multiple Soft Landing Points)	341	Fabrication of Poly (L–lactic acid) Nanosheets Using Micro Gravure Printing and Microstructure
Authors:	Toshiharu KAZAMA	Authors:	Koki KIKUCHI, Masafumi MIURA, Kyosuke SHIBATA and Junpei YAMAMURA	Authors:	Yoshitomo KAI, Yosuke OKAMURA, Kazuyoshi TSUCHIYA, Hiromu HASHIMOTO and Yuta SUNAMI
142	Approach to Education of Geometrical Dimensioning and Tolerance in University and College of Technology	242	Realization of Jumping Motion for Walking Robot with Spherical Outer Shell	342	Design of Compliant Mechanism Fabricated by Additive Manufacturing with Different Strength Materials
Authors:	Tsukasa IRIE, Kazuki TAKENOUCHI, Keiji SONODA, Naoshi IZUMI, Ryohei ISHIMARU, Koji AKASHI and Akihisa MORI	Authors:	Takatoshi KINJO and Takeshi AOKI	Authors:	Momoko KIMURA and Toshitake TATENO
143	The Workshop on the Environmental Color Education Utilizing a Diagram	243	Multi–magnet Foot of Locomotion Ceiling Robot for Underground Construction	343	Design of Cell–based Compliant Mechanism in Consideration of Multi–Material Additive Manufacturing
Authors:	Qifan HUANG and Akiyo KOBAYASHI	Authors:	Yuto TANAHASHI, Shun ONODUKA, Kan YONEDA, Testuya KOYOU and Toshihiko KONDO	Authors:	Toshitake TATENO, Koki JINBO and Haruki MIZOKAMI
18:15–20:00	Banquet				

Day 3 (Tuesday, Sept. 19)		
Lobby	Aix la Chapelle 1	Aix la Chapelle 2
9:00-16:30 Registration	9:00-17:00 For Secretariat	9:30-16:30 Exhibition & Poster

Aachen 1	Aachen 2
9:00–10:00 Keynote lecture Prof. Dr. Schuh, Günther (RWTH Aachen)	
10:00–10:30 Break	

10:30–11:55 Session 1–5		10:30–11:55 Session 2–5	
Design Education (2)		Robotics (4)	
Chair/Co–chair:	Kazuki TAKENOUCHI/Norifumi MIYANAGA	Chair/Co–chair:	Koki KIKUCHI/Masatoshi NIIZEKI
151	Engineering Design using A Small Autonomous Robot for Student Education (Practical Engineering Education with PDCA)	251	Effectiveness of Precise Velocity Control of a Bipedal Robot from the Viewpoint of Energy Conservation
Authors:	Masatoshi ONISHI, Naoshi TAMIYA, Shotaro KAGA and Takumi KOMO	Authors:	Tadashi KOMATSU and Kengo SAITO
152	PBL Practice Education Featuring both Trials of Design and Manufacturing of a Small Formula–Type Racing Vehicle, and Participation in Formula SAE Competition – The Initiation of Development and Research Capabilities by Manufacturing Education for 6 years	252	Design to Realize the Harmonious Coexistence of Humans and Robots
Authors:	Tomoaki KODAMA, Yasuhiro HONDA and Toshio OTAKA	Authors:	Shigeo HIRANO, Susumu KISE, Sozo SEKIGUTI, Kazuya OKUSAKA and Tsutomu ARAKI
153	A Study on the Design and Manufacturing of Small Formula Type Vehicle – Especially, Chassis System of Student Formula Japan Vehicle	253	Development of Quadruped Robot with Spherical Shell – Realization of locomotion by kicking
Authors:	Daisuke KAGAWA, Tomoaki KODAMA, Yasuhiro HONDA and Toshio OTAKA	Authors:	Shunsuke CHIBA and Takeshi AOKI
154	A Study on the Design and Manufacturing of Small Formula Type Vehicle – Especially, Powertrain System of Student Formula Japan Vehicle	254	Development of Quadruped Robot with High Adaptability on Rough–Terrain (Analysis Focused on Joint Torques of Leg)
Authors:	Yoichiro TAKAHASHI, Chen LIU, Tomoaki KODAMA,Yasuhiro HONDA and Toshio OTAKA	Authors:	Hiroaki OKURA and Yusuke OTA
11:55–13:25	Lunch		

13:25–14:50 Session 1–6		13:25–14:50 Session 2–6	
Machine Element and Tribology (3)		Design Theory and Methodology (1)	
Chair/Co–chair:	Norifumi MIYANAGA/Kenichi P. KOBAYASHI	Chair/Co–chair:	Masatoshi NIIZEKI/Yusuke OTA
161	Design and Manufacture of Eccentric Planetary Gear Drive with Hydraulic Motor (Power Transmission Efficiency of Trial Gear Reducer)	261	Proposition of M Method System
Authors:	Keiji SONODA, Hidenori HIRAI, Maki SONODA and Kazuki TAKENOUCHI	Authors:	Daisuke ISEKI, Yuki YASUMOTO, Shota AMABE, Takeo KATO and Yoshiyuki MATSUOKA
162	A Wettability Evaluation on Super–hydrophobic and Hydrophobic Surface	262	Proposal of Design Knowledge Management for Global Collaboration Using Language–Independent Representation
Authors:	Masahiro KAN, Hiroki KAWASAKI and Fumihiro SUZUMURA	Authors:	Tamotsu MURAKAMI, Koudai SUGIYAMA and Youji HIRAOKA
163	Friction Characteristics of Pneumatic Cylinder (Effects of Rod Packing and Piston Packing)	263	Brain Activities of Idea Generation Using Sketches
Authors:	Yasunori WAKASAWA, Yuta KOHASHI, Naoto AYADA and Hideki YANADA	Authors:	Takeo KATO, Hikaru OKADA and Yuichi IZU
164	Durability of a Water Hydraulic Cylinder	264	Stakeholder Value Prioritization Method for Quality Function Deployment
Authors:	Hideki YANADA, YuhI ITO and Yutaka FUJIMOTO	Authors:	Kazuaki UESHIMA, Takeo KATO and Yoshiyuki MATSUOKA
14:50–15:05	Break		

15:05–16:30 Session 1–7		15:05–16:30 Session 2–7	
Mobility Design		Design Theory and Methodology (2)	
Chair/Co–chair:	Keiji SONODA/Kazuki TAKENOUCHI	Chair/Co–chair:	Tamotsu MURAKAMI/Koki KIKUCHI
171	A Conceptual Design for a Value Growth Mobility System Based on Timeaxis Design	271	Definition of Action Fields According to the Improvement of Methods and Tools for the Product Development Process in Non–Electrical Explosion Protection
Authors:	Satoru FURUGORI, Keisuke TODA, Soichiro HATANO, Takeo KATO, Hidekazu NISHIMURA and Yoshiyuki MATSUOKA	Authors:	Sabrina HERBST, Frank ENGELMANN and Karl–Heinrich GROTE
172	Pedestrian–Space Personal Mobility, ILY–A, with Features of Transformation and Safety Function – Concept Proposal and Model Development	272	Entropy–based Optimization of Engineering Design – CAE Applications
Authors:	Hideaki YAMATO, Kazuki OGHIHARA, Takashi KODACHI, Masakuni NAGANO, Kengo TODA, Masaharu SHIMIZU, Yu OKUMURA, Kiyoshi IRIE and Takayuki FURUTA	Authors:	Masatoshi NIIZEKI and Mikiyo KII NIIZEKI
173	Dynamic Analysis of Baby Carriage Passing through a Level–difference of Road Surface	273	Set–based Design Method Using Vector Evaluated Particle Swarm Optimization
Authors:	Chihiro KAMIO and Tatsuhito AIHARA	Authors:	Tatsuki ITOMI, Mitsuhiro WADA, Tetsuya ISHINARI and Takeo KATO
174	Redesign and Reproduction of Japanese Oldest Bicycles Developed About 100 Years Ago	274	Proposal of a Component Upgradability Indicator from Comprehensive Perspectives (Case Study of Laptop Modules)
Authors:	Hwa–Soo LEE, Kohji TOKURA, Kohichi SHIBUYA and Noboru ITOH	Authors:	Chise SHIBATA, Shuho YAMADA, Tetsuo YAMADA, Stefan BRACKE and Masato INOUE
16:30–17:00	Break		
17:00–17:30	Closing		