ICIARE2014 and CEDC2014

International Conference on Innovative Application Research Education

and

Creative Engineering Design Competition

Organized by:

Chonbuk National University, Korea
Chungbuk National University, Korea
Kunsan National Universitym, Korea
Advanced Electronics & Information Research Center, CBNU, Korea

Co-sponsored by:

Dalian University of Technology, China
Hunan University of Science and Technology, China
Jiangsu University, China
University of Seoul, Korea
University of Science and Technology Liaoning, China
Yamaguchi University, Japan

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Welcome Message

The various committees are delighted to welcome everyone to Jeonju City in South Korea for the International Conference on Innovative Application Research Education (ICIARE) 2014 and Creative Engineering Design Competition (CEDC) 2014. The joint ICIARE 2014 and CEDC 2014 is envisioned as a platform for researchers, students, academicians, engineers and industry practitioners from around the world to present their works on applications of research and innovations in education. The delegates will have the opportunity of establishing new relationships both in their personal or official capacity that could lead to future collaborative research works.

Research articles related to innovative application research and education are most welcome. It is expected that the delegates present their work(s) in an easily understandable way since the participants are from various fields with different knowledge background. A detailed explanation of the research background and idea with a simple but clear presentation of the theories and results as well as unresolved issues will enable the audience to get a better grasp of the study and give an idea of possible future collaborative works.

The ICIARE 2014 consists of 2 plenary talks and 4 oral sessions for presenting 27 research works while CEDC 2014 has a total of 40 teams that will demonstrate their designs.

The general chairs would like to express our sincerest appreciation to the Program, Steering and Executive committees of ICIARE 2014 and CEDC 2014 for their valuable contribution to the success of the event. We would also like to extend our thanks for all those involved in the preparation and conduct of the conference and competition.

Jeonju City is famous in South Korea for its well-preserved Traditional Village (Haneuk Maul) and very delicious Bibimbap (a mixture of rice with seasoned vegetables, spices with fried egg or a slice of meat). We wish everybody a good combination of productive work presentation and nice stay in Jeonju City.

Sincerely yours,

General Chairs of ICIARE2014 and CEDC2014

Kil To Chong, Chonbuk National University, Korea
Qingkai Han, Dalian University of Technology, China
Zhongwei Jiang, Yamaguchi University, Japan

ICIARE2014 and CEDC2014 Organization

General Conference Chairs

Kil To Chong, Chonbuk National University, Korea
Qingkai Han, Dalian University of Technology, China
Zhongwei Jiang, Yamaguchi University, Japan

Program Committee

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Xuejin Li, Hunan University of Science and Technology, China
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Conference Secretariats

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Kunsan National University
Email: deokjlee@kunsan.ac.kr
Mobile: +82 10 2026 0477

Secretary
Ms. Hyun Jin Kim
CK Center, Chonbuk National University
Tel: +82 10 9423 3507

General Information

Conference Location

The conference will be held in the 2nd floor of Engineering Building 8 (2-8), Chonbuk National University (CBNU). CBNU is located at the north-central area of Jeonju City. Please see map in the last part of this section. The ICIARE oral sessions will be in rooms 209 and 210 while CEDC will be in room 203. Room 203 will also be the Professor's Lounge.

Registration Desk

The registration desk will be open at 2nd floor of Engineering Building 8, Chonbuk National University during the following period: 09:00-19:00 Monday, 1 December 2014.

On-site registration will also be available during the conference.

Information / Message Board

The information / message board will be located near the registration desk. Messages will be posted on the board throughout the conference.

Name Badge

All attendees must wear their name badges at all times to gain admission to all conference sessions, welcome reception, conference banquet and social program.

Conference Papers

All accepted abstracts of papers are included in conference program book.

Papers presented in ICIARE2014 will be peer-reviewed and published in the International Journal of Engineering Innovation and Management (ISSN 2185-5544). If the authors want to publish their presented paper, please send the manuscript to the conference Secretariat (deokjlee@kunsan.ac.kr) before the conference day, or submit it on-site. During the conference we will arrange for peer reviews.

Office Language

The official language of the conference is English and will be used for all presentations and printed materials.

Currency and Credit Cards

Foreign currency and traveler’s checks can be exchanged into Korean Won at foreign exchange banks and other authorized money exchangers. Credit cards, including VISA, MasterCard are accepted at major hotels, department stores, and large restaurants. The exchange rate is subject to fluctuation.

Electricity

Sockets with 220Volt 50Hz are dominant. Always check the power supply before using.

Refreshment Break

Coffee and tea with cookies will be served during conference breaks.

Registration Kit

All registrants will be given a conference bag. It will contain the final program, personal badge, receipt, list of participants, as well as invitations to the welcome reception and conference banquet.

Climate

December is winter season in Korea and Jeonju's temperature is expected to be in the range of -4℃ to 10℃ during the conference.

Conference Secretariat

If you have any inquiry on the ICIARE2014, please contact:

ICIARE2014 Secretariats
Professor Deokjin Lee (Email: deokjlee@kunsan.ac.kr)
Ms. Hyun Jin Kim (Tel: +82 10 9423 3507)
Chonbuk National University

Conference Hotel Information

Hunsan Gunji House at Chonbuk National University
Address: 567 Baekje-daero, Deokjin-gu, Jeonju-si, Jeollabuk-do, Korea.

Transportation

1. Airport to conference venue

Incheon International Airport -> Buy bus ticket bound for Jeonju at Exit No. 8 -> Get onto the Limousine bus bound for Jeonju at bus station No. 9C (trip will take about 4 hours)-> Get off the bus at Limousine Bus Terminal -> take the taxi to Chonbuk National University (fare costs you about KRW 5,000).

2. Railway station to conference venue

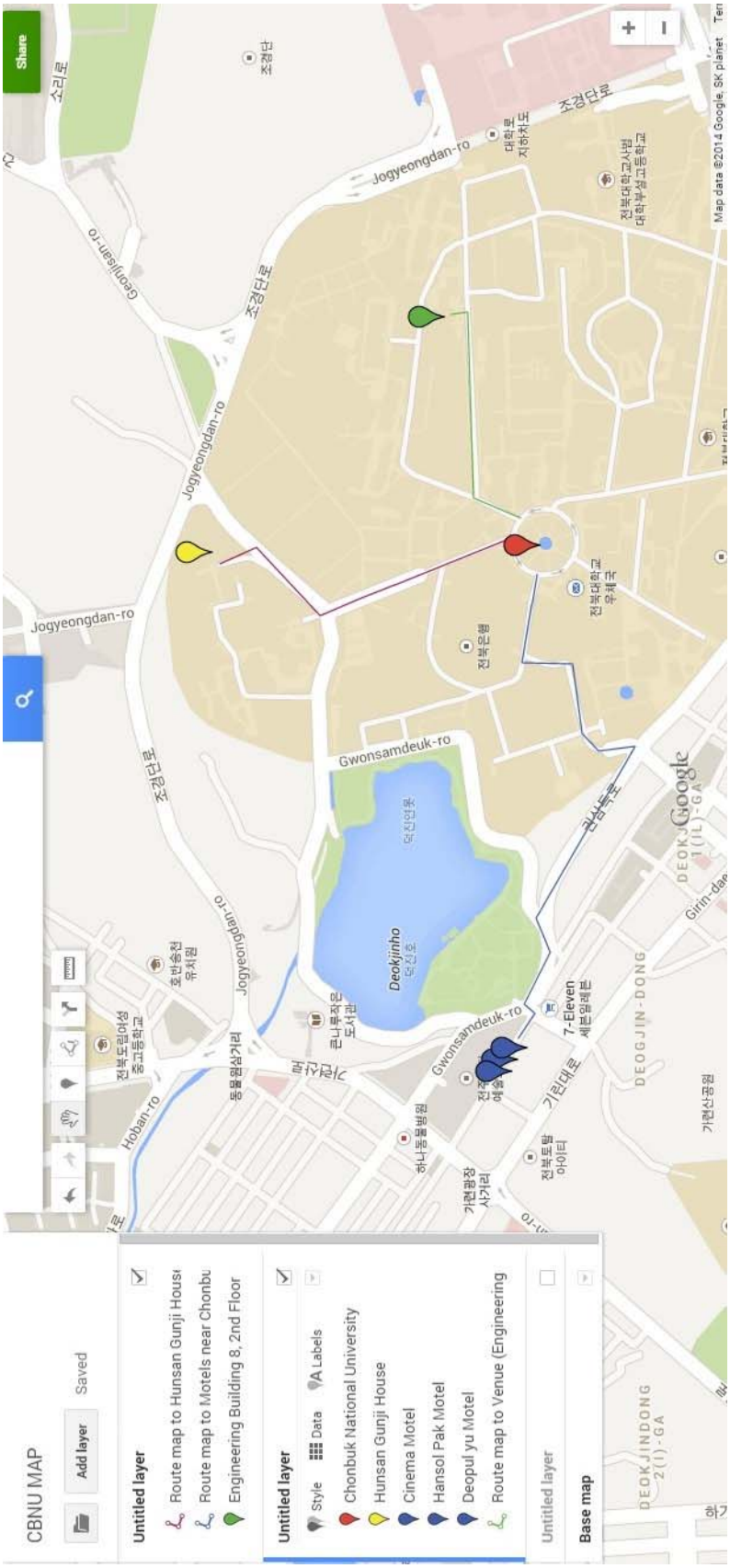
The Jeonju train station is approximately 10 minutes away by taxi from Chonbuk National University and cost about KRW 4,000.

Conference Visit

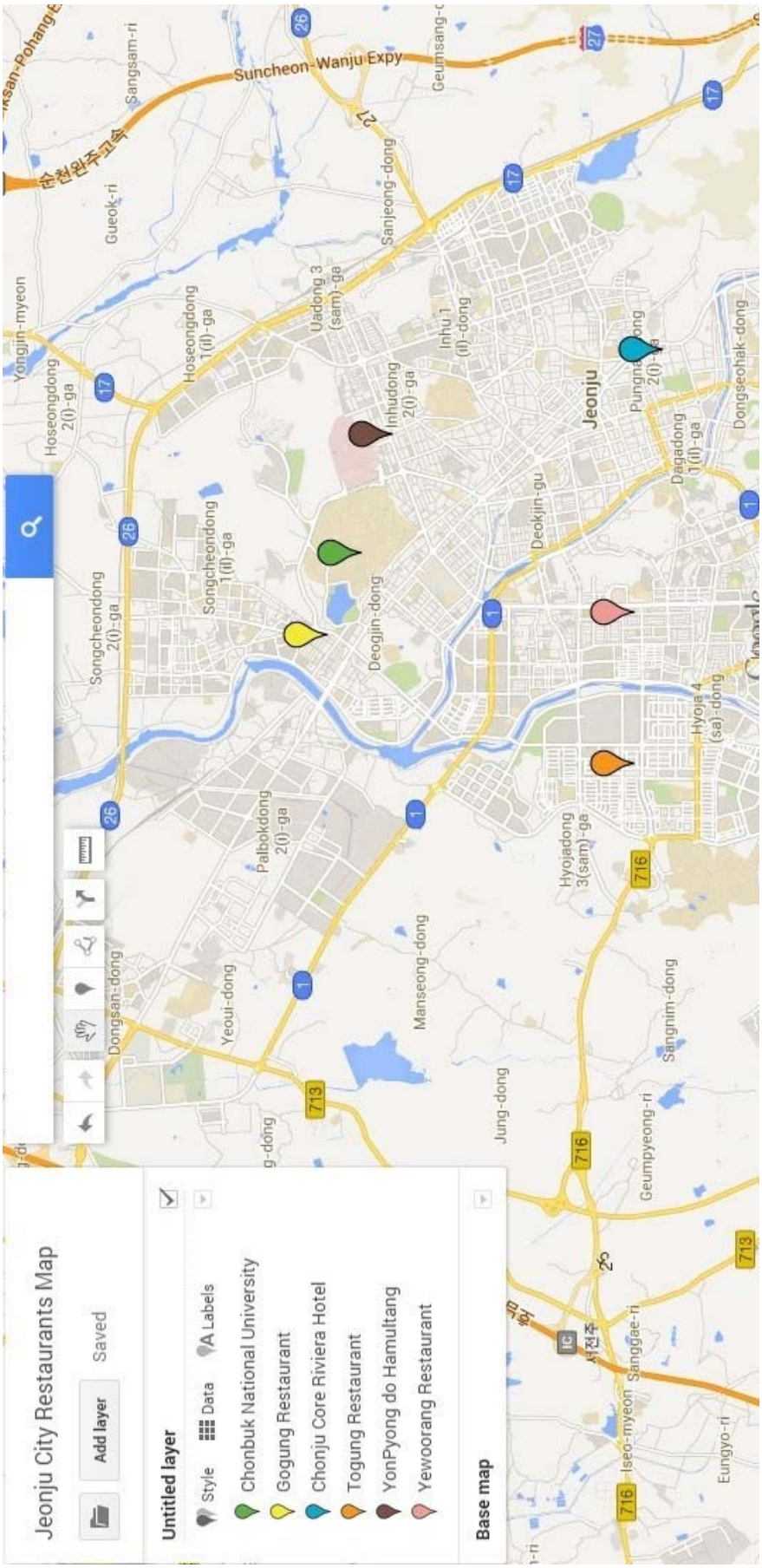
A travel company appointed by conference office provides the city tour.

Map

A map of the conference venue and accommodation areas.



A map of CBNU and selected restaurants for conference events.



ICIARE2014 & CEDC2014
Program at a Glance

Sunday, November 30		
06:00 pm ~ 09:00 am	Welcome Reception	
Monday, December 1		
International Conference on Innovative Application Research Education (ICIARE) 2014		
08:00 am ~	Breakfast	
10:00 am ~ 11:50 am	ICIARE oral presentation A (Rm 209), B (Room 210) Event for CEDC Students (Room 203)	
12:00 pm ~ 02:00 pm	Lunch	
02:00 pm ~ 02:30 pm	ICIARE 2014 Opening Ceremony	Prof. Hiesik Kim
02:40 pm ~ 03:20 pm	Plenary Speech	
03:30 pm ~ 05:30 pm	ICIARE oral presentation C (Rm 209), D (Room 210) CEDC Preparation of poster and products (Room 203)	
06:30 pm ~	Banquet	Prof. Deok Jin Lee
Tuesday, December 2		
Creative Engineering Design Competition (CEDC) 2014		
08:00 am ~	Breakfast	
09:20 am ~	CEDC 2014 Opening	Prof. Takashi Kuremoto
10:00 am ~ 12:00 pm	Presentation and Evaluation	
12:00 pn ~ 02:00 pm	Lunch	
02:00 pm ~ 05:00 pm	Demonstration and Evaluation	
06:30 pm ~	Awarding and Dinner	Dr. Felipe P. Vista IV
Wednesday, Dec. 3		
08:00 am ~	Breakfast	
~	City Sightseeing Tour	

ICIARE 2014 Program

Plenary Session A

December 1 [Monday], 02:40 pm ~ 03:20 pm

Plenary Speaker: Professor Qingkai Han, *(Dalian University of Technology, China)*

Topic:
New modeling strategy of an elastic-supported rotor system and its misalignment

Abstract:

The new strategy of multi-level modeling (MLM) and model validation-correction (MVV) of a rotor system which is composed of elastic supports and rigid shaft are investigated.

Many advanced rotating machines are structural integration and light weight, in which the rotor systems easily suffer from high cycle fatigues due to serve vibration. The traditional theory of rotor dynamics includes bending and torque dynamics is limited in modeling the complicated rotor system, especially no reasonable model of an elastic-supported rigid one now.

From the viewpoint of the sub-structures and different prediction targets of rotor dynamics, the rotor system of a prototype test-rig is modeled on different levels, such as a bending dynamic model, a torque dynamic model, and rotating beam element based model and 3D finite element based model, by using different simplified or reduced procedures.

Then, the frequency response function (FRF), critical speeds and unbalanced responses of the elastic-supported rotor system are simulated. The obtained dynamic characteristics and vibrations which are different from the past understanding and helpful for the machine design.

Based on the different models built and well verified, the influence of the support misalignment on shaft vibrations, support pieces' deformations and bearings' reactions are predicted. These results are compared with the experimental measurement data consistently.

The new technologies and results of this work provide valuable references for dynamic design and vibration prediction on the complicated rotor systems of many rotating machinery.

Keywords: Elastic-supported rotor system, FRF, Misaligned vibration, Multi-level modeling strategy, Unbalanced response

Acknowledgments:
This work is financially supported by Natural Science Foundations of China (Grant

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CV:

Qingkai Han was born in 20 March 1969. He took his Bachelor's degree in the University of Science and Technology Liaoning at 1990 and his PhD. degree from Northeastern University (China) at 1997. He worked as a Lecturer, Associate Professor and Professor in Northeastern University (China) from 1997 to 2011. He is currently a Professor at the School of Mechanical Engineering, Dalian University of Technology, Dalian, Liaoning Province, China. His research interesting areas include machine dynamics and vibration control, simulation and measurement technologies.

Plenary Session II

December 1 [Monday], 02:40 pm ~ 03:20 pm

Plenary Speaker: Professor Zhongwei Jiang, (*Yamaguchi University*, *Japan*)

Topic:

Creative Engineering Design Education Attempt and its Globalizatio

Abstract:

Monozukuri, that is, Manufacturing if translated directly in English, is a word that represents the production and manufacturing. From the late 1990s Monozukuri is frequently used by Japanese companies and mass media. It could say the prosperity of current Japanese manufacturing industry is due to Monozukuri spirituality and its traditional culture. From 1990 Japanese universities have started the education for Monozukuri combined with the creative engineering design. I'd like first to mention the creative engineering design education programs for undergraduate students in mechanical department and the mechatronics and embedded system technology education program for graduate students in Yamaguchi University. Furthermore the attempt to expand our experience for global human resource development in engineering field through Japan-China-Korea universities cooperation is introduced.

CV:

Professor Zhongwei Jiang graduated from Northeastern University, China and with his Bachelor's degree in 1982. He received his Master's degree from Tohoku University, Japan in 1987 and his Ph.D. in 1990. After graduation, he worked as Assistant Professor from 1990-1993 and Associate Professor from 1993-1990 at Tohoku University. He moved to Yamaguchi University as a Full Professor since 1990. His research fields are vibration and dynamics, structure analysis, measurement and control, data processing, mechatronics and biomedical and welfare engineering.

Oral Session A

1 December [Monday], 10:00 am ~ 11:30 am, Room 209

Chair: Prof. Takashi Kuremoto, *Yamaguchi University, Japan*

A-1 10:00 ~ 10:15	**(No. 007) A Study on Effective Structural Evolution of Genetic Network Programming for Improving Generalization Performance** Shun GOTOH, Shingo MABU, Masanao OBAYASHI and Takashi KUREMOTO *Yamaguchi University, Japan*
A-2 10:16 ~ 10:30	**(No. 002) Physiological parameters collection system using the internet of the things** Haoran LI and Tianhong PAN *Jiangsu University, China*
A-3 10:31 ~ 10:45	**(No. 009) Implementation of Real Time Single Pass Image Segmentation Algorithm on FPGA Using Matlab HDL-Coder-141123** Hilal TAYARA, Deok Jin LEE and Kil To CHONG *Kunsan National University, Korea* *Chonbuk National University, Korea*
A-4 10:46 ~ 11:00	**(No. 016) A Reinforcement Learning System with Neuro-Fuzzy Network and its Applications** Takashi KUREMOTO, Masanao OBAYASHI, Kunikazu KOBAYASHI, Shingo MABU *Yamaguchi University, Japan* *Aichi Prefectural University, Japan*
A-5 11:01 ~ 11:15	**(No. 023) New Remote Monitoring System for Elder Care** Jia SHI, Xiang BAO, HaoHao KANG, Pu GONG *Jiangsu University, China*
A-6 11:16 ~ 11:30	**(No. 017) A Voice Instruction Learning System using GSOM with Asymmetric Neighborhood Function** Takashi KUREMOTO, Yuya KUZUKAMI, Masanao OBAYASHI, Kunikazu KOBAYASHI, Shingo MABU *Yamaguchi University, Japan* *Aichi Prefectural University, Japan*

Oral Session B

1 December [Monday], 10:00 am ~ 11:45 am, Room 210

Chair: Prof. Fumitike Fujii, *Yamaguchi University, Japan*

B-1 10:00 ~ 10:15	**(No. 011) Time Series Prediction using DBN and ARIMA** Takaomi HIRATA, Takashi KUREMOTO, Masanao OBAYASHI, Kunikazu KOBAYASHI, Shingo MABU *Yamaguchi University, Japan* *Aichi Prefectural University, Japan*
B-2 10:16 ~ 10:30	**(No. 018) A Portable Device to Measure NO_3^{s-} Ion Concentration in Nutrient Solution Based on ISE** Yuwen LI, Xiliang ZHANG, Xiang SUN *Jiangsu University, China*
B-3 10:31 ~ 10:45	**(No. 015) Coin Referenced Measurement of Injected Sealant on Car Body Assembly by Using Matlab Vision Functions** Hiesik KIM *University of Seoul, Korea*
B-4 10:46 ~ 11:00	**(No. 019) RBF Neural Network Modeling of Rate-dependent Hysteresis for Piezo-ceramic Actuator** Dongbo LIU, Fumitake FUJII *Yamaguchi University, Japan*
B-5 11:01 ~ 11:15	**(No. 001) - Real-time Line Tracking via PID Algorithm** Jiali DING, Tianhong PAN *Jiangsu University, China*
B-6 11:16 ~ 11:30	**(No. 004 A Tracking Control Method for A Two Wheeled Robot Using Wavelet Neural Network-based Sliding Mode Control** Takeshi ARIDOME, Masanao OBAYASHI, Takashi KUREMOTO, Shingo MABU *Yamaguchi University, Japan*
B-7 11:31 ~ 11:45	**(No. 020) Self-Location Recognition of Rotorcraft by Monocular Camera Mounted on the Craft based on Solid Label** Tetsuya MORISAKI, SIGAT Sharon Ludai, Hisao EMOTO, Takayuki OKABE *Tokuyama College of Technology, Japan* *Yamaguchi University, Japan*

Oral Session C

1 December [Monday], 03:30 pm ~ 05:30 pm, Room 209

Chair: Prof. Yi Zhu, *Jiangsu University, China*

C-1 03:30 ~ 03:45	**(No. 013) Peak Power Shaving of Electric Injection Molding Machine With a Bidirectional Isolated DC/DC Converter** Kei IWATA, Hiroaki YAMADA, Toshihiko TANAKA, Masayuki OKAMOTO *Ube National College of Technology, Japan*
C-2 03:46 ~ 04:00	**(No. 027) Content Centric Networking and its Security Problems** Yi ZHU, Jia SHI, HaoHao KANG, Pu GONG *Jiangsu University, China*
C-3 04:01 ~ 04:15	**(No. 024) Obstacle Avoidance of Multiagent System using Gradient-free Numerical Optimization-based Extremum Seeking** Tuvshinbayar CHANTSALNYAM, Felipe P. VISTA IV, Kil To CHONG *Chonbuk National University, Korea*
C-4 04:16 ~ 04:30	**(No. 025) Static Synchronous Compensator with NPC-Inverter Voltage-Balancing Control for DC Capacitors** Makoto WATANABE, Hiroaki YAMADA, Toshihiko TANAKA, Masayuki OKAMOTO *Ube National College of Technology, Japan*
C-5 04:31 ~ 04:45	**(No. 021) Data-driven Methods for Cogeneration System Modelling** Tianhong PAN, Haoran LI, Jiali DING *Jiangsu University, China*
C-6 04:46 ~ 05:00	**(No. 003) Evaluation of Vickers Hardness on Various Materials Using the Nanoindentation Test** *Takanori SHIMIZU, Futoshi NISHIMURA* *Tokuyama College of Technology, Japan*
C-7 05:01 ~ 05:15	**(No. 008) An Odor Recognition System in Real Environments Using KIII** Wataru HIKINO, Masanao OBAYASHI, Takashi KUREMOTO, Shingo MABU *Yamaguchi University, Japan*

Oral Session D

1 December [Monday], 03:30 pm ~ 05:30 pm, Room 210

Chair: Prof. Minoru Morita, *Yamaguchi University, Japan*

D-1 03:30 ~ 03:45	**(No. 014) Study on the effect of assembly load on fire extinguishing sprinkler head** Hoyoung JANG, Juhwan OH, Minoru MORITA, Zhongwei JIANG *Yamaguchi University, Japan* *Masteco Industry, Korea*
D-2 03:46 ~ 04:00	**(No. 005) Origami Microfluidics Paper Analytic Device for Portable Bioassay** Samjin CHOI, Hoyoung JANG, Minoru MORITA, Zhongwei JIANG *Kyung Hee University, Korea* *Jiangsu University, China*
D-3 04:01 ~ 04:15	**(No. 022) FE-Based Optimal Design of Telescopic Boom Aerial Lift** Henry PANGANIBAN, Won-Cheol KIM, Tae-Jin CHUNG *Masteco Industry, Korea* *Kunsan National University, Korea*
D-4 04:16 ~ 04:30	**(No. 010) Preparation of liposome for thermotherapy and Drug Release Control** Masahiro HIRANO, Zhongwei JIANG, Minoru MORITA *Yamaguchi University, Japan*
D-5 04:31 ~ 04:45	**(No. 006) Study on Automatic Snoring Extraction Method for Obstructive Sleep Apnea Analysis** Yu FANG,, Zhongwei JIANG, Zhonghong YAN, Haibin WANG *Yamaguchi University, Japan* *Xihua University, China*
D-6 04:46 ~ 05:00	**(No. 012) Study on Sleeping Condition Monitoring by Measuring Breath Sound** Keigo HONDA, Zhongwei JIANG, Minoru MORITA *Yamaguchi University, Japan*
D-7 05:01 ~ 05:15	**(No. 026) Design of New Scissor Type Micro-stirrer for Efficient Thrombus Dissolution** Jingjing YANG, Zhongwei JIANG, Minoru MORITA *Yamaguchi University, Japan*

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