

**The 16th International Student Conference  
on Advanced Science and Technology (ICAST) 2021  
(Online)**

December 2 - 3, 2021

Organized by  
Graduate School of Science and Technology (GSST), Kumamoto University, Japan

***Research Session:***

1. Mathematics
2. Physics
3. Chemistry
4. Earth and Environments
5. Biological Sciences
6. Applied Chemistry
7. Materials Science and Engineering
8. Mechanical System Engineering
9. Applied Mathematics
10. Computer Science
11. Electrical Engineering
12. Civil and Environmental Engineering
13. Architecture
14. Multidisciplinary

***General Session:***

Energy, environment, natural disasters, and topics related to SDGs in the fields of science and engineering.



## **DAY 1: December 2, 2021 (Thursday)**

9:30 – 9:50	<b>Opening Address</b> Hisao OGAWA (President of Kumamoto University) <b>Welcome Address</b> Sadahiro TSUREKAWA (Dean of GSST, Kumamoto University) <b>Introduction of Kumamoto and Kumamoto University</b> Student Organizing Committee
9:50 – 10:50	<b>Keynote Lecture</b> Sooyoul KIM (Associate Professor, Department of Civil Environmental Engineering and Architecture, GSST, Kumamoto University) “Compound modeling of surge, wave, wave overtopping/runup, precipitation, backflow from sewage systems and river flow for urban coastal areas”
10:50 – 11:35	<b>Report on International Experiences by GSST students</b> Mohammad Atiqur RAHMAN (Department of Science) “Culture and Education in Bangladesh” Elisha Eikem Kofi SENOO (Department of Computer Science and Electrical Engineering) “Culture as a Tool for National Development” Misato NAKAJIMA (Department of Materials Science and Applied Chemistry) “My experience at one of the top universities in Germany”
11:35 – 11:40	<b>Group photo</b>
11:40 – 13:00	<b>Lunch Break</b>
13:00 – 15:15	<b>Session I</b> Room A - D (Research), Room E (General)
15:15 – 15:30	<b>Break</b>
15:30 – 17:45	<b>Session II</b> Room A - D (Research), Room E (General)

## **DAY 2: December 3, 2021 (Friday)**

9:30 – 12:00	<b>Session III</b> Room A - D (Research), Room E (General)
12:00 – 13:00	<b>Lunch Break</b>
13:00 – 15:15	<b>Session IV</b> Room A - D (Research), Room E (General)
15:15 – 16:00	<b>Break</b>
16:00 – 16:30	<b>Cultural Exchange</b>
16:30 – 17:15	<b>Closing Ceremony &amp; Student Awards</b>

## List of Papers in Sessions

December 2, Thursday 13:00 – 15:00

● Room A

Research Session on **Biological Sciences**

5-1	<b>Comparison of quality and microstructure of strawberry powders prepared by two different drying methods, low temperature drying with convection dryer and vacuum freeze drying</b> <i>Masayo Nishizono, Kumamoto University</i>
5-2	<b>Changes in cotyledon shape and pavement cell morphology in <i>RIC1</i>-overexpressors</b> <i>Kotomi Kikukawa, Kumamoto University</i>
5-3	<b>Optical imaging for membrane type of matrix metalloproteinase-1 overexpressed head and neck squamous cell carcinoma</b> <i>Naoki Furutachi, Kumamoto University</i>
5-4	<b>Species-specific accumulation and body distribution of per- and polyfluoroalkyl substances (PFASs) in marine mammals and sea turtles along the Korean coast</b> <i>Qaim Mehdi, Hanyang University</i>
5-6	<b>Synergistic effect of ErbB2 / EGF dual targeting liposomes in DOX / Rapa combination study</b> <i>Sho Ueno, Kumamoto University</i>
5-7	<b>Next generation nucleic-acid medicine that suppresses gene expression by Staple XNA</b> <i>Tomoki Kida, Kumamoto University</i>
5-8	<b>Mitochondrial-targeted redox sensitive gemcitabine prodrug for non-small cell lung cancer</b> <i>Sho Tanigawa, Kumamoto University</i>
5-9	<b>The Effects of Substrate/Inoculum Ratio and Acid Pretreatment on Anaerobic Digestion of Tomato Plant Residues</b> <i>Fatma Gamze Bodur, Ege University</i>

**December 2, Thursday 13:00 – 14:45**

● **Room B**

**Research Session on Electrical Engineering**

<b>11-1</b>	<b>Behavior of conductive fluids exposed to repetitive high-power electrical pulses</b> <i>Takumi Yamashita, Kumamoto University</i>
<b>11-2</b>	<b>Analysis of the effect of various conditions of nanosecond pulsed electric field treatment on the viability of HL-60 cells</b> <i>Koki Mochizuki, Kumamoto University</i>
<b>11-3</b>	<b>Implementation of Supervisory – Fuzzy Logic Control in A Small Scale Variable Speed Wind Turbine</b> <i>Muhammad Khamim Asy'ari, Institut Teknologi Sepuluh Nopember</i>
<b>11-4</b>	<b>Sensitivity Comparison by Top Electrode of Bi<sub>4</sub>Ti<sub>3</sub>O<sub>12</sub> / Al<sub>2</sub>O<sub>3</sub> Sol-Gel Complex Ultrasonic Transducers</b> <i>Hiroaki Akatsuka, Kumamoto University</i>
<b>11-5</b>	<b>Observation of streamer to glow, arc discharges transition using a high-speed framing camera</b> <i>Kazuto Yamamoto, Kumamoto University</i>
<b>11-7</b>	<b>Ultrasonic Properties of LiNbO<sub>3</sub>/TiO<sub>2</sub> Ultrasonic Transducer at High-Temperature</b> <i>Naoki Kambayashi, Kumamoto University</i>
<b>11-8</b>	<b>Spatial dependence of ozone generation characteristics in nanosecond pulsed discharge based ozonizer</b> <i>Naoya Sumi, Kumamoto University</i>

## December 2, Thursday 13:00 – 14:45

- Room C

### Research Session on Multidisciplinary

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14-1	<b>A study of cognitive skills and autonomic nervous system changes due to playing esports</b> <i>Toshihide Otsuki, Kumamoto University</i>
14-3	<b>Redesigning Existing Assistive Device for Commuting Blind in the Philippines</b> <i>Gabriel Bucu, De La Salle University</i>
14-4	<b>Identification of Key Factors Influencing Biking in Seoul</b> <i>Madiha Bencekri, University of Seoul</i>
14-5	<b>An Overview of Dynamics Performances of Hexacopters UAV on Various Kinds of Trajectory Under Time-Varying External Disturbances</b> <i>Kadek Dwi Wahyuadnyana, Institut Teknologi Sepuluh Nopember</i>
14-6	<b>Ex-situ synthesis of AgNps/PNIPAM nanocomposite using pulsed arc discharge method in contact with water interface</b> <i>Cinthya Soreli Castro Issasi, Kumamoto University</i>
14-7	<b>Integration of Lean and Agile Supply Chain using NFC Technology</b> <i>Yulia Margiati, Institut Teknologi Sepuluh Nopember</i>
14-8	<b>Disruption of the Covid-19 Pandemic in Marine Logistics: Overview of challenges &amp; opportunities</b> <i>Bernadita Suryawati, Institut Teknologi Sepuluh Nopember</i>

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**December 2, Thursday 13:00 – 15:00**

● **Room D**

Research Session on Materials Science and Engineering

7-1	<b>"One-Pot" Synthesis of Polyethyleneimine-Functionalized Activated Carbon and Graphene Oxide Supported with Copper Nanoparticles Electrode for Carbon Dioxide Reduction Reaction</b> <i>Muhamad Farhan Haqem Othman, Universiti Teknologi PETRONAS</i>
7-2	<b>Characterization of Lignocellulosic Biomass and Synthesis of Low Transition Temperature Mixture (LTTM)</b> <i>Vienoth Segar, Universiti Teknologi PETRONAS</i>
7-3	<b>Bending Deformation Behavior in Pure Zinc Single Crystals</b> <i>Sho Furukawa, Kumamoto University</i>
7-4	<b>Effects of Cerium Addition on Second Order Pyramidal Slip of Magnesium Single Crystals</b> <i>Masashi Sakamoto, Kumamoto University</i>
7-5	<b>Microstructure and Mechanical Properties of Pure Zinc Deformed by ECAP at 273K</b> <i>Yoshihiro Miyamoto, Kumamoto University</i>
7-6	<b>Local mechanical properties of the &lt;110&gt; symmetric tilt grain boundaries with phosphorus segregation in <math>\alpha</math>Fe bicrystals</b> <i>Hiroki Morishita, Kumamoto University</i>
7-8	<b>Development of two-dimensional materials using MXenes</b> <i>Sora Wakamatsu, Kumamoto University</i>
7-9	<b>Improving the ionic conductivity of graphene oxide</b> <i>Junya Yagyu, Kumamoto University</i>



**December 2, Thursday 13:00 – 15:00**

● **Room E**

General Session

G-1	<b>Evaluation of CFRP Outdoor Wheelchair Design for Elderly</b> <i>Ryotaro Yoshiji, Kumamoto University</i>
G-2	<b>Structural Reproduction for Graphical Deformation of Japanese Folding Fan</b> <i>Riku Fukuma, Kumamoto University</i>
G-3	<b>Design of Mechanical Engineering Teaching Material using VR for Distance Classes</b> <i>Ryota Kawahara, Kumamoto University</i>
G-4	<b>Evaluation and Optimization of Sit-to-Stand Assistive Chair by using Three-Dimensional Motion Analysis and EMG Signal Measurement</b> <i>Ryotaro Tomura, Kumamoto University</i>
G-5	<b>Development of protect board with ricochet prevention structure</b> <i>Natsumori Wakasugi, Kumamoto University</i>
G-6	<b>The allelopathic effect of Aoigoke (<i>Dichondra repens</i>) which invaded our school yard</b> <i>Lana Tomei, Kumamoto Gakuen University Fuzoku High School</i>
G-7	<b>Toxicity and Solubility Test of Striped Catfish (<i>Pangasius hypophthalmus</i>) Skin Gelatin Capsules with Transglutaminase (TGA) Modified in Mice (<i>Mus musculus</i>)</b> <i>Nurul Fitria, Institut Teknologi Sepuluh Nopember</i>
G-8	<b>Pigment distribution and enzymes activities involved in betalains biosynthesis in the <i>Caryophyllaceae</i> plants</b> <i>Haru Matsuki, Kumamoto Gakuen University Fuzoku High School</i>

## December 2, Thursday 15:30 – 17:45

- Room A

### Research Session on Civil and Environmental Engineering

12-1	<b>Using GIS to Measure Walkability of 15 Regional Bases in Kumamoto City, Japan</b> <i>Qiaohui Zhou, Kumamoto University</i>
12-2	<b>Improvement of Accuracy of Rainfall-Runoff modeling with LSTM by Means of Integrated Sensitivity Analysis</b> <i>Kazuki Yokoo, Kumamoto University</i>
12-3	<b>Time-use Modeling of Duration of Households with Every Member Out-of-Home across 14 Cities Using JICA-PT Data</b> <i>Tomoki Nakayama, Kumamoto University</i>
12-4	<b>Growth Rate Measurement of <i>Canna indica</i> for Treated Landfill Leachate in Constructed Wetland</b> <i>Isnri Arliyani, Institut Teknologi Sepuluh Nopember</i>
12-5	<b>A Linear Program for Optimizing Negative Emissions Technologies Potential under Footprint and Temporal Constraints</b> <i>Maria Victoria Migo-Sumagang, De La Salle University</i>
12-6	<b>Concentrate minimization in treatment of the spent geothermal water by pressure-driven membrane separation processes</b> <i>Yakubu Abdullahi Jarma, Ege University</i>
12-7	<b>The effect of CNN structure on estimation accuracy of precipitation downscaling</b> <i>Sosuke Inokuchi, Kumamoto University</i>
12-8	<b>The effect of setting hyperparameters on the accuracy of snow depth modeling by utilizing LSTM</b> <i>Shin Tamaoki, Kumamoto University</i>
12-9	<b>Thermal behaviour of pervious concrete in dry conditions</b> <i>Khaled Seifeddine, University of Clermont Auvergne</i>

**December 2, Thursday 15:30 – 17:15**

● **Room B**

Research Session on Electrical Engineering

11-9	<b>Electron temperature and electron density measurement of positive and negative polarity pulsed streamer discharge in He by laser Thomson scattering diagnostics</b> <i>Tomomasa Murakami, Kumamoto University</i>
11-10	<b>Measurement of PbTiO<sub>3</sub>/Pb(Zr,Ti)O<sub>3</sub> using Scanning Nonlinear Dielectric Microscopy</b> <i>Kohei Hirakawa, Kumamoto University</i>
11-11	<b>Changes in the Isoelectric Point of ZrO<sub>2</sub> and ZnO Nanoparticles by Non-Thermal Plasma Treatment</b> <i>Shun Takaki, Kumamoto University</i>
11-12	<b>High-capacity treatment of produced water using nanosecond pulsed discharge plasma</b> <i>Kazuma Takeuchi, Kumamoto University</i>
11-13	<b>Fabrication of Top electrodes for High Temperature Ultrasonic Transducers</b> <i>Kento Sakaeda, Kumamoto University</i>
11-14	<b>Non-Thermal Food Processing Using Nanosecond Electrical Pulse</b> <i>Yuto Kinjo, Kumamoto University</i>
11-15	<b>Analysis of dielectric properties of bacteria exposed to pulsed electric fields</b> <i>Midori Fujino, Kumamoto University</i>

**December 2, Thursday 15:30 – 17:30**

● **Room C**

Research Session on **Applied Chemistry**

6-1	<b>Mechanically robust physically crosslinked triple network hydrogel with self-healing and adhesiveness properties</b> <i>Moustapha Mohamed Mahamoud, Kumamoto University</i>
6-2	<b>Hybridization of CsPbBr<sub>3</sub> quantum dots with photochromic molecules using 1,3-dipolar cycloadditions of azides and alkynes</b> <i>Manami Shimoyoshi, Kumamoto University</i>
6-3	<b>Antibacterial Behaviour of Novel Anion Exchange Membranes Synthesized for Reverse Electrodialysis</b> <i>Mine Eti, Ege University</i>
6-4	<b>Column-mode removal of boron from reverse osmosis concentrate and permeate of geothermal water by novel chelating resin</b> <i>Esra Altıok, Ege University</i>
6-5	<b>Separation of Lithium from Reverse Osmosis Concentrate of Geothermal Water by Adsorption-Membrane Filtration Hybrid Method</b> <i>Başak Sever, Ege University</i>
6-6	<b>Reuse of Spent Geothermal Water as Process Water After Treatment by Reverse Osmosis and Nanofiltration Membranes - Pilot Tests</b> <i>Islam Rashad Ahmed Senan, Ege University</i>
6-7	<b>Platform Chemicals From Biomass</b> <i>Dogan Emre Yuksel, Ege University</i>
6-8	<b>Microwave Irradiation for GTBE Synthesis Using Solid Carbon-Based Catalysts</b> <i>Yuri Ogasawara, Kumamoto University</i>

## December 2, Thursday 15:30 – 17:45

### ● Room D

#### Research Session on Materials Science and Engineering / Mechanical System Engineering

7-10	<b>Super proton conductive aromatic sulfonic acid intercalated 3D graphene oxide for high-efficiency proton exchange membrane fuel cell</b> <i>Mohammad Atiqur Rahman, Kumamoto University</i>
7-11	<b>Titanium Oxynitride Nanoflake Supported Platinum Catalysts for Oxygen Reduction Reaction (ORR)</b> <i>Afandi Yusuf, Institut Teknologi Sepuluh Nopember</i>
7-12	<b>NiS<sub>2</sub>/CoS<sub>2</sub>@C nanocage composites derived from MOFs for high-performance hybrid supercapacitors</b> <i>Shanshan Li, Shandong University</i>
8-1	<b>Experimental study of gas-liquid two-phase flow through rectangular microchannel with different wettability</b> <i>Takumi Yokoo, Kumamoto University</i>
8-2	<b>The Firing Process for The Direct Piezoelectric Film in Fabrication Steps</b> <i>Mako Nakamura, Kumamoto University</i>
8-3	<b>Glass plate crushing experiment using underwater shock wave for application to recycling of glass bottle</b> <i>Koya Suzuki, Kumamoto University</i>
8-4	<b>Development of VR teaching materials in mechanical engineering field using 3D models</b> <i>Shoji Watasaki, Kumamoto University</i>
8-5	<b>Development of Wheelchair with Stand-Up Assist Function for Elderly People Based on Comfort Evaluation and Motion Analysis</b> <i>Kosuke Kawasaki, Kumamoto University</i>
8-6	<b>Development of Autonomous Robotic Lawn Mower Using Multi- Sensor Fusion Based Simultaneous Localization and Mapping</b> <i>Meng-Huai Wu, National Kaohsiung University of Science and Technology</i>

## December 2, Thursday 15:30 – 17:15

- Room E

### General Session

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<b>G-9</b>	<b>The Effect of Some Host-plants to Monophagous butterfly</b> <i>Reo Shimizu, Kumamoto Kita High School</i>
<b>G-10</b>	<b>Optical Wave Microphone Research</b> <i>Yoshito Todoroki, Kumamoto Kita High School</i>
<b>G-11</b>	<b>Mercury toxicity was reduced by selenium on Japanese Medaka (<i>Oryzias latipes</i>) embryogenesis</b> <i>Rei Misumi, Kumamoto Gakuen University Fuzoku High School</i>
<b>G-12</b>	<b>Making good products for the environment</b> <i>Himawari Nagatani, Kumamoto Gakuen University Fuzoku High School</i>
<b>G-14</b>	<b>Pattern Recognition and Machine Learning for SDGs</b> <i>Kotaro Fujimoto, Kumamoto University</i>
<b>G-15</b>	<b>Design of Autonomous Delivery Robot Using Lidar-based SLAM</b> <i>Wei-Chiao Chang, National Kaohsiung University of Science and Technology</i>
<b>G-16</b>	<b>Obtaining of silicon nanoparticles (Si-NP) and their properties</b> <i>Altynai Abdirashit kyzy, Kyrgyz-Turkish Manas University</i>

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**December 3, Friday 09:30 – 12:00**

● **Room A**

**Research Session on Civil and Environmental Engineering**

12-10	<b>Interrupted Time Series Analysis of Motor Vehicle Crashes with Injury or Death following the 2016 Kumamoto Earthquake</b> <i>Ryotaro Tominaga, Kumamoto University</i>
12-11	<b>Spatial Distribution of Behavioral Change by Road Pricing Policy: A Case in Kumamoto using PP-SP Survey</b> <i>Shunsuke Arao, Kumamoto University</i>
12-12	<b>Factor Affecting and Damage Mapping of Flood Inundation in Japan: A Case Study of Hitoyoshi City, Kumamoto Prefecture, Japan</b> <i>Arbi Surya Satria Ridwan, Kumamoto University</i>
12-13	<b>Physical Model Investigation of Hard Structure Effects on Tsunami Force Reduction in the Constructed Environment</b> <i>Dang Van Hai, Hanyang University</i>
12-14	<b>Sensitivity analysis of input variables in precipitation downscaling using 3D-CNN</b> <i>Takeyoshi Nagasato, Kumamoto University</i>
12-15	<b>Large-scale wave flume tests for coastal sand dune morphodynamics</b> <i>Eunju Lee, Hanyang University</i>
12-16	<b>CO<sub>2</sub> Emission of Aircraft at Different Flight-Level and Those Effects to Greenhouse Gas (Case Study: Route Jakarta-Surabaya)</b> <i>Ratih Sekartadji, Institut Teknologi Sepuluh Nopember</i>
12-17	<b>Modification of basic hydrology formulation based on an approach of the rational method at field measurement</b> <i>Martheana Kencanawati, Institut Teknologi Sepuluh Nopember</i>
12-18	<b>Copula-Based Meteorological Drought Analysis in The Irrigation Area of the Gondang Lamongan Reservoir, East Java, Indonesia</b> <i>Nur Azizah Affandy, Institut Teknologi Sepuluh Nopember</i>
12-19	<b>Comparison of Random Forest and Linear Regression in a weak learner for river flow estimation by using ensemble learning</b> <i>Daiju Sakaguchi, Kumamoto University</i>

**December 3, Friday 09:30 – 11:45**

● **Room B**

Research Session on **Physics / Earth and Environments**

2-1	<b>Phase transition of Rb-Na alloy based on the first principles molecular dynamics</b> <i>Ayu Irie, Kumamoto University</i>
2-2	<b>Photo-Assisted High Performance Single Atom Electrocatalysis of N<sub>2</sub> Reduction Reaction by Mo-embedded Covalent Organic Framework</b> <i>Juan Wang, Shandong University</i>
2-3	<b>One-micron-thick organic indoor light harvesters with low photocurrent loss and fill factor over 67%</b> <i>Tong Wang, Shandong University</i>
2-4	<b>A Parkes Search for Fast Transients in the Large Magellanic Cloud</b> <i>Shinnosuke Hisano, Kumamoto University</i>
4-1	<b>Target, suspect, and non-target analysis with GC-TOF and MS/MS for per- and polyfluoroalkyl substances surrounding fluorine-producing or consuming industrial facilities in Korea</b> <i>Sori Mok, Hanyang University</i>
4-2	<b>Seasonal variation of the groundwater spring discharge around Lake Ezu, Kumamoto City</b> <i>Irfan Tsany Rahmawan, Kumamoto University</i>
4-3	<b>Crystal structures and phase transitions in the system of Na<sub>0.5</sub>Ce<sub>0.5</sub>TiO<sub>3</sub> – CaTiO<sub>3</sub> – NaNbO<sub>3</sub> perovskite-type solid solutions</b> <i>Ginga Kitahara, Kumamoto University</i>
4-4	<b>Start Up Model for Ecofriendly Market</b> <i>Heru Budi Prasetyo, Institut Teknologi Sepuluh Nopember</i>
4-5	<b>Determining Side Weir Model for Plastic Trap Inlet in Coastal Reservoir</b> <i>Annisak Laila / Rakhmawati, Institut Teknologi Sepuluh Nopember</i>



**December 3, Friday 09:30 – 11:30**

● **Room C**

Research Session on **Applied Chemistry/ Chemistry**

6-9	<b>Conversion of Fructose into Useful Products by Combined Microwave Heating and Carbon-based Catalysis</b> <i>Miyu Nakamura, Kumamoto University</i>
6-10	<b>Silica nanoparticles crosslinked acrylamide hybrid hydrogels for efficient removal of dye</b> <i>MST Maria Rahman, Kumamoto University</i>
6-11	<b>Graphene-Based Catalyzed Deamination Under Supercritical Carbon Dioxide Conditions</b> <i>Shunsuke Kimura, Kumamoto University</i>
3-1	<b>Study on flexible crystals with metal complexes</b> <i>Akira Sugimoto, Kumamoto University</i>
3-2	<b>NO reduction activities of multicomponent 3d transition-metal nanoparticles</b> <i>Yuma Miyahara, Kumamoto University</i>
3-3	<b>Redox Dynamics of Rh Three-Way Catalyst Analyzed by Time-Resolved <i>in situ</i> Diffuse Reflectance Spectroscopy</b> <i>Yutaro Tsurunari, Kumamoto University</i>
3-4	<b>Structural Control of Metal Thin Film Catalysts for Ammonia Oxidation</b> <i>Tomoki Taniguchi, Kumamoto University</i>
3-5	<b>Control of cellular uptake based on selective adsorption of photoactive surfactants on albumin</b> <i>Mai Shinohara, Kumamoto University</i>

**December 3, Friday 09:30 – 11:30**

● **Room D**

Research Session on **Mechanical System Engineering**

8-7	<b>Optimization of Power Assistance Chair for Elder Based on Motion Analysis and EMG Measurements in Sit-to-Stand Movement</b> <i>Keisuke Nakamura, Kumamoto University</i>
8-8	<b>Development of Suspension Function Outdoor Wheelchair for Elderly People</b> <i>Ruru Nagatomo, Kumamoto University</i>
8-9	<b>Grinding Simulation of Surface Generation with Polyhedron Single Grit Abrasive Grain Model</b> <i>Takahiro Yanai, Kumamoto University</i>
8-10	<b>Heat Transfer Enhancement Using Graphene Nanofluid Manufactured by Pulsed Discharge</b> <i>Aima Shibata, Kumamoto University</i>
8-11	<b>Measurement of <i>in vivo</i> micropressure using a microfluidic device</b> <i>Mami Akaike, Kumamoto University</i>
8-12	<b>Requirement analysis and importance calculation of green design for mechanical and electrical products</b> <i>Jiaxuan Zhou, Shandong University</i>
8-13	<b>Friction and cutting characteristics of micro-textured diamond tools fabricated with femtosecond laser</b> <i>Qingwei Wang, Shandong University</i>
8-14	<b>Surface morphology assessment of nanocomposites ceramic grinding using water-based nanofluid minimum quantity lubrication</b> <i>Xianpeng Zhang, Shandong University</i>

**December 3, Friday 09:30 – 11:30**

● **Room E**

General Session

<b>G-17</b>	<b>Design and development of a Vision-based Automatic Weeding Robot for Organic Greenhouse Agriculture</b> <i>You-Xin Chen, National Kaohsiung University of Science and Technology</i>
<b>G-18</b>	<b>Multiferroic property in nanosheet hybrids</b> <i>Ryuta Tagawa, Kumamoto University</i>
<b>G-19</b>	<b>Current Global State of Deforestation and Solution</b> <i>Natsumi Matsushita, Kumamoto University</i>
<b>G-20</b>	<b>UTO-UTO time Regulates the Body's Autonomic Nerves and Balance</b> <i>Shiina Watanabe, Uto Junior and Senior High School</i>
<b>G-21</b>	<b>Habitat evaluation of <i>Plecoglossus altivelis</i> using environmental DNA analysis after dam removal in the Kuma river</b> <i>Ayaka Hashiki, Kumamoto University</i>
<b>G-22</b>	<b>Unique electron conduction of reduced Graphene Oxide</b> <i>Nonoka Goto, Kumamoto University</i>
<b>G-23</b>	<b>The Strategy of IGO and Programming</b> <i>Yu Sasaki, Kumamoto High School</i>
<b>G-24</b>	<b>Building the Blue Ocean of Takezaiku</b> <i>Kosei Sakurada, Kumamoto High School</i>

**December 3, Friday 13:00 – 15:15**

● **Room A**

**Research Session on Civil and Environmental Engineering / Architecture**

12-20	<b>Understanding the Water-Energy-Greenhouse Gas Nexus of New Conceptual Micro-Oxygen Biosorption-Integrated Vertical Flow Constructed Wetland (MB-IVCW) process</b> <i>Ji Mingde, Shandong University</i>
12-21	<b>Study on water-holding characteristics of unsaturated granular soil based on LBM simulation and micro-macro experiment</b> <i>TaiHeng Liu, Shandong University</i>
12-22	<b>DEM simulation of mechanical properties in wet granular materials with capillary effect</b> <i>Meng Chen Li, Shandong University</i>
12-23	<b>Characterization of Orange Peel Hydrochar as Adsorbent in Diclofenac Sodium Adsorption</b> <i>Mohammad Syaifuddin, Institut Teknologi Sepuluh Nopember</i>
13-1	<b>Study on Outdoor Thermal Environment Focusing on the Layout Plan of Temporary Housing in Shirahata, Kosa Town, Kumamoto Prefecture</b> <i>Haruki Utsunomiya, Kumamoto University</i>
13-2	<b>FEM Analysis on Bond Strength between CFRP Rod and Reinforcing Material</b> <i>HaoTian Li, Kumamoto University</i>
13-3	<b>Urban Migration and its Impact on Housing Identity from the aspects of Architecture Characteristics in Kabul city</b> <i>Sayed Farhad Alavi, Kumamoto University</i>
13-4	<b>Study on developing a simple method for maintaining and managing vacant wooden houses focusing both on indoor and outdoor thermal environment</b> <i>Risa Maeda, Kumamoto University</i>
13-5	<b>Study on the method to introduce inner terraces into houses to enhance ventilation between indoor and outdoor spaces on Japanese traditional land divisions in strips</b> <i>Mitsuhiro Kitayama, Kumamoto University</i>

**December 3, Friday 13:00 – 14:45**

● **Room B**

Research Session on **Multidisciplinary**

<b>14-9</b>	<b>Development and Validation of an Optimized Attachment Position Choice System for a Patch Type Wireless R-R interval Measuring Device</b> <i>Aoi Noguchi, Kumamoto University</i>
<b>14-10</b>	<b>Pneumonia Detection Using Deep Learning Image Recognition</b> <i>Narendro Ariwisnu, Institut Teknologi Sepuluh Nopember</i>
<b>14-11</b>	<b>Impact of Employee Motivation on Employee Commitment in Oil &amp; Gas industry of Indonesia</b> <i>Yanni Rosandi Prihatiningsih, Institut Teknologi Sepuluh Nopember</i>
<b>14-12</b>	<b>Purchasing Decision Analysis from Cloud Kitchen PT. ABC using Multiple Linear Regression</b> <i>Valya Ika Dhanie, Institut Teknologi Sepuluh Nopember</i>
<b>14-14</b>	<b>Development and Validation of a Wearable Pulse Oximeter for Measurement from Earlobe</b> <i>Nao Inatsu, Kumamoto University</i>
<b>14-15</b>	<b>Analysis of Factors for Successful Implementation of Supply Chain Control Tower in Logistics Sectors in Thailand</b> <i>Norman Erikson Suli, Institut Teknologi Sepuluh Nopember</i>

**December 3, Friday 13:00 – 14:45**

● **Room C**

Research Session on **Chemistry**

3-6	<b>Study on Molecular Ferroelectrics with Hydrogen-Bonded Network Using DABCO</b> <i>Haruka Hirayama, Kumamoto University</i>
3-7	<b>Ion permeation properties of oxygen functional group-controlled graphene oxide</b> <i>Tatsuki Tsugawa, Kumamoto University</i>
3-8	<b>A new way to synthesize compounds with multiple stable states</b> <i>Takahiro Taira, Kumamoto University</i>
3-9	<b>Hydrogen production from ethanol using graphene oxide membrane reactor</b> <i>Taiga Kodama, Kumamoto University</i>
3-10	<b>Development of Electrochemical Gas Sensors Using A Proton-Conducting Graphene Oxide Membrane Fitting with Oxide Electrode</b> <i>Kosuke Sonda, Kumamoto University</i>
3-11	<b>Dielectric properties of Co(II)-semiquinone VT complex oriented for ferroelectric property</b> <i>Rikuto Nakamura, Kumamoto University</i>
3-12	<b>A study on membrane fouling after treatment of geothermal water by nanofiltration and reverse osmosis membranes</b> <i>Aseel Jamal Zaid, Ege University</i>

**December 3, Friday 13:00 – 14:15**

● **Room D**

**Research Session on Computer Science**

10-4	<b>Classification of Arrhythmia by Using EFFICIENTNETV2 with 2-D Electrocardiogram Spectral Image Representation</b> <i>Muhammad Furqon, Institut Teknologi Sepuluh Nopember</i>
10-2	<b>Process Mining in LMS: Literature Study</b> <i>Fatharani Wafda, Kumamoto University</i>
10-3	<b>Low-power-consumption deep neural network accelerator for AI edge computing</b> <i>Yuta Masuda, Kumamoto University</i>
10-1	<b>Recognition of visually impaired people in urban streets based on CNN</b> <i>Haotian Ji, Kumamoto University</i>
10-5	<b>An Efficient Deep Network Architecture to Measure the Risk of Covid-19 Dynamics as A Basis to School Reopen Safely</b> <i>Feby Artwodini Muqtadiroh, Institut Teknologi Sepuluh Nopember</i>

**December 3, Friday 13:00 – 15:00**

● **Room E**

General Session

<b>G-25</b>	<b>Synthesis and characterization of metal complexes with metal-metal bonding</b> <i>Ryuya Tokunaga, Kumamoto University</i>
<b>G-26</b>	<b>Depolymerization of lignin by catalytic reaction</b> <i>Sayo Kamei, Kumamoto University</i>
<b>G-27</b>	<b>Scientize the Natural Phenomenon called Shiranui 3 ~The conditions on which the Phenomenon Can Occur and Can Be Observed~</b> <i>Yui Shintaku, Uto Junior and Senior High School</i>
<b>G-28</b>	<b>Okoshiki is a nice view~Mysterious sand crests appear in the Ariake Sea~</b> <i>Shinntaro Yanagida, Uto Junior and Senior High School</i>
<b>G-29</b>	<b>Photometric follow-up observations and transit timing analysis of HAT-P-37b</b> <i>Jiamei Yang, Shandong University</i>
<b>G-30</b>	<b>A Heating Unit for Disasters from Amakusa</b> <i>Mayuko Tsuruda, Amakusa High School</i>
<b>G-31</b>	<b>A Study on Hand Sterilization and Psychological Effects of Essential Oils from Amakusa</b> <i>Mei Minoda, Amakusa High School</i>
<b>G-32</b>	<b>Visualization of the Force Applied to the Suspension Bridge ~Toward the Realization of the Bridge between Amakusa and Nagasaki~</b> <i>Keita Hirayama, Amakusa High School</i>