

# International Student Workshop on Materials Science and Engineering 2021 (ISWMSE 2021)



Kyushu Institute of  
Technology

National Taiwan University  
of Science and Technology

Changwon National  
University

Sepuluh Nopember  
Institute of Technology

**December 20-21, 2021**  
**Virtual**

## **Aim**

We hold this joint workshop on materials science and engineering. The purpose of this workshop is offering an opportunity of sharing scientific and technological knowledges, education of students, and international collaboration between participating professors and students.

Materials science and engineering has opened new scientific fields in fundamental researches, and also has significant roles in technologies. Innovation in materials promises to advance the science and technologies. Each university and institution is performing active researches on materials science and engineering, and has strong research areas. Our understanding of materials will be deepened by sharing these knowledges. This workshop may also offer an opportunity to start a new co-research.

There are many international conferences on materials science and engineering. It may be difficult for some students to participate in such conferences, and the workshop for educating students are limited. In this workshop, many students present their results, and some of the students join the workshop organization.

International collaboration of professors and international interaction between students are required. International collaboration partners on the department level are very important for the international activity, and the joint workshop deepens the partnership between the departments as well as individual professors and students.

We expect active discussions and interaction between participating students and professors. In future, we expect not only to keep this international collaboration platform but also to expand the collaboration partner to other universities and institutions.

Indonesia	Taiwan	Korea Japan	Session	
			Meeting Room1	Meeting Room2
<b>20, December</b>				
9:00-9:10	10:00-10:10	11:00-11:10	Opening Ceremony	
9:10-10:50	10:10-11:50	11:10-12:50	Professor Session	
10:50-12:20	11:50-13:20	12:50-14:20	Lunch	
12:20-15:00	13:20-16:00	14:20-17:00	Student Session IA	Student Session IB
<b>21, December</b>				
9:00-11:00	10:00-12:00	11:00-13:00	Student Session IIA	Student Session IIB
11:00-12:20	12:00-13:20	13:00-14:20	Lunch	
12:20-14:45	13:20-15:45	14:20-16:45	Student Session IIIA	Student Session IIIB
14:45-15:00	15:45-16:00	16:45-17:00	Closing Ceremony	

## Professor Session

**Professor session** (20, December)

Room 1

9:10-10:50 (Indonesia), 10:10-11:50 (Taiwan), 11:10-12:50 (Korea, Japan)

Chair: Jun-Seob Lee (Changwon National University), Diah Susanti (Sepuluh Nopember Institute of Technology)

9:10-9:35 (Indonesia), 10:10-10:35 (Taiwan), 11:10-11:35 (Korea, Japan)

Sigit Tri Wicaksono (Sepuluh Nopember Institute of Technology)

*“High potential of Indonesia’s natural resources: From Research to Better Life and National Competitiveness”*

9:35-10:00 (Indonesia), 10:35-11:00 (Taiwan), 11:35-12:00 (Korea, Japan)

Jyh-Chien Chen (National Taiwan University of Science and Technology)

*“Introduction to the Department of Materials Science and Engineering at National Taiwan University of Science and Technology (NTUST)”*

10:00-10:25 (Indonesia), 11:00-11:25 (Taiwan), 12:00-12:25 (Korea, Japan)

Youngung Jeong (Changwon National University)

*“Elasto-visco-plastic self-consistent polycrystal model and its applications”*

10:25-10:50 (Indonesia), 11:25-11:50 (Taiwan), 12:25-12:50 (Korea, Japan)

Manabu Ishimaru (Kyushu Institute of Technology)

*“Introduction of the Department of Materials Science & Engineering, Kyushu Institute of Technology”*

# Student Session

Chair: Hsueh-Sheng Tseng (National Taiwan University of Science and Technology), Jefri Kurniawan (Sepuluh Nopember Institute of Technology)

Time		Speaker	Title
12:20-12:35 13:20-13:35 14:20-14:35	IA1	Isamu Kawano (Kyushu Institute of Technology)	Control of nanostructure in manganese spinel oxide $\text{Co}_{0.6}\text{Fe}_{0.9}\text{Mn}_{1.5}\text{O}_4$
12:35-12:50 13:35-13:50 14:35-14:50	IA2	Helmi Son Haji (National Taiwan University of Science and Technology)	Metallic Nanotube Arrays: Fabrication and Their Surface-enhanced Raman Scattering (SERS) Application
12:50-13:05 13:50-14:05 14:50-15:05	IA3	Ji Un Park (Changwon National University)	Effect of Heat Treatment on Microstructure Evolution and the Mechanical Properties of Inconel 740H Superalloy
13:05-13:20 14:05-14:20 15:05-15:20	IA4	Tatsuya Myoga (Kyushu Institute of Technology)	Effect of hydrogen charging in fcc Fe investigated by first-principles calculation
13:20-13:35 14:20-14:35 15:20-15:35	IA5	Iyando Adityawan, Adhy prihatmiko, Fransisca Angela Margaretha Rochdiyanti (Sepuluh Nopember Institute of Technology)	A Lagrangian Finite Element Modelling by ANSYS Explicit Dynamic for Extreme Deformation Investigation in Different Bullet Designs Penetrating Ballistic Gelatine
<b>Coffee break : 10min</b>			
13:45-14:00 14:45-15:00 15:45-16:00	IA6	I Chen Chen (National Taiwan University of Science and Technology)	Preparation and characterization of $\text{SiO}_2$ -PMMA coating for radiative cooling applications
14:00-14:15 15:00-15:15 16:00-16:15	IA7	Kento Higashi (Kyushu Institute of Technology)	Effects of pulse laser frequency and oxygen annealing on nanostructures of $\text{Ba}_2\text{LuNbO}_6$ -doped $\text{YBa}_2\text{Cu}_3\text{O}_{7-y}$ thin films
14:15-14:30 15:15-15:30 16:15-16:30	IA8	Sijia Liu (Changwon National University)	Microstructure Evolution of Nickel-base Superalloys upon Ultrasonic Shot Peening
14:30-14:45 15:30-15:45 16:30-16:45	IA9	Yusuke Kanazawa (Kyushu Institute of Technology)	Structure analysis of swift heavy ion irradiated complex oxides
14:45-15:00 15:45-16:00 16:45-17:00	IA10	Faizah Ali, Jauhar Azhar, Sugiarto (Sepuluh Nopember Institute of Technology)	A Lead-free Cu-Sn Metal Matrix Composite-Based Bullet Fabrication for Anti-Ricochet Ammunition Potentials

Chair: Kosei Kubo (Kyushu Institute of Technology), Ahmad Ramadhan (Sepuluh Nopember Institute of Technology)

Time		Speaker	Title
12:20-12:35 13:20-13:35 14:20-14:35	IB1	Syuga Shigetou (Kyushu Institute of Technology)	Fabrication and Thermoelectric Property of Nb doped SrTiO <sub>3</sub> film
12:35-12:50 13:35-13:50 14:35-14:50	IB2	Yejin Lee (Changwon National University)	Passive Behavior of Inconel 718 Alloy in an Acidic Solution
12:50-13:05 13:50-14:05 14:50-15:05	IB3	Kenji Shimizu (Kyushu Institute of Technology)	Current transfer analysis of solder-joined REBCO wire by multi-point I-V characteristics
13:05-13:20 14:05-14:20 15:05-15:20	IB4	Hsueh-Sheng Tseng (National Taiwan University of Science and Technology)	Studies of self-healing and stretchable conductive polymer films on organic electrochemical transistors
13:20-13:35 14:20-14:35 15:20-15:35	IB5	Ahmad Fahmi Prakoso (Sepuluh Nopember Institute of Technology)	Research Progress on Energy conversion technology: PEMFC & DCFC
<b>Coffee break : 10min</b>			
13:45-14:00 14:45-15:00 15:45-16:00	IB6	Tien-Shin Chen (National Taiwan University of Science and Technology)	Trimetallic Thin Film prepared by RF sputter for Overall Water Splitting in Alkaline Solution
14:00-14:15 15:00-15:15 16:00-16:15	IB7	Mitsuki Mizuno (Kyushu Institute of Technology)	Critical current characteristics of Ca-doped GdBa <sub>2</sub> Cu <sub>3</sub> O <sub>7-x</sub> superconducting thin films
14:15-14:30 15:15-15:30 16:15-16:30	IB8	Junhyeong Lee (Changwon National University)	Effect of Carbon Content on the Passivation Behavior of High Chrome Cast Iron
14:30-14:45 15:30-15:45 16:30-16:45	IB9	Dao Lam Gia Hao (National Taiwan University of Science and Technology)	Improved Stability of Flexible Hybrid Photodetectors Based On Mixed Organic-Inorganic Perovskite/Cellulose Nanocrystals Film
14:45-15:00 15:45-16:00 16:45-17:00	IB10	Sofyan Abidin (Sepuluh Nopember Institute of Technology)	Synthesis of Copper Indium Sulfide Quantum Dots/Titanium Dioxide using The Wet Chemical Method as An Antimicrobial Material



Chair: Chih-Hao Chiang (National Taiwan University of Science and Technology),  
Junhyeong Lee (Changwon National University)

Time		Speaker	Title
9:00-9:15 10:00-10:15 11:00-11:15	IIA1	Koki Ohba (Kyushu Institute of Technology)	Effect of (001) Fiber Texture in Iron Powder on Magnetic Properties of Soft Magnetic Composite.
9:15-9:30 10:15-10:30 11:15-11:30	IIA2	Yi Ju Hsieh (National Taiwan University of Science and Technology)	Synthesis and characterization of Zn <sub>2</sub> SiO <sub>4</sub> powder using spray drying
9:30-9:45 10:30-10:45 11:30-11:45	IIA3	Jeffry Kurniawan (Sepuluh Nopember Institute of Technology)	Preparation of Superparamagnetic Nanoparticles Oxide Fe <sub>3</sub> O <sub>4</sub> from Iron Sand for Water Treatment Application
9:45-10:00 10:45-11:00 11:45-12:00	IIA4	Koki Nakano (Kyushu Institute of Technology)	Synthesis and Photoluminescence Properties of Eu(III)-containing Silica Nanoparticles via Mechanochemical Solid-state Reaction.
<b>Coffee break : 10min</b>			
10:15-10:30 11:15-11:30 12:15-12:30	IIA5	Andre Tjahjono (National Taiwan University of Science and Technology)	Rapid thermal annealing for improving GaSe-Ni device performance based on photodetector application
10:30-10:45 11:30-11:45 12:30-12:45	IIA6	Seonghyo Ham (Changwon National University)	Solidification microstructure evolution with directional solidification and AM in IN625 alloy
10:45-11:00 11:45-12:00 12:45-13:00	IIA7	Cheng-You Tsai (National Taiwan University of Science and Technology)	Interfacial engineering for triboelectric nanogenerators and their application in self-powered formaldehyde sensors

Chair: Yusuke Kanazawa (Kyushu Institute of Technology), Yejin Lee (Changwon National University)

Time		Speaker	Title
9:00-9:15 10:00-10:15 11:00-11:15	IIB1	Yui Ogasawara (Kyushu Institute of Technology)	Effect of test temperature on interactions between plastic deformation and hydrogen for SUS310S stainless steel
9:15-9:30 10:15-10:30 11:15-11:30	IIB2	Ting Wei Wu (National Taiwan University of Science and Technology)	Preparation of novel freeze dried collagen, barium titanate and $\beta$ -tricalcium phosphate for dental filler composites
9:30-9:45 10:30-10:45 11:30-11:45	IIB3	Ryosuke Hayashi (Kyushu Institute of Technology)	Changes in hydrogen embrittlement behavior for Ni-Ti superelastic alloy by different charging solutions
9:45-10:00 10:45-11:00 11:45-12:00	IIB4	Denny Hartanto (Sepuluh Nopember Institute of Technology)	Shape memory polyurethane foam as candidate materials embolization endovascular aneurysm
<b>Coffee break : 10min</b>			
10:15-10:30 11:15-11:30 12:15-12:30	IIB5	Sheng-Yuan Chen (National Taiwan University of Science and Technology)	Phenylboronic acid-grafted hydrogels as drug delivery systems for dry eye treatment
10:30-10:45 11:30-11:45 12:30-12:45	IIB6	Liming Xu (Changwon National University)	Precipitation Behavior in HR <sub>3</sub> C Heat Resistant Steel During Creep Test
10:45-11:00 11:45-12:00 12:45-13:00	IIB7	Ya-Hsien Wang (National Taiwan University of Science and Technology)	Shear-thinning laponite/gelatin-based hydrogels as cell carriers to rescue the cardiomyocytes from oxidative stress

Chair: Yui Ogasawara (Kyushu Institute of Technology), Alvan Alfaridzi (Sepuluh Nopember Institute of Technology)

Time		Speaker	Title
12:20-12:35 13:20-13:35 14:20-14:35	IIIA1	Hiroki Tsumura (Kyushu Institute of Technology)	Thermodynamic analysis of phase equilibria in the Ni-P binary system
12:35-12:50 13:35-13:50 14:35-14:50	IIIA2	Mooyeong Joo (Changwon National University)	An application of self-consistent polycrystal elasto-plasticity finite element method in springback analysis of mild steel
12:50-13:05 13:50-14:05 14:50-15:05	IIIA3	Naoki Matsumoto (Kyushu Institute of Technology)	Thermodynamic calculation of phase equilibria in the Al-Fe-Zn-O quaternary system
13:05-13:20 14:05-14:20 15:05-15:20	IIIA4	Nicky Dwi Saputra (Sepuluh Nopember Institute of Technology)	Chitosan biosorption for PGM and rare earth elements
13:20-13:35 14:20-14:35 15:20-15:35	IIIA5	Sin-Yi Chen (National Taiwan University of Science and Technology)	Using Calculation Method to Predict the Formation Zone and Mechanical Properties of the Al-Co-Fe-Ni-Ti Lightweight High Entropy Alloy
<b>Coffee break : 10min</b>			
13:45-14:00 14:45-15:00 15:45-16:00	IIIA6	Gouki Kuwahara (Kyushu Institute of Technology)	Removal of boron from aqueous solution using zero-valent magnesium granules
14:00-14:15 15:00-15:15 16:00-16:15	IIIA7	Bohye Jeon (Changwon National University)	Application and verification of polycrystalline finite element analysis model for prediction of mechanical behavior during mini V-bending of magnesium alloy
14:15-14:30 15:15-15:30 16:15-16:30	IIIA8	Ryouya Wada (Kyushu Institute of Technology)	The influence of electrolyte flow and dissolved oxygen on copper electrorefining
14:30-14:45 15:30-15:45 16:30-16:45	IIIA9	Rizaldo Rizky Himawansah (Sepuluh Nopember Institute of Technology)	Investment Casting Simulation of ASTM F75 Artificial Hip Prosthesis with Shell Thickness and Gating System Geometry Variation

Chair: Quinones Edgar Daniel (National Taiwan University of Science and Technology), Sijia Liu (Changwon National University)

Time		Speaker	Title
12:20-12:35 13:20-13:35 14:20-14:35	IIIB1	Koki Iwatani (Kyushu Institute of Technology)	Influence of Plate Deformation around the Nugget on Tensile Shear Strength of Resistance Spot Welded Lap Joints
12:35-12:50 13:35-13:50 14:35-14:50	IIIB2	Junho Park (Changwon National University)	Analysis of rapid solidification microstructure in the selective laser melted Inconel 718 alloy
12:50-13:05 13:50-14:05 14:50-15:05	IIIB3	Daisuke Kawano (Kyushu Institute of Technology)	Evaluation of Tensile Strength on Resistance Spot Welded L-type Joints with Different Arm Length
13:05-13:20 14:05-14:20 15:05-15:20	IIIB4	Erika Satriana (Sepuluh Nopember Institute of Technology)	Study Of Performance And Fatigue Properties Of Silicone Rubber/ Poly(Vinyl) Alcohol/ZrO <sub>2</sub> Materials As Candidate For Nucleus Pulposus Replacement Material
13:20-13:35 14:20-14:35 15:20-15:35	IIIB5	Bo-Syuan Hung (National Taiwan University of Science and Technology)	Fabrication of Fiber Electrodes by Electrospinning and Their Applications for Smart Clothing
<b>Coffee break : 10min</b>			
13:45-14:00 14:45-15:00 15:45-16:00	IIIB6	Kousei Kubo (Kyushu Institute of Technology)	Fiber laser welding of hot-dip galvanized steel sheet using ring mode waveform
14:00-14:15 15:00-15:15 16:00-16:15	IIIB7	Tea Yeong Kim (Changwon National University)	The effect of Ti addition and welding process on microstructure and high-temperature mechanical properties in RAFM steel
14:15-14:30 15:15-15:30 16:15-16:30	IIIB8	Soichiro Futaka (Kyushu Institute of Technology)	Effects of inclusions on diffusion bonding of carbon steel
14:30-14:45 15:30-15:45 16:30-16:45	IIIB9	Delta Kuncahyo Afif (Sepuluh Nopember Institute of Technology)	Analysis Of Deformation And Stress On Silicone Rubber/Poly(Vinyl Alcohol)/ZrO <sub>2</sub> Composite As Candidate For Nucleus Pulposus Replacement With Finite Element Method