Table of Contents

Preliminaries

Welcome Message 02

Conference Committee 03

Committee Member 03

Symposia 04

Plenary Speakers 05

Invited Speakers 07

General

Conference Information 09

Floor Plan 10

Scientific Program

Program at a Glance 11

Oral Sessions

Monday, July 27 14

Tuesday, July 28 19

Wednesday, July 29 23

Poster Sessions

Sessions 1 and 2: Tuesday, July 28 26

Welcome Message

Biomaterials International 2026

Invitation

Dear Colleagues,

The Organizing Committee is pleased to invite you to participate in Biomaterials International 2026, which will be held in Seoul, Korea, from July 26 to July 30, 2026. The conference will take place at Seoul National University and will bring together international research communities from a wide range of scientific disciplines, including biology, physiology, materials science, physics, chemistry, engineering, and clinical science. Participants will have the opportunity to exchange ideas and explore the latest advances in biomaterials, techniques, and methodologies.

In addition to plenary and invited lectures, general symposia, and poster presentations, Biomaterials International 2026 will feature several Special Symposia focused on applications of biomaterials in areas such as biomechanics, biosensors and biochips, and biomedical optoelectronics, among other emerging topics.

While Biomaterials International 2026 will present a rich scientific and technological program, we also encourage you to take advantage of the vibrant social and cultural experiences Seoul has to offer. The Organizing Committee is dedicated to ensuring a memorable and rewarding event in one of Korea's most captivating regions.

We sincerely hope you will join us at Biomaterials International 2026 for an enriching and enjoyable experience alongside your colleagues in the field of biomaterials. The entire Organizing Committee eagerly looks forward to welcoming you to the dynamic and innovative city of Seoul.

Yours sincerely,

Shih-Jung (Sean) Liu

Chair

Professor, Chang Gung University

Hyeong-Cheol Yang

Co-Chair

Professor, Seoul National University

Conference Committee

Chair **Shih-Jung Liu** (Department of Mechanical Engineering, Chang Gung University)

Co-Chair **Hyeong-Cheol Yang** (School of Dentistry, Seoul National University)

Members

Yoon Jeong Park	**PhD**	(Professor, Dental Research Institute, School of Dentistry, Seoul National University)
Jin-soo Ahn	**PhD**	(Professor, Dental Research Institute, School of Dentistry, Seoul National University)
Shin-Hye Chung	**PhD**	(Professor, Dental Research Institute, School of Dentistry, Seoul National University)
Wonjoon Moon	**PhD**	(Assistant Professor, Dental Research Institute, School of Dentistry, Seoul National University)
Gyeung Mi Seon	**PhD**	(Assistant Research Professor, Dental Research Institute, School of Dentistry, Seoul National University)
Sun Woo Um		(Dental Research Institute, School of Dentistry, Seoul National University)
Ji Hyeon Yoon		(Dental Research Institute, School of Dentistry, Seoul National University)
Soyun Kang		(Dental Research Institute, School of Dentistry, Seoul National University)
Yeon Joo Kang		(Dental Research Institute, School of Dentistry, Seoul National University)
Pan-Yun Chou	**MD/PhD**	(Professor, Department of Plastic and Reconstructive Surgery and Craniofacial Research, Chang Gung Memorial Hospital)
Chen-Hung Lee	**MD/PhD**	(Professor, Department of Cardiology, Chang Gung Memorial Hospital)
Tsung-Ting Tsai	**MD/PhD**	(Professor, Department of Orthopedic Surgery, Chang Gung Memorial Hospital)
Ming-Yeh Chen		(Department of Mechanical Engineering, Chang Gung University)

Symposia

General symposia

G1. Biodegradable materials and devices

G2. Metallic biomaterials

G3. Ceramic biomaterials

G4. Smart materials

G5. Synthesis and fabrication of biomaterials and devices

G6. Regenerative medicine and tissue engineering

G7. Interactions of biomaterials and cells

G8. Nanoscale biomaterials

G9. Delivery of drug, gene, vaccine, and active biomolecules

G10. Functionalization and bioactivity

G11. Natural biomaterials

Special symposia

S1. Nanomedicines

S2. Biomechanics

S3. Biosensors and biochips

S4. Biomedical optoelectronics

S5. Signal and image processing

S6. Other techniques and applications

Plenary Speakers

Ajji A, PhD

Polytechnique Montreal

Electrospun fibers for biomedical applications: Cancer testing platform, antibacterial and antiviral masks and bone tissue engineering

Hosoda H, PhD

Institute of Science Tokyo

Recent achievement of Ni-free Ti-based biomedical superelastic alloys

Lee S-H, PhD

Dongguk University

The next frontier in regenerative medicine: Leveraging advanced biomaterials to orchestrate stem cell fate — Towards personalized therapeutic applications

Plenary Speakers

Park K, PhD

Korea Institute of Science and Technology

Engineered extracellular matrix derived from human cells for regenerative medicine

Perret E, PhD

Swiss Federal Laboratories for Materials Science and Technology

Liquid-core biomaterial fibers: Transforming drug delivery through structure and design

Pun SH, PhD

University of Washington at Seattle

Engineering synthetic materials as alternatives to biologics in medicine

Invited Speakers

Lee CH	MD/PhD	Chang Gung Memorial Hospital (Cardiology)	Biodegradable core–shell PLGA nanofibers providing sustained release of stem cell–derived, miRNA-loaded extracellular vesicles significantly improve vascular repair
Lee DY	PhD	Hanyang University	Advanced chitosan-based nanotherapeutics for the targeted treatment of inflammatory bowel disease: From enzyme switching to ROS-responsive delivery
Moon W	DDS/PhD	Seoul National University	Photonic biomaterials and biodevices in oral and craniofacial engineering
Nguyen L	PhD	UCL Eastman Dental Institute	Human tissue-driven periodontal regeneration integrating granulation tissue and micrografts with injectable biomaterials
Park KM	PhD	Incheon National University	Bioactive hydrogels for in situ tissue regeneration
Park YS	PhD	Chungbuk National University	Biomaterial-mediated microenvironmental modulation for enhanced regeneration of tonsil-derived stem cells
Scheibel T	PhD	University of Bayreuth	Bioengineering and processing of spider silk proteins for biomedical applications
Srimaneepong V	PhD	Chulalongkorn University	Immunomodulatory enhancement of WE43 magnesium alloy–induced osteogenesis by erythromycin
Stein A	PhD	University of Minnesota	Addressing materials challenges in the miniaturization of ion-selective sensors for wearable devices

Invited Speakers

Tay KP	PhD	National University of Singapore	4R strategies with biomaterials for wound healing
Tsai TT	MD/PhD	Chang Gung Memorial Hospital (Orthopedic Surgery)	Challenges in removing unknown spinal implants from prior surgeries: Strategies and pitfalls
Voelcker N	PhD	Monash Institute of Pharmaceutical Sciences	Porous microneedle arrays for wearable biosensing
von Recum H	PhD	Case Western Reserve University	Predicting unintended drug/material interactions
Yang SG	PhD	Inha University	Photocatalytic BiVO4 nanoparticles for combination therapy of KRAS mutant colorectal cancer via controlled enzymatic pathway of ferroptosis
Yoshikawa C	PhD	National Institute for Materials Science	Polymer brushes for biointerfaces

Conference Information

Conference Venue	Seoul National University Dental Hospital		
Registration Service	Date	Time	Venue
	Sunday, July 26	17:00-19:00	Jeonggahanjeongsik
	Monday, July 27	09:00-17:15	Seoul National University Dental Hospital 2nd Floor
	Tuesday, July 28	09:00-18:00	
	Wednesday, July 29	09:00-16:15	
Conference Badge	Please ensure to wear your badge at all times to enter the conference rooms. There may also be coupons placed in your badge to exchange for additional purchase.		
Welcome Reception	Date	Sunday, July 26	
	Time	17:00-19:00	
	Location	Jeonggahanjeongsik (https://maps.app.goo.gl/veWwWi6NUhuWqZiY8)	
Conference Banquet	Date	Tuesday, July 28	
	Time	18:30-20:30	
	Location	Moma Restaurant (https://maps.app.goo.gl/fHHvXJMx4EHArBLE7)	
Lab Tour	9:00-12:00, Thursday, July 30 (Gathering at 9:00 the entrance of Seoul National University Dental Hospital)		

Oral Presentation Schedule

Presentation Type	Total Time	Presentation Time	Q&A
Plenary Talk	40 min.	35 min.	5 min.
Invited Talk	25 min.	20 min.	5 min.
Oral Presentation	15 min.	13 min.	2 min.

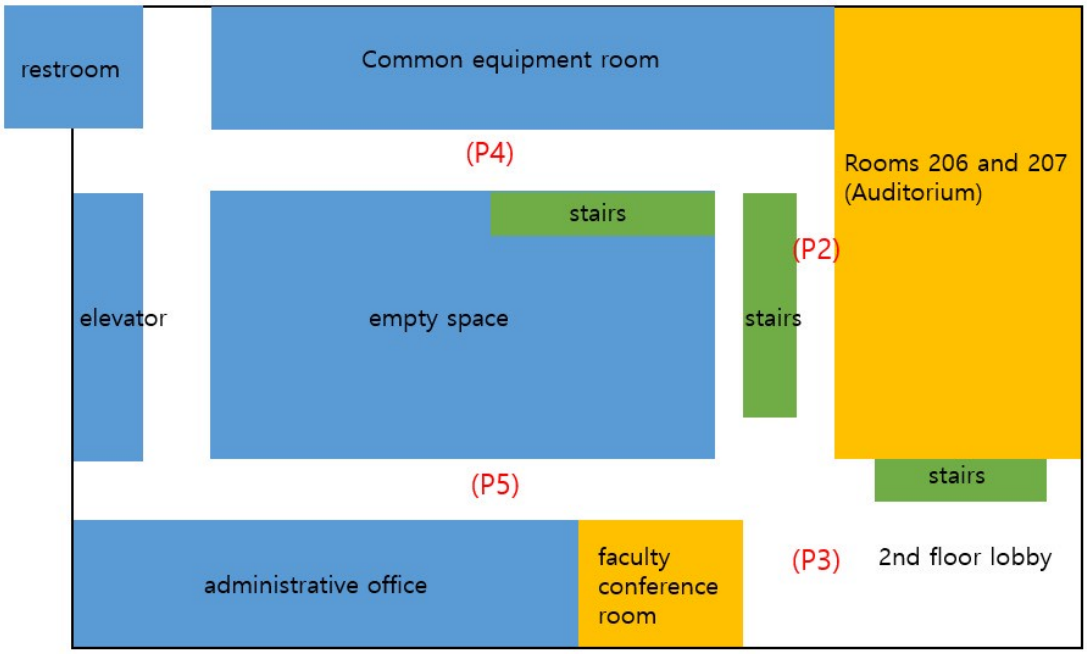
Poster Presentation Schedule

Session	Date	Time	Schedule
Poster Session 1 (1st Floor)	Tuesday, July 28	15:45-15:55	Poster Setup
		15:55-16:35	Poster Session
		16:35-16:45	Poster Removal
Poster Session 2 (1st Floor)	Tuesday, July 28	17:00-17:10	Poster Setup
		17:10-17:50	Poster Session
		17:50-18:00	Poster Removal

Floor Plan

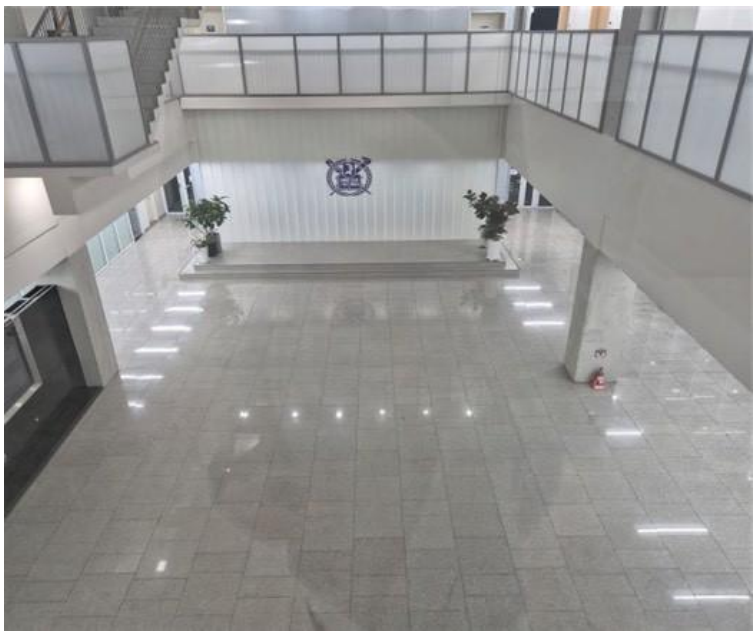
Graduate School of Dentistry (Seoul National University Dental Hospital) at the Gwanak Campus

2nd Floor



Poster Presentation Venue

1st Floor



Program at a Glance

Sunday, July 26		
Time	Venue	Activity
17:00-19:00	Jeonggahanjeongsik	Welcome Reception

Monday, July 27	
Venue	Auditorium
09:00-09:05	**Opening Ceremony** **Liu SJ,** PhD/Chang Gung University **Yang HC,** PhD/Seoul National University **Park Y-S,** DDS, PhD/Seoul National University
Venue	Auditorium
09:05-10:25	**Plenary Talks**
10:25-10:35	Break Time
Venue	Auditorium
10:35-11:50	**Invited Talks**
11:50-13:00	Lunch Time
Venue	Auditorium
13:00-13:50	**Invited Talks**
13:50-14:00	Break Time
Venue	Auditorium / Room #103
14:00-15:30	**Oral Talks**
15:30-15:45	Break Time
Venue	Auditorium / Room #103
15:45-17:15	**Oral Talks**

Tuesday, July 28	
Venue	Auditorium
09:00-10:20	**Plenary Talks**
10:20-10:30	Break Time
Venue	Auditorium
10:30-11:45	**Invited Talks**
11:45-13:00	Lunch Time
Venue	Auditorium
13:00-13:50	**Invited Talks**
13:50-14:00	Break Time
Venue	Auditorium / Room #103
14:00-15:45	**Oral Talks**
Venue	1st Floor
15:45-16:45	**Poster Session 1 Presentations**
16:45-17:00	Break Time
Venue	1st Floor
17:00-18:00	**Poster Session 2 Presentations**
Venue	Moma Restaurant
18:30-20:30	**Banquet**

Wednesday, July 29	
Venue	Auditorium
09:00-10:20	**Plenary Talks**
10:20-10:30	Break Time
Venue	Auditorium
10:30-11:45	**Invited Talks**
12:45-13:00	Lunch Time
Venue	Auditorium
13:00-13:50	**Invited Talks**
13:50-14:00	Break Time
Venue	Auditorium / Room #103
14:00-16:00	**Oral Talks**
Venue	Auditorium
16:00-16:15	**Closing Ceremony**

Thursday, July 30	
Venue	Graduate School of Dentistry, Seoul National University
9:00-12:00	**Lab Tour**

Oral Sessions

Monday, July 27	
Venue	**Auditorium**
09:00-09:05	**Opening Ceremony** **Liu SJ,** PhD/Chang Gung University **Yang HC,** PhD/Seoul National University **Park Y-S,** DDS, PhD/Seoul National University
Venue	**Auditorium**
Chair	
09:05-09:45	**#1083 Engineered Extracellular Matrix Derived from Human Cells for Regenerative Medicine** Kwideok Park
09:45-10-25	**#0000 Electrospun Fibers for Biomedical Applications: Cancer Testing Platforms, Antibacterial and Antiviral Masks, and Bone Tissue Engineering** Ajji A
10:25-10:35	**Break Time**
Venue	**Auditorium**
Chair	
10:35-11:00	**#1025 Strategies for Removing Pedicle Screws of Unknown Manufacturer in Revision Spine Surgery** Tsung-Ting Tsai
11:00-11:25	**#1036 Porous Microneedle Arrays for Electrochemical Biosensing in Interstitial Fluid** Nicolas Voelcker
11:25-11:50	**#1047 Advanced Chitosan-Based Nanotherapeutics for the Targeted Treatment of Inflammatory Bowel Disease: From Enzyme Switching to ROS-Responsive Delivery** Dong Yun Lee
11:50-13:00	**Lunch Time**

Monday, July 27	
Venue	**Auditorium**
Chair	
13:00-13:25	**#0000 Immunomodulatory Enhancement of WE43 Magnesium Alloy–Induced Osteogenesis by Erythromycin** Srimaneepong V
13:25-13:50	**#0000 Human Tissue-Driven Periodontal Regeneration Integrating Granulation Tissue and Micrografts with Injectable Biomaterials** Nguyen L
13:50-14:00	**Break Time**
Venue	**Auditorium**
Chair	
14:00-14:15	**#1006 3D-Printed Nanoparticles as a Delivery Vehicle for Catalase Against Oxidative Stress** S. Lee, D. Lee, N. Rajput, Aya Shanti
14:15-14:30	**#1010 Porous Organogel Materials as Bacterial Culture Supports for Probiotic Delivery** A. Gregorio Gomes, E. Perez, G. Ramos, B. Payre, G. Garrait, S. Franceschi
14:30-14:45	**#1035 Hydrophobic Tagging-Engineered Antigens Potentiate Antibacterial Immunity** Yang Wu, Tay Kah Ping, Andy Tay
14:45-15:00	**#1037 Dysfunctional T Cell Reprogramming via Catalytic Nanosponge-Mediated Tumor-Specific Antigen Capture** Shang-Hsiu Hu
15:00-15:15	**#1082 MPC Polymer-Based Lipid Nanoparticles for mRNA Delivery to Suspension Cells** S. Obuchi, U. Chung, Y. Teramura
15:15-15:30	**#1086 Development of a Nuclear-Targeting Nanocarrier for Overcoming Drug Resistance in Cancer** S. Kawashima, K. Nagahama
15:30-15:45	**Break Time**

Monday, July 27	Au
Venue	**Auditorium**
Chair	
15:45-16:00	**#1005 Angiopep-2-Modified Graphene Oxide for Dual-Drug Delivery in Targeted Chemo-Photothermal Treatment of Glioblastoma** Banendu Sunder Dash
16:00-16:15	**#1020 PD-L1 Aptamer-Engineered Pluripotent Nanoreactor for Chemodynamically Motivated Cancer Cuproptosis-Immunotherapy** Chunhui Wu, Ningxi Li, Hong Yang, Yiyao Liu
16:15-16:30	**#1022 Targeting YAP Mechanotransduction for Tumor Therapy Using Engineered Nanotherapeutics** Tingting. Li , Ping Li , Y.Y. Liu
16:30-16:45	**#1050 H_2S-Responsive CuSe Nanoparticles Undergo In Situ Conversion to CuSSe with Bandgap Modulation for Oxygen Self-Supply and Enhanced Colon Cancer Phototherapy** Manoj Kandel, Hsin-Cheng Chiu
16:45-17:00	**#1075 Myeloid-Derived Suppressor Cell–Guided Mesoporous Silica Nanoparticles Enhance Delivery of BET Inhibitors and Remodel the Tumor Microenvironment in Pancreatic Cancer** Li-Chan Chang, Li Xu, Yin-Fen Liu , Chang-An Lin, Si-Han Wu, Wen-Pin Su
17:00-17:15	**#1080 Green Synthesis of Silver Nanoparticles by Cold Plasma Jet for Antimicrobial Application** R. Morarad, P.zcMeepean, N. Sritapanya, W. Kiatarkom, K. Nilgumhang, P. Uttayarat

Monday, July 27	
Venue	**Room #103**
Chair	
14:00-14:15	**#1014 In Situ Grown Porphyrin-Based Covalent Organic Framework on Multi-Walled Carbon Nanotubes for Real-Time Monitoring of Superoxide Anion in Living Cells** Y.J. Bai, H.H. Yu, X. Zhang, M.Q. Chen, C. Liu, P.H. Zhu, J.H. Yu
14:15-14:30	**#1018 Thermoelectricity-Mediated Photoelectrochemical Sensing Platform Based on a Cas12a Amplification System to Detect Aβ42** M.Q. Chen, L.N. Zhang, C. Liu, X. Zhang, Y.J. Bai, H.H. Yu, L. Shan, J.H. Yu
14:30-14:45	**#1026 Smartphone-Assisted Fluorescence-Based Detection Using a Sunrise-Type Smart Amplification Process and a 3D-Printed Ultraviolet Light-Emitting Diode Device for the Diagnosis of Tuberculosis** Shang-Yen Tsai, Chung-An Chen, Natalie Yi-Ju Ho, Hui-Yi Hsiao, Song-Shu Lin, Po-Liang Lai, Tsung-Ting Tsai
14:45-15:00	**#1027 Smartphone-Assisted Tuberculosis Detection by a Smart Amplification Process and Lateral Flow Immunoassay with a 3D-Printed Device** Shang-Yun Tsai, Chung-An Chen, Natalie Yi-Ju Ho, Chang-Chi Yang, Hui-Yi Hsiao, Tse-Hao Huang, Ming-Kai Hsieh, Po-Liang Lai, Tsung-Ting Tsai
15:00-15:15	**#1043 Layered Metal Sulfides as Advanced Electrocatalysts for the Hydrogen Evolution Reaction** Y.T. Qian
15:15-15:30	**#1044 Current State of Applications, Market Prospects, and Analysis of Industrialization Pathways for Nanofunctional Materials in the Cosmetic Industry** S. Chen
15:30-15:45	**Break Time**

Monday, July 27	
Venue	**Room #103**
Chair	
15:45-16:00	**#1008 Hydrolytically Stable Carboxyl-Functionalized Silatrane for Controlled Biointerface Engineering and High-Performance Biosensing** Van-Truc Vu , Chun-Jen Huang
16:00-16:15	**#1009 Demineralized Bone Bioinks with Enhanced Odontogenic Differentiation: Synthesis and Characterization** Sudarshini Nath , Heesun Hong, Ji-Hyun Jang, Moon Sik Oh, Sol Kim, Ok Joo Lee, Ji Seung Lee, Kyunghee Kim, Chul Hee Lee, Ki Hyun Kim, Yusang Son , Chan Hum Park , Soon Hee Kim
16:15-16:30	**#1012 Optimized Bilayer Osteochondral Graft in a Rabbit Xenogeneic Model Using a DLP-Printed β-TCP Bioceramic Scaffold and hADSC-Laden Biohydrogel** C.-K. Wang, C.-Y. Lee, S. Nedunchezian
16:30-16:45	**#1033 Digital Light Processing (DLP) Bioprinting of Clinically Relevant Soft Tissues** S. Vijayavenkataraman
16:45-17:00	**#1051 Eosin Y/AgNPs-Doped Polyimide Porous Membrane via the Breath Figure Method for Optical Ammonia Gas Sensing** Manna Septriani Simanjuntak, Cheng Shane Chu
17:00-17:15	**#1057 A Breast Cancer–Immune Assembloid Platform for TLS Mechanisms and Personalized Immunotherapy** Xuelu Li, Andy Tay

Tuesday, July 28	
Venue	**Auditorium**
Chair	
09:00-09:40	**#0000 Recent Achievements in Ni-Free Ti-Based Biomedical Superelastic Alloys** Hosoda H
09:40-10:20	**#1077 Biomaterial Solutions in Immunotherapy and Trauma Medicine** Suzie H. Pun
10:20-10:30	**Break Time**
Venue	**Auditorium**
Chair	
10:30-10:55	**#1072 Addressing Materials Challenges in the Miniaturization of Ion-Selective Sensors for Wearable Devices** M. Komal, F. Farjana, K. Madungwe, S.L. Swisher, P. Bühlmann, A. Stein
10:55-11:20	**#1081 Polymer Brushes for Biointerfaces** Chiaki Yoshikawa
11:20-11:45	**#1129 Bioengineering of Spider Silk Proteins for Heart Muscle Regeneration** Thomas Scheibel
11:45-13:00	**Lunch Time**
Venue	**Auditorium**
Chair	
13:00-13:25	**#1139 Double-Emulsion Microparticles Combined with iPSC-EVs for Cardiac Regeneration and Fibrotic Remodeling** Chen-Hung Lee
13:25-13:50	**#0000 Bioactive Hydrogels for In Situ Tissue Regeneration** Park KM
13:50-14:00	**Break Time**

Tuesday, July 28	
Venue	**Auditorium**
Chair	
14:00-14:15	**#1011 A Nanophotonic Biomaterial Interface for Metabolic Programming of Adaptive Living Oxygen Therapeutics** D. Zhong, A. Tay
14:15-14:30	**#1045 EV–Liposome Hybrids via Membrane Fusion Using Cell-Penetrating Peptide-Conjugated Lipids** Yuya Sato, Yuji Teramura
14:30-14:45	**#1084 Mycelium Leather as a Sustainable Biomaterial: Effects of Post-Harvest Treatments and Structural Modification** K. Rahman, P.P.C. Chang
14:45-15:00	**#1100 Engineering a Bioactive PMMA–Silica Hybrid Scaffold for Enhanced Bone Regeneration** Ren Jei Chung
15:00-15:15	**#1106 Photo-Responsive Peptide Hydrogel for Spatiotemporal Control of Embryoid Morphogenesis** T.T.D Dinh, C. Bai, I.A. Middleton, K. Kilian, P. Thordarson
15:15-15:30	**#1117 Exploring the Mechanism of Protein Liquid–Liquid Phase Separation with Lattice Model Simulations** Javaid Zunera, Kyota Yasuda, Shin-Ichi Tate
15:30-15:45	**#1126 Extraction and Characterization of Type II Collagen from Crocodile By-Products as a Potential Biomaterial** Panssachon Kraikhun, Rudee Surarit, Aree Wanasuntronwong, Nuttawee Niamsiri

Tuesday, July 28	
Venue	**Room #103**
Chair	
14:00-14:15	**#1102 Micropatterned GelMA Hydrogels with Electrical Stimulation Enable Accelerated Maturation of a Functional 3D Neuromuscular Model for ALS Evaluation** Chun-Sheng Yu, Ying-Chieh Chen
14:15-14:30	**#1112 Fabrication of Carbon-Doped TiO_2 Films via Reactive Sputtering and Their Visible-Light-Induced Antibacterial Activity** S. Shim, K. Ueda, K. Ogasawara, T. Narushima
14:30-14:45	**#1114 Substrate Surface Functionalized with Long-Chain Alkyl-Modified Poly(vinyl alcohol) That Facilitates Transition from Immediate Cell Capture to Adhesion** Erika Yoshihara, Kimio Sumaru
14:45-15:00	**#1132 Electrochemical Behavior of Magnesium–Calcium Alloy under Loading Conditions for Craniofacial Implants** Andril Arafat, Nur Amirah Shaharom, Abdul Hakim Md Yusop, Is Prima Nanda, Ahmad Kafrawi Nasution , Dieter Rahmadiawan
15:00-15:15	**#1133 Covalently Cross-Linked and Entangled Degradable Elastomers for Green Wearable Electronics** Minxuan Kuang, Xiuqin Zhang
15:15-15:30	**#1135 Integration of Thermographic Metrics as Surrogate Markers of Microvascular Healing for Enhanced Wound Healing Trajectory Assessment** Igor Jaszczyszyn, Jakub Rochoń, Mateusz Turalski, Arkadiusz Gąsiński, Paweł Wiśniwski, Michał Grąt, Piotr Kalinowski
15:30-15:45	**#1007 Nanomaterial-Layered Scaffolds for Stem Cell Enhancement via Mechanobiology** R. K. Singh

Tuesday, July 28	
Venue	**1st Floor**
15:45-16:45	**Poster Session 1 Presentations**
16:45-17:00	**Break Time**
Venue	**1st Floor**
17:00-18:00	**Poster Session 2 Presentations**
Venue	**Moma Restaurant**
18:30-20:30	**Banquet**

Wednesday, July 29	
Venue	**Auditorium**
Chair	
09:00-09:40	**#1059 Liquid-Core Biomaterial Fibers: Transforming Drug Delivery through Structure and Design** Edith Perret
9:40-10:20	**#1116 Leveraging Biomaterials to Orchestrate Stem Cell Fate Toward Personalized Therapeutic Applications** Soo-Hong Lee
10:20-10:30	**Break Time**
Venue	**Auditorium**
Chair	
10:30-10:55	**#0000 Biomaterial-Mediated Microenvironmental Modulation for Enhanced Regeneration of Tonsil-Derived Stem Cells** Park YS
10:55-11:20	**#0000 Photonic Biomaterials and Biodevices in Oral and Craniofacial Engineering** Moon W
11:20-11:45	**#0000 4R Strategies with Biomaterials for Wound Healing** Tay KP
11:45-13:00	**Lunch Time**
Venue	**Auditorium**
Chair	
13:00-13:25	**#0000 Predicting Unintended Drug/Material Interactions** von Recum H
13:25-13:50	**#0000 Photocatalytic $BiVO_4$ Nanoparticles for Combination Therapy of KRAS-Mutant Colorectal Cancer via Controlled Enzymatic Pathways of Ferroptosis** Yang SG
13:50-14:00	**Break Time**

Wednesday, July 29	
Venue	**Auditorium**
Chair	
14:00-14:15	**#1118 Engineered Virus-Like Nanobubble with MnO_2/ICG Interface for Targeted, Image-Guided Synergistic Cancer Therapy** P.S. Hung, H.W. Yang
14:15-14:30	**#1124 Development of Novel Auxetic Skin Grafts with High Expansion Potential** A. Chanda
14:30-14:45	**#1134 Nocturnal Thermoregulation in Obstructive Sleep Apnea: A Non-Invasive Continuous Monitoring Approach Using Wearable Sensors** Weronika Bielska, Karol Pierzchała , Zuzanna Boczar, Piotr Białasiewicz, Wojciech Kuczyński
14:45-15:00	**#1131 Nanofiber Materials for Biomedical Applications** J. Xie
15:00-15:15	**#1128 This Study Explores How EGCG and Chitosan Coatings can Enhance Osseointegration on the SLLA Surface under High Oxidative Stress** Yushan Huang, Ying-Sui Sun, Yu-Rou Lin, Wen-Chen Chen, Sheng-Yen Lin
15:15-15:30	**#1001 Marine Biomaterials and High-Value Utilization of Biological Resources** Jingdi Chen, Jing Wang, Panpan Pan
15:30-15:45	**#1140 Nanomaterial-Layered Scaffolds for Stem Cell Enhancement via Mechanobiology** R. K. Singh
15:45-16:00	**#1058 Bio-Inspired Synthesis of Silver Nanoparticles for Potential Application in Wound Regeneration** J. Jurak, I. Jaszczyszyn, M. Rybka, Ł. Mazurek, A. Laskowska, J. Czuwara, M. Wojtkowiak, A. Sureda, M. Konop
Venue	**Auditorium**
16:00-16:15	**Closing Ceremony**

Wednesday, July 29	
Venue	**Room #103**
Chair	
14:00-14:15	**#1109 A Dugout-Like Microneedle Patch Enabling Deep Tissue Regeneration in Chronic Wounds via Co-Delivery of Irisin and Fibroblasts** Yu-Chi, Pan, His-Chen, Tung, Shu-Hung Huang, Hung-Wei Yang
14:15-14:30	**#1113 Artificial T Cell–Mimicking Virus-Like Nanoparticles Enable Synergistic Chemotherapy and Immune Checkpoint Blockade in Triple-Negative Breast Cancer** S.H. Wu, H.W. Yang
14:30-14:45	**#1091 Multi-Scale Characterization of Collagen Supramolecular Chirality and Fiber Orientation in Muscle-Associated Fascia** Sahar Ilyas, Ali Haider, Kyota Yasuda, Andrew K. Schulz, Elizabeth J Dresselhaus, Hisako Sato, Elisabetta Matsumoto, Katsuya Inoue
14:45-15:00	**#1108 Twinkling Peptide Nanoemulsions Enabling Precision Ultrasound Detection of Atherosclerotic Plaques** Inhye Kim, Jacob C. Elliott, Atip Lawanprasert, Anthony M. Koehle III, Grace M. Wood, Rita Castro, Julianna C. Simon, Scott H. Medina
15:00-15:15	**#1103 Real-Time, Non-Invasive Bioimpedance Sensing for Cross-Scale Evaluation of Cellular Behavior, Vascular Network Formation, and Tissue Identity** C.L. Chang, Y.C. Chen
15:15-15:30	**#1115 Amylose-Coated Waxy Corn Starch for Stabilising Oral Viscosity During Slow Swallowing Initiation** T. Tongbram, P.K. Borah, G.E. Yakubov, L.S. Badwaik
15:30-15:45	**#1101 Inclusion-Free Ultrahigh-Purity Mg–Zn Alloys for Next-Generation Biodissolvable Implants** K. Ueda, K. Sasaki, T. Nakata, T. Narushima
15:45-16:00	**#1104 Development of a Composite Alginate Hydrogel with Lutein and Caffeic Acid Phenethyl Ester for Ocular Maintenance** Chieh-An Chen, Yu-Hsiang Lee
Venue	**Auditorium**
16:00-16:15	**Closing Ceremony**

Poster Session 1

Date: Tuesday, July 28

Time: 15:45-16:45

Venue: Room #103

Category: G01. Biodegradable materials and devices

001) #1063 **Assessment of Weldline Strength in Biochar-Reinforced Polylactide Composites**
Tzu-Wei Huang, Bo-Kwei Hung, Yi-Hua Kuo, Shih-Jung Liu, Hiroshi Ito

Category: G02. Metallic biomaterials

002) #1056 **Effect of Oxygen Content on the Microstructure and Mechanical Properties of α+β-Type Ti-4.5Al-6Nb-2Fe-2Mo Alloys**
T. Araki, K. Ueda, T. Narushima

003) #1064 **Drug Release from a Nano-Hydroxyapatite-Reinforced Resorbable Nanofibrous Scaffold in In Vitro and In Vivo Models of Female Pelvic Organ Prolapse**
Yi-Pin Chen, Tsia-Shu Lo, Yu-Han Chien, Yi-Hua Kuo, Shih-Jung Liu

004) #1069 **Phase Transformation Associated with Shape-Advance Phenomenon during Heating in Ti-17Nb-3Al Alloy**
Tomoya Nakae, Sengo Kobayashi, Satoshi Okano

005) #1071 **Effect of Carbon and Molybdenum on Hot Workability and Mechanical Properties of Biomedical Co–Cr–Fe–Ni–Mo–C Alloys**
Ren Kato, Kai Hiyama, Ryoji Sahara, Kyosuke Ueda, Takayuki Narushima

006) #1078 **Effect of Heat Treatment on the Depth Distribution of Cu in Ti-10Cu Alloys**
Satoshi Okano, Yuta Hisamori, Sengo Kobayashi

007) #1085 **Fabrication of Visible-Light-Responsive TiO_2 Films on Ti Using Thermal Oxidation and Their Antibacterial Properties**
Shunsuke Sasanuma, Kyosuke Ueda, Koetsu Ogasawara, Takayuki Narushima

008) #1143 **Corrosion Protection of Porous Ti–Nb–Zr–Sn Scaffolds by Polydopamine Coating under Inflammatory Conditions**
K.Y. Lin, Y.L. Huang, H.H. Huang

Category: G03. Ceramic biomaterials

009) #1040 **Optimizing Mg/Ca Ratios in MgO–CaO–SiO_2 Bioactive Glass for Enhanced Osteogenic Differentiation of Human Adipose-Derived Stem Cells**
Pin Yi Chen ,Guan-Yi Hung, Chi Yun Wang, Hui-Yi Hsiao, Po-Liang Lai

010) #1054 **Thermal Treatment Effects on Crystallization and Surface Behavior of Zn-Doped Hydroxyapatite Thin Films for Biomedical Coating Applications**
Sin-Liang Ou, Chun Ming Chang, Wen-Sen Fan, Chuan-Yi Lin, Cheng-Jui Wang, Chung-Kai Huang

011) #1144 **Combined Simulated Intraoral Aging Effects on the Fracture Properties of Two Types of Multilayer Zirconia: Comparison between ISO Standard Specimens and Simulated Crowns**
T.T. Chen, C.Y. Liu, H.H. Huang

012) #1055 **Tuning Hydroxyapatite Thin Film Properties via Zinc Doping Concentration for Potential Biomedical Applications**
Sin-Liang Ou, An-Shun Liu, Cheng-Jui Wang, Chun Ming Chang, Wen-Sen Fan, Cheng-Jian Dai, Phu-Qui Nguyen

013) #1074 **Synthesis of Ag- and Ta-Co-Doped SiO_2–CaO–P_2O_5 Bioactive Glass Powders Using the Sol–Gel Method**
Kota Sekine, Kyosuke Ueda, Takayuki Narushima

Category: G04. Smart materials

014) #1023 **Soft Robot for Integrated Tumor/Infection Therapy and Painless Postoperative Drainage**
Hong Yang, Wanyi Zhou, Chunhui Wu, Yiyao Liu

Category: G05. Polymer composites

015) #1052 **Versatile β-Carboline-Conjugated Hyaluronic Acid-Based Hydrogel for Antimicrobial Therapy, Resistance Mitigation, and Wound Healing**
S. Chauhan, D. Manna

016) #1053 **Metal-Responsive Fluorophore- and Amikacin-Conjugated Heparin for Bacterial Cell Imaging and Antibacterial Applications**
R. Karn, D. Manna

017) #1066 **Achieving High Cellular Bioactivity via Hydrothermal Surface Modification of β-Tricalcium Phosphate**
Yan-Ting Chen, Guan-Yi Hung, Chi Yun Wang, Cheng-Sao Chen, Pin Yi Chen, Po-Liang Lai

018) #1076 **Multifunctional Electrospun PVA/Honey Composite Nanofibrous Wound Dressing**
Yu-Jie Wu, Chi-Yun Wang, Po-Liang Lai, Pin-Yi Chen, Cheng-Sao Chen

019) #1096 **Electrochemical Biosensor Based on Temperature-Sensitive Polymer Nanocomposites for Simultaneous AA, DA, and UA Detection**
Chen Chuan Yen, Yi Cheng Lu, Mei-Chen Lin

020) #1098 **Fabrication and Characterization of PVA/$SrCl_2$ Electrospun Fibers for Bone Tissue Engineering Applications**
Yi Cheng Lu, Chen Chuan Yen, Mei-Chen Lin

021) #1130 **Biocompatibility and Antibacterial Enhancement of Micro-Arc Oxidation-Pretreated Titanium via Tantalum Oxide Coatings**
Ming-Tzu Tsai, Hsu Jui-Ting, Heng-Li Huang, Yin-Yu Chang, Yang-Hao Hong, Yu-Ting Lin, Min-Xuan Hong

022) #1137 **Biomimetic Osmolyte Polymers for Protein Stabilization**
Enas Sakkamini, Takahisa Anada, Masaru Tanaka

Category: G06. Regenerative medicine and tissue engineering

023) #1038 **Poly-L-Lactic Acid Promotes a More Favorable Repair Trajectory than PLGA in a Unified Murine Myocardial Infarction Model**
Bingxin Huang, Engui Wang, Han Ouyang, Yunpeng Ling

024) #1042 **Keratin-Based Bioactive Dressings Enriched with Small Molecules Accelerate Diabetic Wound Healing via Immunomodulation and Cytokeratin Activation**
M. Rybka, Ł. Mazurek, J. Jurak, M. Szudzi, J. Czuwara, M. Dziadek, S. Salagierski, A. Sureda, M. Ufnal, M. Konop

025) #1048 **Antiarrhythmic Potential of Mirabegron in Suppressing Ventricular Fibrillation**
Y.L. Sung

026) #1087 **In Vivo Mechano-Tissue Engineering by Hydrogels Capable of Transmitting Intercellular Mechanical Stress**
Ayane Kunieda, Natsumi Ueda, Natsumi Ueda, Akihiro Mikuma, Ssouma Kawashima, Koji Nagahama

027) #1093 **Neuronal Differentiation Potential of Biodegradable Andrographolide-Loaded Bovine Serum Albumin Nanogel**
H.M.S.H Soe, D. Tantikanlayaporn

028) #1095 **Mechanism of Arecoline-Induced Macrophage-Fibrinoblast Interaction in Oral Submucosal Fibrosis**
W.C. Chen, C.Y. Ho, E.R. Chuanhg, Y.L. Kuo, Y.S. Sun

029) #1107 **Processing of Human Amniotic Membranes as Biological Dressings for Treating Ocular Surface Disorders**
Pimpon Uttayarat, Rawita Morarad, Pranita Meepean, Natawan Sritapanya Wasawat Kiatarkom, Nuatawan – Thamrongsiripak, Kanchana Chahom Rapeeporn – Yodprom, Maethaphan Kitporntheranunt

030) #1121 **Photo-Responsive Antibacterial Bioceramic Scaffold for Bone Reconstruction and Infection Prevention**
M. Kuboki, M. Shimabukuro, S. Kusumoto, R. Miyake, T. Yokoi, R. Kishida, E. Marukawa and M. Kawashita

031) #1125 **Collagen–Hyaluronic Acid Hydrogel with Embedded Chondrocytes as a Platform for Modeling Early Stages of Endochondral Ossification In Vitro**
Marina Malic, Martina Doubkova, Simon Prazak, Antonín Brož, Kristyna Havlickova, Vera Jencova, Daniel Hadraba, Lucie Bacakova

Category: G07.

032) #1017 **3D Bioprinting of Functional Pancreatic Islet Organoids Using a GelMA–ECM–PRP Tri-Component Bioink for Enhanced Vascularization and Immune Compatibility in Diabetes Therapy**
Zhu Biwen

033) #1024 **Novel CNTs/Cu Nanodots–Arabic Gum Hybrid Induces Cytotoxicity and Apoptosis in Breast and Lung Cancer Cells**
N.H. Aljarba, A.A. Qurtam, Mo Al-Zharani, W.M. Daoush, A. AlHarb, N.M. Alyami, S. Alkahtani, F.A. Nasr, M.A. Alkhateeb

034) #1070 **Effect of Microstructure on Phase-Dependent Osteoblast Adhesion in Titanium Alloys**
Sengo Kobayashi, Shoma Shibata, Kotaro Hayashi, Satoshi Okano

035) #1105 **Discovering the Effects of an Anticancer Drug and *Ganoderma microsporum* Immunomodulatory Protein on Oral Cancer Cells and Human Gingival Fibroblasts**
S.Y. Lin, C.H. Yang, M.Y. Wu, Y.S. Sun

036) #1110 **Self-Aggregation of Cells with Concentrated Polymer Brush-Modified E-Spun Fibers**
A. Jean, C. Yoshikawa

037) #1120 **Cell Response to Polyacrylamide-Based Conductive Hydrogels for Biomedical Applications**
Antonín Brož, Marina Malic, Terezia Futoova, Martina Doubkova, Arti Singh, Jinhwan Yoon

038) #1138 **Enhancing Central Nervous System Delivery via RVG29-Conjugated Upconversion Nanoparticles**
Haitao Liu, Hengde Li, Saman Hamidi, Xi Chen, Angelo H. All

039) #1141 **Extracellular Matrix Formation on Nonwoven Scaffolds for Applications in Cell-Based Leather Engineering**
Himari Sasaki, Katsuhisa Sakaguchi

Poster Session 2

Date: Tuesday, July 28

Time: 17:00-18:00

Venue: Room #103

Category: G09.

040) #1029 **Novel Self-Assembled Antimicrobial Peptide Pardaxin Hydrogel as a Functional Biomaterial for Food Packaging and Preservation**
Sanjay Prasad Selvaraj, Ju-Chun Chang, Karukuvelraja Raja, Jing-Ting Zhu, Prakash Kishore Hazam, Wen-Chun Lin, Jung-Ren-Huang, Tsung-Lin Li, Jyh-Yih Chen

041) #1034 **Biogenic Nanoscale Silver: A Multifunctional Platform for Rapid Catalysis and Nanomedicine**
Manthae C. Phom, Tovishe Phucho

042) #1041 **Plant-Derived Nanomaterial-Mediated Corrosion Inhibition: Mechanistic Elucidation of Phytochemical–Nanoparticle Interfacial Interactions**
Therola Sangtam, Ambrish Singh

043) #1065 **Dye-Sensitized Upconversion Nanoparticles with Enhanced Aqueous Luminescence**
Hendge Li, Haitao Liu, Angelo Homayoun All

044) #1099 **Green Electrospinning Process: Effects of Water-Soluble Chitosan Content on the Morphology and Fundamental Properties of PVA Nanofibers**
Zhi-Yun Li, Yanyu Lin, Mei-Chen Lin

045) #1148 **Eco-Friendly Electrospun PVA Nanofibers Loaded with Green-Synthesized Silver Nanoparticles for Antimicrobial Wound Dressings**
Ewa Kijeńska-Gawrońska, Moein Zarei, Jakub Trzciński, Dominik Baraniecki, Mustafa Alsarraf, Monika Staniszewska

Category: G09.

046) #1013 **Engineering Gas-Generating Nanofiber Platforms for Enhanced Bioactive Release**
R. Benziane, A. Zeeshan

047) #1046 **Enhanced Intracellular Co-Delivery of Doxorubicin and Fe(II) Using Tumor Acidity-Responsive PEG-Sheddable Bimetal–Tannic Acid Nanocapsules for Combined Chemo/Chemodynamic Therapy**
Wen-Hsuan Chiang, Chuan-Cheng Chiu, Yen-Hsuan Chang

048) #1067 **Thermoresponsive Hydrogel as a Delivery Platform for Phage phiPA1-3 and Its Derived Enzyme to Mitigate Carbapenem-Resistant *P. aeruginosa* in an Ex Vivo Porcine Skin Model**
Y.C. Tsai, Ling-Chun Lin

049) #1068 **Thermosensitive Hydrogel Loaded with *Bacillus rugosus* S7 Cell-Free Supernatant: A Novel Therapeutic Strategy Against Bacterial Vaginosis**
Jo-Ting Hung, Ling-Chun Lin

050) #1079 **Engineered pH-Responsive Polysaccharide Nanoparticle for Targeted and Controlled Cancer Drug Delivery**
Y.H. Lin, H.L. Huang

051) #1088 **Development of a Nucleolus-Targeted Drug Delivery System Based on Nuclear-Translocating Nanoparticles**
H. Taniguchi, S. Kawashima, D. Miyoshi, K. Kawauchi, K. Nagahama

052) #1089 **Bioengineered Epsilon-15 Virus-Like Particles as Protein Delivery Nanocarriers for Photodynamic Therapy**
Hao-Han Pang, Chia-Yu Hsu

053) #1090 **Development of a Natural Herbal Combination Compound-Loaded Nanodrug for Glioblastoma Therapy**
Z.J. Peng, C.Y. Hsu, M.Y. Lee, Y.C. Chang, H.H. Pang

054) #1092 **Hydrophobic Deep Eutectic Solvent-Based Microemulsions Enhance the Anti-Inflammatory and Antioxidant Activity of Curcuminoids**
Kantapich Kongpol, Gorawit Yusakul, Kulthida Vaeteewoottacharn, Anuchit Phanumartwiwath

055) #1097 **Characterization and Application of a Thermosensitive Chitosan/Pluronic® F-127 Hydrogel Incorporating Clotrimazole for Vaginal Drug Delivery Systems**
I-Han Liao, Yueh-Hua Chung, Mei-Chen Lin

056) #1146 **Direct Generation of High-Concentration Lipid-Shell Ultrafine Bubbles via Thin-Film High-Speed Agitation**
H. Kida, M. Noma, Y. Yamasaki, M. Tachibana, H. Endo, L. B. Feril, K. Tachibana

057) #1147 **Electrospun PVA/PVP/Pectin Nanofibrous Patches Loaded with Hawthorn Extract and Dragon's Blood for Synergistic Wound Care**
Moein Zarei, Jakub Trzciński, Dominik Baraniecki, Paulina Trzaskowska Mustafa Alsarraf, Monika Staniszewska, Jagan Mohan Dodda, Tomáš Kovářík, Jaeyun Kim, Ewa Kijeńska-Gawrońska

Category: G10.

058) #1032 **Post-Fabrication Silver Ion Incorporation into Electrospun Polypeptide Membranes for Stable Antibacterial Functionalization**
Z.W. Hu, T.L. Ma

059) #1122 **PVDF Piezoelectric Film-Mediated Modification of Titanium Dental Implants for Improved Antibacterial Activity and Osseointegration**
Xusheng Yang, Guomin Wang

060) #1127 **Zwitterion-Functionalized Silver Nanoparticle-Embedded Polyurethane Nanofiber Membranes for Highly Efficient Antibacterial Applications**
Yu-Wei Cheng, Yen-Yu Lin

Category: G11.

061) #1004 **Valorization of Human Hair Keratins into Functional Films**
Partha Pratim Das, Kee Woei Ng

062) #1015 **Far-Infrared–Active Fossil-Based Composite Biomaterials Modulate Brain Water Dynamics and Metabolism: An In Vivo MRI Study**
C.Y. Lin, H.C. Lo, K.N. Shih, W.T. Huang, C.L. Juang, H.C. Wen

063) #1019 **Topical Hydrogen Gas Therapy Mitigates Acute Radiation Dermatitis by Reducing DNA Damage and Inflammation**
Deng-Yu Kuo , Yu-Chi Wang, Pei-Han Chou, Tse-Ying Liu

064) #1073 **pH-Responsive Chitosan–Polysaccharide Composite Biofilm with Essential Oils for Food Spoilage Monitoring**
Anuchit Phanumartwiwath, Desy Liana

065) #1111 **The Influence of the Micro- and Macrostructure of Additively Manufactured Hydrogel Structures on Their Physicochemical and Mechanical Properties in the Context of Applications in Wound Dressings**
M. Skrodzka, M. Ducka, P. Szymczyk-Ziółkowska, J. Detyna, K. Matczyszyn

Category: S01.

066) #1039 **Polymer-Engineered Interfacial and Microstructural Modulation in Silver Selenide Thermoelectric Films**
Cheng-Lung Chen, You-Cheng Liao, Ho Yuan-Soon

067) #1094 **Multifunctional Nanoemulsions of Ulvan and *Cinnamomum zeylanicum* Essential Oil: Antioxidant and Anti-Melanogenic Effects**
R.K. Song, H.M.S.H. Soe, R.K. Song

Category: S02.

068) #1002 **Biomechanical Advantages of Hex-Vase and QDC Porous Structures in Customized Mandibular Reconstruction: Strain Gauge Analysis versus Solid Implants**
H.L. Huang, H. Zhang, J.T. Hsu, L.J. Fuh

069) #1060 **Injectable Degradable Poly(ethylene glycol)-block-poly(propylene glycol)-block-poly(ethylene glycol) Hydrogels for Sustained Release of Sodium Tetradecyl Sulfate**
Pin-Chao Feng, Pang-Yun Chou, Zhao-Ding Su, Ulfia Nur Amallia, Shih-Jung Liu, Yen-Wei Liu, Hiroshi Ito

070) #1061 **A Versatile Degradable Polymeric Capsule for Sustained Delivery of Bioactive Molecules**
Tzu-Wei Huang, Chih-Yang Lai, Po-Ju Lai, Rifky Rahardian Setiawan, Chao-Tsai Huang, Yi-Hua Kuo, Shih-Jung Liu

071) #1119 **Effect of Polymer Concentration and Porogen Size on the Structure and Mechanical Properties of PLLA/HAp Scaffolds for Oral Tissue Engineering Formed via TIPS-SL**
Magdalena Kobielarz, Małgorzata Gazińska, Anna Krokos, Anna Nikodem, Natan Marszałek, Agnieszka Chwiłkowska

072) #1145 **Bio-Inspired Synthesis of Silver Nanoparticles for Potential Application in Wound Regeneration**
Jakub Trzciński , Ewa Kijeńska-Gawrońska, Moein Zarei, Mudin Adem Husein

073) #1149 **The Smart Neuro-Ankle-Foot Home Trainer (SNAFT) to Improve Gait and Balance**
Y.B. Kang, P. Burgos, B. Snider

Category: S03.

074) #1028 **Detection of Single Nucleotide Polymorphism Variants in a Gene Model on a Porous Nitrocellulose Membrane**
Jui-Chuang Wu, Shang-Yu Wang

075) #1049 **LC Repeater-Enabled Flexible Body Sensor Network for Multisite Physiological Monitoring**
T.W. Wang

076) #1062 **Enhanced Triboelectric Properties of Graphene-Filled Poly(vinylidene difluoride-co-hexafluoropropylene) (PVDF-HFP) Nanofibers**
Chen-Hung Lee, Wei-Kang Huang, Meng-Fang Lin, Yi-Hua Kuo, Shih-Jung Liu, Hiroshi Ito

077) #1123 **Achieving High Cellular Bioactivity via Hydrothermal Surface Modification of β-Tricalcium Phosphate**
A. Cieślak, M. Żółtowski, A. Krakos, W. Szlasa, J. Kulbacka, R. Walczak, J. Detyna

Category: S05.

078) #1136 **Quantitative Thermographic Assessment of Postoperative Wound Healing Using Machine Learning-Based Predictive Modeling**
Igor Jaszczyszyn, Jakub Rochoń, Mateusz Turalski, Arkadiusz Gąsiński, Paweł Wiśniewski, Michał Grąt, Piotr Kalinowski

Category: S06.

079) #1030 **Development of Cellulose–Moss Films for Suppressing Methanogens and Absorbing Methane in Manholes**
Seungjun Lee