

GOLDEN ACADEMY

Message from the organizers

Dear Colleagues and Friends,

2025 Symposium for the Promotion of Applied Research Collaboration in Asia (SPARCA 2025) will be held in Okinawa, Japan, during Feb 28 - Mar 3 2025.

SPARCA stands for the Symposium for the Promotion of Applied Research Collaboration in Asia (SPARCA 2025), which is aimed at providing an international platform for the exchange and networking between top scientists, emerging young researchers, and students across a wide spectrum of materials science and engineering.



We would like to invite you to participate in SPARCA 2025. Your active participation is the key to the success of this conference.

Yours Sincerely,

SPARCA 2025 Committee

Asia Pacific Society for Materials Science (APSMR)

www.apsmr.org



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Conference organizing committee

CONFERENCE CHAIRS

Prof. Yiu Cheong LEUNG (University of Hong Kong)

Prof. Shih-Chieh HSU (Tamkang University)

Prof. Yen-Ho CHU (National Chung Cheng University)

Prof. Yung-Kang SHEN (Taipei Medical University)

Dr. Rudder WU (National Institute for Materials Science)

CONFERENCE PROGRAM DIRECTORS

Dr. Yingxue SONG (APSMR)

CONFERENCE SECRETARIAT

Ms. Yaru WU (APSMR)



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Conference topics

1. **Structure materials and Functional Coatings (metals, ceramics, and composites)**
2. **Materials for energy (saving, conversion, transfer, storage) and environment plus electrochemistry**
 - 2.1. **Photovoltaics**
 - 2.2. **Rechargeable Batteries and Fuel Cells**
 - 2.3. **Materials for Thermal Management and Thermal Energy Utilization**
 - 2.4. **Materials for Energy and Environmental Applications**
3. **Optics and Photonic Materials**
4. **Electronics, Magnetics and Nanomaterials**
5. **Polymer Science and Molecular Chemistry**
6. **Organic Materials and Bio-materials**
7. **Theory, Characterization and Computational Modeling of Materials**

	FRI, 02/28	SAT, 03/01	SUN, 03/02	MON, 03/03	
9:15 – 10:40	Pre-session technical and discussion forums on international collaboration (by invitation only)	Oral Presentation			
10:40 – 10:50		Coffee & Tea Break	Break		
10:50 – 12:05		Oral Presentation	Discussion Session		
12:10 – 13:10		Lunch Break			
13:10 – 14:30		Oral Presentation	Conference Excursion		
14:30 – 14:40		Coffee & Tea Break			
14:40 – 15:30		Oral Presentation			
15:30 – 16:30		Poster Session			
16:30 – 18:00	Conference Registration & Welcome Reception				
18:00 – 19:30		Conference Banquet			

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Presentation List

	FRI, 02/28	SAT, 03/01	SUN, 03/02	MON, 03/03
9:15 – 10:40	Pre-session technical and discussion forums on international collaboration (by invitation only)	1. Y.H. CHU 2. B. YAN 3. C.L. KAO	12. L. AN 13. W.D. PAN 14. S.H. CHAO	18. S.C. HSU (Online) 19. L.T. WU (Online) 20. J.K. WU (Online, TBC)
10:40 – 10:50		Coffee & Tea Break		Break
10:50 – 12:05		4. Y. CHEN 5. J. JIA 6. S.H. WU	15. K.I. LEE 16. Y.K. SHEN (Hybrid) 17. S. HONG	Discussion Session
12:10 – 13:10		Lunch Break		
13:10 – 14:30		7. S. NIWAYAMA (Hybrid) 8. M. YAGI 9. B. HAN	Conference Excursion	
14:30 – 14:40		Coffee & Tea Break		
14:40 – 15:30		10. D.M. SHIN 11. R.T. WU		
15:30 – 16:30		Poster Session (13 Presenters)		
16:30 – 18:00		Conference Registration & Welcome Reception		
18:00 – 19:30		Conference Banquet (Approx. 1.5 hrs)		

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Presentations for SPARCA 2025

SATURDAY 03/01

1. Functional Ionic Liquid Materials (Y.H. CHU)
2. Integrating Nanoplastics Toxicity into Nanotoxicology through Data Mining and Machine Learning (B. YAN)
3. On-bead reduction with diaminobenzoate resin prepares peptidols (C.L. KAO)
4. Ultralow thermal conductivity and the transport mechanism in simple crystal AgTlI₂ (Y. CHEN)
5. Anti-inflammatory application of metal-based nanostructures (J. JIA)
6. The Recycle of Agricultural Wastes, Chicken Feather and Eggshell Membrane, by Biodegradation (S.H. WU)
7. Efficient, Practical, and Environmentally Benign Selective Monohydrolysis of Symmetric Diesters (S. NIWAYAMA)
8. Material hunting of advanced metal oxide films as electro- and photoelectrocatalysts for water splitting using a mixed metal-imidazole casting (MiMIC) method (M. YAGI)
9. Machine Learning-Aided Computational Design of Functional Nanomaterials for Renewable Energy System Applications (B. HAN)
10. Electromechanical and Electrochemical Energy Harvesting from Environmental Moisture (D.M. SHIN)
11. Materials for Thermal Insulation and Thermal Management (R.T WU)

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POSTER SESSION

- P1. Development of a Vanadium-Chromium Redox Flow Battery for Future Large-Scale Energy Storage (X.Y. HUO)
- P2. A salt concentration-gradient cationic hydrogel based moisture-enabled electric generator for sustainable green energy production (E. KIM)
- P3. Enhancing High-Current-Density Lithium Metal Batteries via High Conductive Additive (W. DONG)
- P4. High Specific Capacity and Cycle Performance with Layer-Stacked SiO_x@CNT as Anode in Lithium Ion Batteries (Z.F. CHANG)
- P5. Click assembly of small-molecule, zwitterionic materials exhibiting LCST thermo-responsive property in water (Y.Q. QIU)
- P6. Small-molecule, zwitterionic materials concomitantly exhibiting both LCST and UCST thermo-responsive property in water (W.Y. CHEN)
- P7. Molecular Engineering of Quinoxaline-based Donor–Acceptor Polymers for High-Efficiency Organic Solar Cells (S.Y. LEE & J.A. PRAYOGO)
- P8. Gradient conducting polymer surfaces with netrin-1-conjugation promote axon guidance and neuron transmission of human ipsc-derived retinal ganglion cells (J.W. SHE)
- P9. Surface Functionalization of Cu₂O Polyhedra with Different Halide-Substituted Phenylacetylenes for Photocatalytic Activity Comparison (H.M. HUNG)

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- P10. Random Solute Distribution Effect on Mechanical Behavior in High-Entropy Alloys: A Crystal Plasticity Finite Element Study (H.W. CHANG)
- P11. Diffusion of Lithium Ions in Graphene Interlayers via Machine Learning-Based Kinetic Monte Carlo Methods (Y.A. CHEN)
- P12. Lattice Distortion Effect on the Dislocation Peierls Stress in Nickel-Tungsten Alloys Using Average Atomic Potential and Nudged Elastic Band (S.H. HUNG)
- P13. Theoretical Investigation for the Hydrogen Evolution Reaction Enhancement of the Two-Dimensional TMD Materials via Lithium Intercalation (J.C. KAO)

SUNDAY 03/02

12. Liquid Fuel Cells: Powering the Future (L. AN)
13. Advancing High-Energy-Density Metal-Based Ion Batteries for Next-Generation Energy Storage (W.D. PAN)
14. Fabrication and Application of Micro-Nano Structures Based on Sapphire Substrate (S.H. CHAO)
15. A Low-Density High-Performance Thermal Insulation Material (K.I. LEE)
16. Effect of Ti6Al4V alloy surface modification on osseointegration using ultrashort pulse laser (Y.K. SHEN)
17. TBC (S. HONG)

MONDAY 03/03

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18. Anodized Aluminum Oxide/Nano Gold Core-Silver Shell Structures for Surface-Enhanced Raman Scattering Substrates in Biosensor Applications (S.C. HSU)
19. Materials Challenges and Design Strategies for Thermal Energy Storage (L.T. WU)
20. TBD (J.K. WU)