GOLDEN ACADEMY

Message from the organizers

Dear Colleagues and Friends,

2026 Symposium for the Promotion of Applied Research Collaboration in Asia (SPARCA 2026) will be held in Okinawa, Japan, during Feb 26 - Mar 1 2026.

SPARCA stands for the Symposium for the Promotion of Applied Research Collaboration in Asia (SPARCA 2026), 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 2026. Your active participation is the key to the success of this conference.

Yours Sincerely,

SPARCA 2026 Committee

Asia Pacific Society for Materials Science (APSMR)

www.apsmr.org

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Conference organizing committee

CONFERENCE CHAIRS

Prof. Dangyuan LEI (City University of Hong Kong)

Prof. Rong-Ho LEE (National Chung Hsing University)

Dr. Rudder WU (National Institute for Materials Science)

CONFERENCE PROGRAM DIRECTORS

Dr. Yingxue SONG (APSMR)

CONFERENCE SECRETARIAT

Ms. Yaru WU (APSMR)

APSMR RESEARCH·ASIA PACIFIC SOCIETY FOR MATERIALS

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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

<table>
<tr><th></th><th>THU, 2/26</th><th>FRI, 2/27</th><th>SAT, 2/28</th><th>SUN, 3/1</th></tr>
<tr><td>9:30 – 10:50</td><td rowspan="3">Pre-session technical and discussion forums on international collaboration (by invitation only)</td><td colspan="2">Oral Presentation</td><td>Online Presentation (Excursion: 10:30~)</td></tr>
<tr><td>10:50 – 11:00</td><td colspan="2">Coffee & Tea Break</td><td>Break</td></tr>
<tr><td>11:00 –12:20</td><td colspan="2">Oral Presentation</td><td>Online Session</td></tr>
<tr><td>12:20 – 13:30</td><td rowspan="6"></td><td colspan="2">Lunch Break</td><td>Lunch Break</td></tr>
<tr><td>13:30 –14:50</td><td colspan="2">Oral Presentation</td><td rowspan="6">Discussion Session (~17:00)

Excursion ends 18:45</td></tr>
<tr><td>14:50 –15:00</td><td colspan="2">Coffee & Tea Break</td></tr>
<tr><td>15:00 – 17:00</td><td colspan="2">Oral Presentation</td></tr>
<tr><td>17:00 – 18:00</td><td>Poster Session</td><td rowspan="2"></td></tr>
<tr><td>18:00 –19:00</td><td>Conference Registration & Welcome Reception</td><td></td></tr>
<tr><td>19:00 –20:30</td><td></td><td>Conference Banquet (Approx. 1.5 hrs)</td><td></td></tr>
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Presentation List

	THU, 2/26	FRI, 2/27	SAT, 2/28	SUN, 3/1
9:30 – 10:50	Pre-session technical and discussion forums on international collaboration (by invitation only)	1. D.H. KIM 2. J.H. CHOI 3. M.H. TSAI	14. L.L. LAI 15. R. KOBAYASHI 16. S. KIM	Online Session (Excursion: 10:30~) 25. Y.K. SHEN 26. D. LEI
10:50 – 11:00		Coffee & Tea Break		Break
11:00 – 12:20		4. R.H. LEE 5. Y.H. KIM 6. TBA	17. K.J. CHOI 18. S. YAO 19. K. NOMURA	Online Session
12:20 – 13:30		Lunch Break		Lunch Break
13:30 – 14:50		7. H.T. CHEN 8. R.H. JIN 9. H.L. CHEN	20. C.Y. CHU 21. M. KOTSUGI 22. F.C.C. LING	Discussion Session (~17:00) Excursion ends 18:45
14:50 – 15:00		Coffee & Tea Break		
15:00 – 17:00		10. H.C. TSAI 11. T.Y. WU 12. J.K. CHEN 13. C.Y. WANG	23. S. SHARMIN 24. L.T. WU	
17:00 – 18:00		Poster Session		
18:00 – 19:00	Conference Registration & Welcome Reception			
19:00 – 20:30		Conference Banquet (Approx. 1.5 hrs)		

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Presentations for SPARCA 2026

FRIDAY 02/27

1. Harnessing Chirality–Spin Interactions for Advanced Energy and Biomedical Applications (D.H. KIM)
2. Mixing, Demixing and Morphology of molecular aggregates in binary system (J.H. CHOI)
3. A new phase inversion mechanism in refractory high-entropy superalloys: Volumetric phase inversion driven by an asymmetric miscibility gap (M.H. TSAI)
4. Synthesis of Triazine-Based Covalent Organic Frameworks for Energy and Electrocatalytic Applications (R.H. LEE)
5. Theory of Static Electricity and Triboelectric Series (Y.H. KIM)
6. TBA
7. Computational study on electrochemical reduction of nitrogen to ammonia on SACs supported on thiophene-linked porphyrin (H.T. CHEN)
8. Development of Chiral Materials Based on Polyethyleneimine (R.H. JIN)
9. Computational Screening of Single-Atom Metal Nanosheets for Electrochemical Cyanide Reduction (H.L. CHEN)
10. Polybenzimidazole Membranes Incorporating Covalent Organic Frameworks and Covalent Organic Polymers: Tailoring Ion Selectivity, Conductivity, and Proton Exchange for Energy Applications (H.C. TSAI)

11. Dual conjugated polymer electrochromic devices with high-contrast and fast electrochromic switching (T.Y. WU)
12. Manipulation of adsorption and desorption of carbon dioxide on core/shell nylon-6/poly(N,N-dimethyl aminoethyl methacrylate) fibrous membrane with frequency under electric polarization (J.K. CHEN)
13. Engineered Mineralized Lysozyme for Combating Bone Infection and Osteoclastic Bone Resorption (C.Y. WANG)

POSTER SESSION

P1. Reactive oxygen species–responsive Pluronic F127/hyaluronic acid hydrogel for targeted doxorubicin delivery and radiotherapy in glioblastoma (T.Y. WU)

P2. Polycaprolactone Microparticle–Nanoparticle Platform for Hemin Driven Redox Priming and Doxorubicin Delivery in Lung Cancer (C.H. CHEN)

P4. Heparin (HEP)-Modified Cotton for Oral Cancer Saliva Testing: Viscosity Reduction and MMP Detection Performance (C.W. SU)

P5. Development of Heparin Modified Cotton Filters and Multidimensional Characteristic Analysis of Exosomes for Pancreatic Cancer Liquid Biopsy (C.C. HUANG)

P6. Reactive Molecular Dynamics Study on the Proton Conductivity of the Sulfonated PET-Based Proton Exchange Membrane (M. NAKAZAWA)

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P7. Molecular Dynamics Study on the Encapsulation of Ferulic acid in Lipid Nanoparticles (E. NAGAHAMA)

P8. In Silico Drug Discovery of Macrocyclic Compound Derivatives for Mutant BMPR2 in Pulmonary Arterial Hypertension (K. ENDO)

P9. In-cycle Argon Plasma assisted ALD for IGZO (T. KIM)

P11. X-ray-Induced Imaging and Anticancer Application of Aptamer-Conjugated Tin Oxide Nanoparticles (H. SHIN)

P12. Synthesis of Y_2O_3:Eu@SiO_2 Core–Shell Nanoparticles for X-ray–Induced Photodynamic Therapy (D. KIM)

P13. Breakdown of Hubbard interaction correction in hexagonal MoS2 (J. SEO)

P14. Accelerating Adsorbate Structure Exploration for Free Energy Diagrams via Machine-Learning-Assisted Structure Relaxation (C. JEONG)

P15. Synthesis of A Highly Conductive Poly(3,4-ethylenedioxythiophene) Nanofilm with Size-Controllable Nano-holes (S.B. JEON)

P16. Selective Electrochemical Conversion of Cyanide to Methane and Ammonia on Blue Phosphorus–Supported TM–N3 Single-Atom Catalysts: Insights from DFT Calculations (C.L. CHANG)

P17. Development of Ultra-low Density Aerogel-based Thermal Insulation Material and its Application for Industrial Furnace Insulation Coatings (R. WU)

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SATURDAY 02/28

14. Synthesis of triazine-based macrocycles and study their porous properties (L.L. LAI)
15. Interatomic Potentials and Nonequilibrium Molecular Dynamics for Ion Transport Analysis in Solid Electrolytes (R. KOBAYASHI)
16. Synthesis of A Highly Conductive Poly(3,4-ethylenedioxythiophene) Nanofilm with Size-Controllable Nano-holes (S. KIM)
17. Is Precise Current Matching Truly Optimal for Perovskite/Silicon Tandem Solar Cells Under Real-World Operating Conditions? (K.J. CHOI)
18. Elastocaloric Cooling Technology for Air Conditioning and Dehumidification (S. YAO)
19. Development of Biobased Polyesters, and the Quantitative Chemical Recycling (K. NOMURA)
20. Low-Intensity Magnetic-Field-Directed Phase Transitions in Block Copolymer Nanohybrids (C.Y. CHU)
21. From Spectra to Insight: Unsupervised Manifold Learning for Scalable XAS Interpretation (M. KOTSUGI)
22. High-k oxides fabrication via defect engineering (F.C.C. LING)
23. Beyond Error Bars: Geometric Diagnostics of Noise and Instability in Materials Spectroscopy (S. SHARMIN)

24. Advanced Aerogel Materials for Thermal Management: Enabling Long-Distance Transportation and Storage of Liquid Hydrogen (L.T. WU)

SUNDAY 03/01

25. Performance evaluation of innovative 4D self-deformation matrix and research on its deformation recovery characteristics (Y.K. SHEN)
26. Plasmonic manipulation of dark excitons and valley polarization in monolayer semiconductors (D. LEI)