

Aerospace / Ocean

The Aerospace and Ocean Cluster Technical Symposium explores emerging technologies that are transforming aerospace, space exploration, ocean engineering, and autonomous systems. As humanity expands its presence beyond Earth while addressing increasingly complex challenges in maritime environments, the symposium highlights innovative research that advances the design, operation, intelligence, and resilience of next-generation aerospace and ocean systems.

The symposium features two podium sessions and one poster session showcasing recent advances in space systems and exploration, aerospace structures and aerodynamics, autonomous aerial and maritime vehicles, ocean and coastal engineering, robotics, artificial intelligence, advanced sensing, digital engineering, and computational modeling. Presentations span fundamental science, engineering innovation, and real-world applications from academia, government laboratories, and industry, emphasizing interdisciplinary approaches that bridge aerospace, ocean, manufacturing, and intelligent systems.

Supporting contributions are provided by the Mechanical, Aerospace, and Naval Engineering (C-3 MAN), Civil and Environmental Engineering and Architecture (C-5 CEA), and Industrial, Manufacturing, and Systems Engineering (C-8 IMD) Technical Groups, along with the Astronautics and Space Engineering (A-1 ASE) and Ocean Science and Engineering (A-3 OSE) Affiliated Professional Societies (APS). Together, these communities foster interdisciplinary collaboration and the exchange of ideas that advance aerospace, space, and ocean engineering.

Chair



Martin Jun

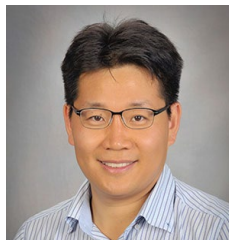
Purdue University

Co-chairs



Chang-Hwan Choi

Stevens Institute of
Technology



Cha Bum Lee

Texas A&M University

Aerospace and Ocean

@ Oakmont A

Thursday, Aug 6 5:00 – 6:45pm

Aerospace and Ocean Cluster Session I

Chair: Martin BG Jun (Purdue University), Chang-Hwan Choi (Stevens Institute of Technology) and ChaBum Lee (Texas A&M University)

Time	Title and Speaker
5:00	The Role of Submerged Aquatic Vegetation in Coastal Protection and Resilience Hyun Dong Kim (Old Dominion University)
5:25	Performance Evaluation of Transport Algorithms in the General Ocean Model (GOM) (Invited) Jungwoo Lee (East Carolina University)
5:50	Performance Prediction of an Electro-Optical Payload Focus Control System Based on Artificial Neural Networks Jingwang Kim (Korea Aerospace Research Institute)
6:05	Apophis 2029: What Happens When an Asteroid Passes Close to Earth? Yaeji Kim (University of Maryland)
6:20	Beyond the Cradle: Structural Foundations for the First Step of Human Civilization on the Moon Simon Shim (Active Design Group)

Aerospace and Ocean

@ Oakmont A

Friday, Aug 7 3:15 – 5:00pm

Aerospace and Ocean Cluster Session II

Chair: Martin BG Jun (Purdue University), Chang-Hwan Choi (Stevens Institute of Technology) and ChaBum Lee (Texas A&M University)

Time	Title and Speaker
3:15	Generating Machining Sound Using Operational Context Invited Eunseob Kim (Wayne State University)
3:40	Laser Powder Directed Energy Deposition of Al6061: Defect Evolution and Processing Window Development Chang-Hwan Choi (Stevens Institute of Technology)
4:05	Fabrication and Synthesis of the Nickel Cobalt Sulfide Nanowire Woven Kevlar Fiber and Polyester Composites Hyungwook Park (Ulsan National Institute of Science and Technology)
4:10	Knowledge-Graph Integrated Agentic Physical/Shadow AI for Autonomous Ships: A Hybrid Approach with LLM and Ontology Geonwoo Kim (POSTECH)
4:35	Diffusiophoresis-Driven Shear Enables Non-Invasive Biofilm Removal from Confined Geometries Sangwoo Shin (The State University of New York, Buffalo)

Poster Session

@ International
Ballroom II

Friday, Aug 7 5:00 – 6:45pm

Aerospace and Ocean Cluster Poster Session

Chair: Martin BG Jun (Purdue University), Chang-Hwan Choi (Stevens Institute of Technology) and ChaBum Lee (Texas A&M University)

P1	Geometry-Controlled Deployment Energy in FW-TAK Kirigami Yeongeun Ki (Purdue University)
P2	Indigenous Development of High Resolution Optical Camera for CAS500(Compact Advanced Satellite 500) -1 and -2 in Korea Deogyu Lee (Korea Aerospace Research Institute)
P3	Structural Reorganization of the Global Container Shipping Network under Geopolitical Risk: The Case of the Red Sea Crisis Suyeon Park (Inha University)
P4	CABLESSail: Solar Sail Momentum Management Using Shape Control Soojeong Lee (University of Minnesota – Twin Cities)
P5	Interpretable Prediction of Stem-to-Stem Contact-Regime Boundaries in Submerged Aquatic Vegetation using a Physics-guided Teacher-Student Surrogate Framework Sebin Oh (Old Dominion University)
P6	μLIBS : ELEMENTAL MAPPER, IN SITU PLANETARY EXPLORATION Dong Jae Lee (Purdue University)
P7	Effectiveness of Mold and Dampness Interventions for Occupant Health San Jin (University of Texas, Arlington)