JANNAF
INTERAGENCY PROPULSION COMMITTEE

72nd JPM | PIB Meeting | 53rd CS | 41st APS
41st EPSS | 35th ESHS | 19th MSS | 15th LPS | 14th SPS
Joint Subcommittee Meeting

Call for Papers

LPS / SPS Addendum

Winter Meeting (dates TBA) | Spokane, WA

LPS / SPS Abstract Deadline:
27 June 2025

Image Credit: Lockheed Martin

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What? Winter JANNAF Interagency Propulsion Committee meeting

When? To be announced soon

Where? Spokane, Washington

Unclassified: Spokane Convention Center

Classified: Fairchild Air Force Base

Meeting Chair:
Dr. Robert A. Baurle, Air Force Research Laboratory, Wright-Patterson AFB, Ohio

The following subcommittees will meet:

JANNAF Propulsion Meeting (JPM)
Programmatic and Industrial Base (PIB)
Combustion (CS)
Airbreathing Propulsion (APS)
Exhaust Plume and Signatures (EPSS)
Energetic Systems Hazards (ESHS)
Modeling and Simulation (MSS)
Liquid Propulsion (LPS)
Spacecraft Propulsion (SPS)

For additional information, visit the Winter meeting page.

WHY SHOULD YOU ATTEND A JANNAF MEETING?

[According to previous JANNAF Meeting attendees]

- To collaborate with colleagues from other labs and companies
- To network with other scientists
- To see presentations on a wide variety of subjects
- To get great exposure to the industry as a young professional
- To present my limited distribution work to a technical audience
- To stay informed about changing technologies

ATTENDANCE REQUIREMENTS

The overall security level of the meeting is **Secret** due to the inclusion of classified sessions in the program. Unclassified sessions will be held at the Spokane Convention Center; classified sessions will be held at Fairchild Air Force Base, approximately a 30 minute drive from the convention center. Attendance is restricted to U.S. citizens employed by a DoD, DoE, or NASA facility, or with a DoD, DoE, or NASA contractor facility, and eligible for receipt of militarily-critical technical data. No foreign nationals are permitted to attend.

To attend the classified sessions, attendees must also possess a personal security clearance of at least Secret with a need-to-know in the areas of rocket, missile, space, aircraft, or gun propulsion.

All attendees will need to have an active JANNAF account. Instructions can be found here.

Non-government attendees (including contractors, consultants, and universities) will need the following:

1. Current government contract or certification from a Sponsoring Government Official
2. Employer's DD 2345 certification number for receipt of militarily-critical technical data

   DD 2345: For additional information, contact the Joint Certification Program Office (JCP) at 1-800-352-3572 or visit their web site at https://www.dla.mil/HQ/LogisticsOperations/Services/JCP/.

Questions concerning attendance eligibility and JANNAF account access should be directed to Mionna Sharp (msharp@erg.jhu.edu) or by calling (410) 992-7300 ext. 224.

REGISTRATION

Preliminary registration information is provided on the Winter meeting website with full details available when registration opens in early September. All attendees, including presenters, must register and pay the registration fee.

PURPOSE

The JANNAF Interagency Propulsion Committee focuses on the technology, development, and production capabilities for all types of propulsion systems and energetics for tactical, strategic and missile defense rockets and missiles, for space boost and orbit transfer, for in-space propulsion, and for gun systems. JANNAF provides a forum for discussion of propulsion issues, challenges, and opportunities across the Military Departments, Defense Agencies and NASA. JANNAF subcommittees focus their resources on technical issues of interest to the JANNAF agencies. JANNAF accepts papers that are unclassified/unlimited and unclassified/limited for all meetings; and up to classified Secret as announced in the specific meeting's announcement and call for papers.

JANNAF IS SOLICITING ABSTRACTS FOR BOTH PAPERS AND POSTERS.

ABSTRACT SUBMITTAL GUIDANCE

- The technical areas to be addressed are defined in this announcement. Individuals who wish to submit an abstract should carefully review the topic areas listed on pages 7 - 17.
- At this time, abstracts are only sought for LPS and SPS topics. Abstracts are no longer being solicited for JPM, PIB, CS, APS, EPSS, ESHS, or MSS.
- **The deadline date for submission of the online Abstract Form is 27 June 2025**. If you need to submit an abstract after this date, please contact ERG (meetings@erg.jhu.edu).
- **Your organization may require abstracts to be processed through an approval system prior to submission. This process takes additional time, so authors should plan accordingly to meet the abstract deadline date.**
- Submitting an abstract represents an agreement to **submit a final paper for publication four weeks prior to the meeting** (date TBA), attend the meeting, and deliver a 25-minute presentation or a poster. The JANNAF Policy of "No Paper, No Podium" will be in effect for this meeting, with the exception of posters.
- **All abstracts are to be submitted via the JANNAF Abstract Submittal Site**. A JANNAF account is NOT required to submit an abstract.
- Submit only unclassified abstracts with content that is distribution statement A (approved for public release) or C (distribution authorized to U.S. Government and its contractors). **Abstracts will NOT be published** and will only be used by the program committee members for selection and scheduling purposes.
- You will be asked to indicate your presentation's anticipated Distribution Statement when completing required fields on the Abstract Submittal Site.
  - » Dissemination of information from JANNAF presentations is primarily relegated to either Statement A (approved for public release) or Statement C (Distribution authorized to U.S. Government and their contractors).
  - » To properly secure them, presentations marked with Statement B (U.S. Government agencies only), Statement D (U.S. Department of Defense and U.S. DoD Contractors only), or Statement E (U.S. Department of Defense components only), must be placed at the beginning of session agendas.
  - » Papers may have different Distribution Statements than their corresponding presentations.
- The Title field on the Abstract Submittal Site is limited to 150 characters including spaces.
- Only a primary author should be listed when submitting your abstract, unless the presenting author is someone other than the primary author. If accepted, there is no limit to the number of authors when submitting your final paper and all names will be included in the author list when the paper is published in JDOC.
- Abstract length is limited to 300 words, and may not include tables or figures. State the objective of the work. Describe the scope, method of approach, and any new advances in the state of the art. Highlight important conclusions, and include a brief summary of the data used to substantiate them.
- Indicate confirmation of required resources when completing the required fields on the Abstract Submittal Site to ensure availability of time, funding, and support for your participation in the meeting. This is NOT related to security review/approval to submit the abstract or submit/present the paper. A "no" response to this question will place your abstract in placeholder status.
- If the abstract deadline is approaching and you have not received approval to release your abstract, please contact the ERG meetings team (meetings@erg.jhu.edu) for guidance on submitting a placeholder.
- When filling in the form in the Abstract Submittal Site, if there is required information that you do not have, you have the ability to save your form and return once you have obtained the missing information to complete and submit the form.

ABSTRACT SUBMITTAL INSTRUCTIONS

JHU WSE ERG accepts only **electronic submission** of abstracts, presentations, and papers. **Abstracts must be submitted only via the Abstract Submittal Site:**

1. To access the Abstract Submittal Site, go to: https://jannaf.org/abstractstart. You may submit an abstract ***with or without*** an active JANNAF Secure Portal Account. Contact meetings@erg.jhu.edu if you require assistance.
   - » If you are submitting an abstract without an active JANNAF Account, and have not received a validation code (from info@erg.jhu.edu) within 30 minutes after you have submitted a request, after confirming that the message is not in your junk/spam folder, email meetings@erg.jhu.edu.
   - » If you are submitting an abstract without an active JANNAF Account, you may use your validation code to submit more than one abstract.
2. After reaching the Abstract Landing Page, select the Winter meeting, and then click the dark blue "Create new abstract" button to create a new abstract or edit/submit a draft abstract.
   - » Once you have reached the Submission Details tab, you will have the option to save the form as a draft and return to complete it at a later time.
3. When all required fields have been completed accurately, submit your abstract. You will have the opportunity to review your responses before you submit.

LPS/SPS AUTHOR TIMELINE

Additional dates will be added when meeting dates are announced.

Date	Weeks to Meeting	Action
27 June 2025	--	Deadline for receipt of abstracts via Abstract Submittal Site.
28 July 2025	--	Approximate date for committee decision emails sent to authors.
15 Aug 2025	--	Deadline for changes to Meeting Invitation and Preliminary Program.
2 Sept 2025	--	Approximate date for Meeting Invitation, Preliminary Program, and registration materials forwarded to propulsion community.
TBA	9	Deadline for award nominations and submittal of Student papers for Best Student Paper award consideration
TBA	6	Deadline for submission of changes to the Final Program
TBA	4	Last day for discounted Early registration fee.
TBA	4	Deadline for receipt of papers and publication clearance forms. Papers not received by this date may be removed from the program.
TBA	2	Deadline for reservations at Doubletree by Hilton Spokane City Center.
TBA	2	Last day to pre-register online (registration form submission and registration fee payment). Late registration required thereafter.
TBA	2	Deadline for receipt of presentations
TBA	0	Start date for JPM/PIB/CS/APS/EPSS/ESHS/MSS/LPS/SPS Joint Subcommittee Meeting

MEETING SUBCOMMITTEES & MISSION AREAS

Click on the Mission Area of interest in the chart below to jump to that section in this Call for Papers.

Mission Area	LPS	SPS
I	Liquid Engine Systems	Chemical Propulsion
II	Liquid Combustion Subsystems and Components	Electric Propulsion
III	Liquid Propellant Feed and Pressurization Systems	Micro / Nano Spacecraft and MicroNewton Propulsion
IV	Advanced Materials for Liquid Propulsion Applications	Future Technologies
V	Rotating Detonation Rocket Engines	
VI	Propulsion-Induced Environments and Structural and Thermal Loads	

LPS

LIQUID PROPULSION SUBCOMMITTEE

JHU WSE ERG Technical Representative
Mr. Nick Keim / JHU WSE ERG / Columbia, MD
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The JANNAF 15th Liquid Propulsion Subcommittee meeting will include sessions in six general technical areas: liquid engine systems; liquid combustion subsystems and components; liquid propellant feed and pressurization systems; advanced materials for liquid propulsion applications; rotating detonation rocket engines; and propulsion-induced environments and structural & thermal loads. Papers are solicited that will aid in the design, development and test of efficient and stable liquid propulsion systems. Please contact the JHU WSE ERG Technical Representative for LPS with questions about the LPS mission areas.

Mission Area I:
Liquid Engine Systems

System Models and Data Integration: Analytical tools, system models, and methodologies that support digital engineering throughout the liquid engine lifecycle. Specific interest in analyses or data integration that enable greater comprehension of system interactions and dependencies; Model-Based Engineering (MBE)architectures, design verification and traceability, risk and margin management, test data analysis, and prediction of integrated-system performance, mass, and cost.

Operability, Serviceability, and Reusability: Research associated with rapid operations, maintenance, and increased asset life. Architecture Con-Ops, functional analysis, and designs that improve the efficiency of launch operations or develop a capability for in-space operations.

- Operability and Serviceability - technologies and designs that increase automation, provide resilient/launch-on-demand capabilities, or enable use over a wider range of launch environments and applications. This can include technologies to address rapid or minimized cleaning/inspection, integrated diagnostics, ability to field remove-and-replace, or approaches to improve launch availability.
- Modularity - Engine architectures, technologies, and designs that increase the applicability of unique propulsion systems across small, medium and large launch vehicles (scalability), applicability to various mission sets (Commercial launch, Rapid Launch, etc.). Furthermore, approaches to dramatically reduce development timelines and amortize cost by increasing economies of scale of liquid rocket engines.
- Reusability - Engine designs for high rate flight operations, long in-space missions; 25+ engine firings, refueling operations, system diagnostics, and servicing of critical components.

Liquid Engine Systems for Launch Stages, Orbital Transfer Vehicles, and Landers: Design, development, test, and evaluation approaches for liquid propellant rocket engines applicable landers, launch vehicle stages, nuclear-thermal propulsion systems, and orbital transfer vehicles. Topics of interest include reliability, fabrication, testing, operations, and the affordable integration of these areas. Particular focus areas include autogenous pressurization, deep throttling capability, cryogenic reaction control systems (RCS), wireless instrumentation and controls, and cryogenic fluid management for in-space applications. Strategies for integrated stage testing, flight testing, and flight system certification are also relevant. For human-rated systems, additional emphasis is placed on functional requirements, design modifications, and advanced fabrication, assembly, and inspection methods. Approaches for meeting government (NASA, FAA, and OCST) safety and reliability requirements—such as fault tolerance, fault detection, isolation, and recovery, crew interaction, reliability modeling, and qualification/certification testing—are of particular interest. Applications span commercial space, NASA and USSF specific mission systems, Lunar and Mars landers, and in-space transportation architectures requiring efficient cryogenic propellant handling.

Liquid Rocket Engine (LRE) Development History: Papers addressing the important process which LRE have gone through in the course of their development. Particular subjects of note are successes, failures, mishaps, and lessons learned. Topics can be detailed in their information or can provide a general overview of the program. Papers are not limited to flight systems; testbeds, proof-of-concepts, and R & D programs are encouraged as well.

Test Practices, Standards, and Facilities: Industry-consensus best practices and standards for the test and evaluation of liquid engines, components and propulsion/vehicle interaction. Status, capabilities, and operation of government and commercial rocket engine test facilities. This includes training, problem reporting, failure investigation, lessons learned, safety, FOD control, process control, and infrastructure improvements to meet aggressive technical goals. Concepts and innovations for engine life testing, engine fault detection, flight qualification testing practices, data reduction and uncertainty analysis methodologies, and other test needs to meet future demands are of interest.

Mission Area II:
Liquid Combustion Subsystems and Components

Thrust Chamber Assembly (TCA) Design and Applications: This mission area addresses the components and subcomponent features required in all sizes of liquid rocket engines. Components include main combustion chambers, preburners, gas generators, nozzles, high temperature nozzles, and their subcomponent features including items such as injectors, stability aids, and coolant passages. Papers on combustion devices are being

sought that cover all aspects of design analysis, component test results, test rig development, diagnostic techniques, and novel design features that are being made possible by manufacturing advances.

Hydrocarbon Fuel Properties, Performance, and Specifications and Processes: Papers addressing chemical composition, physical properties, fit-for-purpose quality, cooling and combustion performance, and specification for various hydrocarbon fuels, including RP-1/RP-2, methane, LNG, JP-10 and other high energy density propellants, and alternatively derived fuels (F-T, fIPK, ATJ, etc.); experimental and numerical efforts to characterize operational performance of these fuels in terms of cooling, combustion, and other application-specific processes.

Combustion Stability: Papers addressing design and performance challenges, modeling and simulation techniques, and scaling methods associated with combustion stability in main combustion chambers, preburners, and gas generators for all sizes of liquid rocket engines.

Liquid Injection Systems: The injection system of liquid rocket engines is critical to system performance. This mission area seeks papers describing new injector concepts, the physical processes required to understand injection concepts (including supercritical jets, sprays, and droplets), and methods to determine injector performance and stability.

Modeling and Simulation: Recent advances in modeling and simulation bring forward new capabilities to performance prediction and design of combustion devices. Papers are sought that look at the recent developments, new techniques, results of implementation or comparison with tests. Aspects covered include, but are not limited to: integrated models, injector element dynamics, hot gas flow fields, heat transfer, cooling mechanism, modeling of conventional and novel additively manufactured design features relative to coolant passages, hot wall features, injectors, etc.

Advanced Liquid and Gel Propellants: Papers are sought addressing advanced liquid and gel propellants and the development of supporting technologies such as “green” propellants, fuel management systems and lightweight tankage systems to advance state-of-the-art chemical capabilities.

Hybrid Rocket Engines: Papers addressing hybrid rocket engine systems and the combustion process in these systems.

Mission Area III:
Liquid Propellant Feed and Pressurization Systems

Turbomachinery Design and Applications: Turbopump-fed liquid rocket engine systems require the use of high speed and high-performance rotating machinery. Turbomachinery for this application requires support from a wide range of technical disciplines. Technical areas typically considered include the design, analysis, and testing of inducers, impellers, turbines, seals, bearings and structural elements. Papers on liquid rocket engine turbomachinery are being sought that cover all aspects of design, analysis, code development, component test results, test rig development, diagnostics techniques, and system level testing.

Pressurization and Feed Subsystem Design and Applications: This area covers all aspects of design, analysis and testing of the propellant feed system and engine system specific elements. The propellant feed system is composed of tanks, major component lines, pressurization systems, ducts, feed system control valves, and suppression systems. Engine system specific elements include ducts, flow measurement devices and valves. Papers are being sought which address design, analysis, tool development, diagnostics techniques, and testing of propellant feed system elements and engine system specific elements.

Electric Pump Systems: Advances in battery technology and electric motor technology have made it possible to use electric motors to drive propellant pumps. Electric pump systems have applications in rocket engines and propellant feed systems. Papers on electric pump systems are being sought that describe the unique flight system requirements, architecture, and design constraints. Also encompassing all aspects of the pump design, analysis, control system design, component test results, test rig development, diagnostics techniques, and system level testing.

Mission Area IV:
Advanced Materials for Liquid Propulsion Applications

Material Applications in Liquid Rocket Engines: Papers are sought addressing advanced materials and processing for liquid rocket propulsion systems, including the following Eight areas:

1. Material technologies resulting in significant thrust-to-weight ratio increases and/or performance advantages over state-of-the-art capabilities
    - » Lightweight, high-temperature nozzle materials
    - » Polymer matrix composites (PMCs) for lightweight components and structures
    - » PMC resin development for high-temperature or cryogenic environments
    - » Materials for lightweight lines, ducts, valves, and tanks
    - » Metals, ceramics, and composites for component applications
    - » Materials and production methods for lower lifecycle costs
    - » Near net shape production for components and structures
    - » Modeling of materials for liquid rocket engines

2. **Materials for Commercial Space Transportation:** The recent shift by NASA to commercial space transportation to the ISS under COTS has created the need for low-cost, high performance material solutions for a new generation of space vehicle engines. Papers are sought addressing areas such as:
    - » Materials selection criteria
    - » Material characterization requirements
    - » Flight qualification standards for materials
    - » Risk management related to materials selection

3. **Heavy Lift Launch Vehicles:** A need for heavy lift launch vehicles has been identified for future space exploration and other missions. Such a launch vehicle will likely require engines in the 1 million pound thrust class as well as smaller upper stage and other liquid-fueled engines. Papers are sought addressing materials and processes for:
    - » Manufacturing and production of new liquid fueled engines
    - » Integrated health management for materials and structures
    - » Lightweight tanks and composite ducts
    - » Materials for reusable engines
    - » Concepts for material solutions that optimize the entire propulsion system for improved performance

4. Nanotechnology for Liquid Propulsion Systems: Application of new nanomaterials to liquid propulsion systems. Papers are sought to address:
    - » Nanomaterials and nano processing to improve strength, conductivity, density, modulus, and other properties
    - » Concepts of how to integrate nanotechnology into future liquid-fueled rocket engines
    - » Nanotechnology areas that may have high payoffs for liquid rocket engine systems

5. Materials for Green Fuel Engines: new engines with "green" fuels such as methane and ethanol as well as newer fuels that go beyond the traditional definition of green fuels have been proposed. Methods to address the compatibility of these fuels and their combustion products with current and potential future engine materials. Papers are sought to address:
    - » Environmental corrosion issues for both the fuels and the combustion products
    - » Compatibility test methods
    - » Materials concepts for future green fueled engines
    - » Concepts for future engines and materials for them

6. Turbomachinery Materials: Turbomachinery require new materials or coatings to address new engine cycles such as oxygen-rich staged combustion. Materials to address chemical and temperature environments considerably different than prior expander or gas-generator cycles. Papers are sought to address potential issues such as:
    - » Hydrogen and oxygen compatibility
    - » Testing for oxygen promoted combustion and hydrogen embrittlement
    - » Development processes for new materials
    - » Criteria for inserting new materials into turbomachinery for hydrogen-, hydrocarbon- and green-fueled engines

7. Additive Manufacturing: Processing methods using additive manufacturing techniques and other three-dimensional rapid prototyping methods that offer potential for reduction of times to produce parts, cost savings and increased part complexity such as:
    - » selective laser sintering,
    - » electron beam sintering,
    - » UV additive manufacturing,
    - » microwave additive manufacturing.

8. Papers are sought for additive manufacturing technologies applied to liquid propulsion applications:
    - » Development of techniques
    - » Practical examples of application
    - » Approaches for Acceptance and Certification for Use

Mission Area V:

Rotating Detonation Rocket Engines

RDRE Thrust Chamber Assembly (TCA) Design and Applications: This mission area addresses the components and subcomponent features required in all sizes of RDREs. RDRE components include main combustion chambers, preburners, gas generators, nozzles, high temperature nozzles, and their subcomponent features including items such as injectors, and coolant passages. Papers are sought on rotating detonation combustion devices including:

- Unsteady RDRE combustor/nozzle design analysis and simulations for gaseous and multiphase rocket propellants
- Compatible materials for the unique unsteady supersonic environment
- Component test results
- Test rig development
- Diagnostic techniques & sensors
- State of the art RDRE modeling simulation techniques for analysis/design of these systems
- Reduced order modeling approaches for optimizing RDRE performance and design

RDRE Test Practices, Standards, and Facilities: Industry-consensus best practices and standards for the test and evaluation of rotating detonation rocket engines, components and propulsion/vehicle interfaces. Papers are sought on state of the art in RDRE testing, including:

- Status, capabilities, and operation of government and commercial RDRE test facilities
- Innovative concepts for RDRE testing, data reduction, and model validation
- RDRE testing uncertainty analysis methodologies

Mission Area VI:

Propulsion-Induced Environments and Structural & Thermal Loads

This area focuses on propulsion-induced environments and the associated loading of a physical structure or material within the surroundings. Fundamentally, an environment represents a source of loading. The source may be a pressure, thermal, thrust, acceleration, or other type of loading. The physical structure may be a launch vehicle, spacecraft, lander, payload, crew, surrounding structure, ground, or other object or material; these are loosely grouped in the summary below as “launch vehicle and surroundings”. While many environments occur during the liftoff phase or landing phase, propulsion-induced environments during the entire mission should not be excluded from this area. The subject area is split into two focus areas, Propulsion-Induced Environments and Structural & Thermal Loads, however this does not exclude many examples where two-way coupling occurs between the source and the structure.

Propulsion-Induced Environments: Modeling, Analysis, Testing, Design, and Validation. Launch vehicles and surroundings are subjected to environments that are induced by propulsion systems. This focus area encompasses the environment and includes analytical and computational tools, models, forcing function definitions, testing, methodologies, validation, physical processes, and mitigation approaches that support propulsion-induced environments.

Examples of propulsion-induced environments are not limited to this list: Liftoff/Landing Acoustics, Engine and Booster Ignition Overpressure, Liftoff Debris Transport, Excess Hydrogen Pop, Thrust Oscillations, Hold-down Acoustics, Engine Nozzle Flow Transient Acoustics, Booster Igniter Shock and Throat Plug Expulsion Overpressure, Infrasonic Acoustics, Far-field Acoustics, Plume Impingement, Plume-Induced Thermal environments, Emissions, Propulsion Noise Sources, Propulsion Blast, and Plume-Surface Interaction.

In general, most of the environments listed above produce a direct pressure, thermal, or acceleration loading and are relatively unambiguous in the environment it produces. Several examples though are not as evident and are described here. Plume-Surface Interaction is an interaction between the environment and the structure but is listed in Propulsion-Induced Environments rather than Structural and Thermal Loads for simplicity. In Plume-Surface Interaction, the plume imparts a pressure, thermal loading, or other environment onto a physical structure or material such as concrete or soil. Physical processes associated with plume-surface interaction could result in pyrolysis and melting, ablation and erosion, and fracture and spalling of material, soil, or regolith. Debris transport and soil particulate impingement to vehicle and surroundings at liftoff and landing can contribute to detrimental loading in the form of impact energy. Emissions or dust can be hazardous to the personnel or to the environment. There are also examples of two-way coupled phenomena such as Slosh and Pogo. In the context of a propulsion-induced environment, a thrust imbalance may contribute to slosh, however the fluid would subsequently impart a pressure on the tank wall relevant to tank design or contribute to a change in mass distribution relevant to vehicle control. And while Pogo is generally recognized as an instability, there are technical aspects and physical processes that fall within this area regarding coupled fluid-structural interaction induced by the propulsion system. Finally, as an example environment mitigation approach, design and analysis activities of the ground system are captured in this area – such as water suppression systems, hydrogen burn-off systems, and appropriate aspects of launchpad design.

Structural and Thermal Loads: Modeling, Analysis, Testing, Design, and Validation. Launch vehicles and surroundings are subjected to environments that are induced by propulsion systems. This focus area encompasses the structural and thermal response to these environments and includes analytical and computational tools, models, testing, methodologies, validation, physical processes, and mitigation approaches that support structural and thermal loads.

Propulsion-induced environments such as dynamic pressure loading is a principal source of structural vibration which may result in the malfunction and fatigue of launch vehicle and surroundings. Pressure loading from the propulsion-induced environments on the external surfaces of a vehicle can damage the vehicle, give rise to sound pressure levels inside a payload cabin which can damage payloads, or inside a crew cabin which may impact the crew's health, safety, or ability to communicate. Other propulsion-induced environments also contribute to stress and failure of vehicle hardware and surroundings.

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SPACECRAFT PROPULSION SUBCOMMITTEE

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The 14th SPS seeks abstracts on the full array of spacecraft propulsion technology interests including chemical propulsion, electric propulsion, micropropulsion, nuclear thermal propulsion, propellant management, aerocapture, solar sails, solar thermal propulsion, tether systems, in-space propulsion infrastructure, and technologies for the future. Possible applications to these technologies are orbit to orbit transfer, attitude control, non-terrestrial ascent/descent, station keeping, deep space, formation flying, drag makeup, and orbital rephasing. Please direct questions about the SPS mission areas to the JHU WSE ERG Technical Representative for SPS.

Mission Area I:
Chemical Propulsion

Papers are invited that cover all areas of chemical propulsion including monopropellant, bipropellant, gel, solid, and hybrid chemical propulsion systems. Some current areas of interest include, but are not limited to, advanced propellant formulations and propulsion system developments for modern spacecraft and new missions.

Decreased toxicity monopropellant thruster technology development has been of primary interest for spacecraft applications in the last decade. Monopropellant technology is of critical importance to spacecraft operations and principally relies upon catalyst technology.

New propulsion system architecture approaches and technology demonstrations that are being pursued to reduce cost, expand capabilities, and enable new missions are also of significant interest. Also, reuse or modification of existing propulsion systems and components has been an ongoing and emerging area of development where publications are sought. This includes the reuse of heritage components and developments in reusable vehicles, systems, or components.

Increasing community knowledge of lessons learned and the relative impact of forthcoming technologies and approaches will support the transition and evolution of these propulsion approaches. Papers are solicited on the following topics of particular interest for sessions supporting spacecraft chemical propulsion:

Propellant Factors -

- Propellant physical property characterization
- Formulation, pre-cursor considerations, synthesis, and quality control measures
- Propellant advantages, disadvantages and their impact to operations (ground and flight)
- Propellant (decreased toxicity and state of the art) storage and management
- Decomposition, kinetics, and combustion environment impact to materials and duty cycle
- Impact of propellant impurities on performance including catalytic life

Thruster / Engine / Component Factors -

- Impact of propellant impurities on delivered performance including catalytic and non-catalytic reactor performance and life
- Injection technologies and concerns such as propellant atomization or dispersion, including impacts of non-volatile residue accumulation factors and irregular feed

- Decomposition and ignition means for all areas of chemical propulsion including:
  - » Development and performance of alternative catalysts, substrate, and active materials with respect to response and life limiting factors
  - » Augmented catalytic and non-catalytic decomposition for monopropellants
- Developments and issues in the reuse, modernization, and/or requalification of components
- Integrated performance and operations including:
  - » Duty and thermal cycle impacts to response, repeatability, and useful life
  - » Relationship of propellant conditions, component design, and ignition factors
  - » Relationship of propulsion system conditioning requirements by mission
  - » Effectiveness in modeling variation of performance for system design and mission planning

System / Mission Factors -

- Throttleable and pulsed system delivered performance including combustion stability effects
- Propulsion system architecture considerations, configuration trades, and mission optimization
- Propulsion system operations, diagnostics, and failure management
- Operational condition concerns such as conditioning of propellants and testing of environments
- Status, infusion viability, and impact of new propulsion technology and pathfinder activities

Mission Area II:
Electric Propulsion

Papers are invited in all areas of electric propulsion (including solar- and nuclear -powered systems). Topics of interest include:

- **Basic Research and Development of Electric Propulsion Thrusters:** This includes physics of electric propulsion processes, thruster technology development, advanced and breakthrough concepts, high-power electric propulsion, hybrid and dual-mode systems using electric propulsion, alternate propellant research, laboratory plasma diagnostic techniques, and electric propulsion ground test facilities effects.
- **Systems Engineering of Electric Propulsion Subsystems:** This includes electric propulsion subsystem design, propellant storage and feed systems development, power processing units design and testing, integrated system testing of electric propulsion subsystems, and assessment/mitigation of electric propulsion system interactions with spacecraft electrical and telemetry subsystems.
- **Electric Propulsion Flight Programs and Mission Studies:** This includes reporting on: flight electric propulsion hardware development; ground and flight system operations; space qualification programs; flight plasma diagnostics development and experiments; in-flight programs status; electric propulsion mission studies for commercial, science, and human exploration space missions.
- **Molecular Propellant Research:** This includes submissions for propulsion technologies able to satisfy new mission demands for spacecraft operation in very low Earth orbit (vLEO) and/or multimode propulsion systems using chemical propellant exhaust or decomposition byproducts.
- **Electric Propulsion Modeling and Simulation:** This includes computational models of thruster physics, new innovative numerical methods to improve accuracy and/or computational speed, development of robust model validation techniques and plasma diagnostics. Investigations of electromagnetic and electrostatic thrusters, ground facilities effects and plume interactions with spacecraft are all welcome.

Mission Area III:
Micro / Nano Spacecraft and MicroNewton Propulsion

Papers are invited to discuss micro propulsion topics for microsats, nanosats, and large spacecraft. Concepts, designs, and mission applications for such propulsion systems or components of such are of interest. Propulsion technologies include chemical, electric, hybrid, and propellantless systems. Topics include:

- Micro and nano spacecraft propulsion systems and components
- Micronewton thrust devices
- Innovative fabrication or assembly approaches, especially to reduce costs and to improve manufacturability and reliability
- Propulsive applications or mission design studies
- System-level integration studies or testing
- Space flight qualification or flight programsa
- Flight demonstrations and lessons learned
- Technology development and mission infusion roadmaps

Mission Area IV:
Future Technologies

Papers are invited for a range of advanced future space propulsion technologies, including but not limited to the following listed areas. In addition, there will be panel discussions focused on the findings of recent AFRL and NASA NEP design studies. Several design reference missions and their NEP system requirements will be discussed. Authors and stakeholders are encouraged to submit papers in these areas, especially sharing not only the results and status of the investigations but also the lessons learned and recommendations for paths forward.

Nuclear Thermal Propulsion (NTP) and Nuclear Electric Propulsion (NEP) design, testing, and utilization for future human and unmanned exploration missions of the solar system, including:

- NTP and NEP spacecraft and mission design for human Mars exploration missions
- Solid core NTP concepts with or without bimodal (power generation) capability
- Common reactor design for nuclear propulsion (NTP and NEP) and nuclear fission surface power generation
- Candidate nuclear fuel options
- Reactor controls and shielding
- NTP and NEP test methods and facilities
- NTP and NEP demonstration options
- Safety, reliability, risk analysis and crew-rating
- NTP and NEP vehicle operations and costs
- Planned and/or funded missions
- Near-term mission concepts
- Innovative system or subsystem designs

Advanced concepts for both near- and far-term future space propulsion focusing on technologies that promise significant gains in specific impulse, and/or power density, but are based on known fundamental physics, such as:

- Fusion-based in-space propulsion systems including conventional magnetic, inertial, and inertial electrostatic confinement schemes; magnetically insulated inertial fusion; fission-fusion hybrid systems; and concepts that directly or indirectly utilize fusion reactions. directly or indirectly.
- Beamed propulsion schemes, including laser or microwave-based propulsion.
- Solar sail propulsion, electrodynamic and momentum exchange tether propulsion, and other innovative technologies that use the natural environments of space to derive propulsion without the expenditure of conventional propellant.

POSTERS

POSTER SESSION INFORMATION

For the Winter Meeting, abstracts for LPS and SPS poster presentations may be submitted by any interested author, including those considered Early Career professionals. The poster session will take place on T**uesday** during the meeting (date TBA) at the Spokane Convention Center and will be open to all meeting attendees. All posters must be unclassified and suitable for public release or approved for presentation at distribution statement C/CUI/FEDCON. Authors of abstracts selected for poster presentations have the option of providing a paper.

Early Career Posters

JANNAF is interested in offering more opportunities for Early Career Propulsion and Energetics Professionals to engage with one another and the overall JANNAF community. In order to be considered an Early Career Professional, at least one of the following criteria must apply to you:

- A student
- Working in the field for less than five years
- Have obtained your Doctorate within the last five years

If you meet the above criteria of an Early Career professional, you are eligible to submit a poster abstract for any of the subcommittees listed on pages 7 - 17. When submitting, choose “Early Career Poster” in place of selecting a Mission Area within your preferred subcommittee.

General Posters

Authors interested in presenting a poster who do not meet the JANNAF definition of Early Career have the option of selecting “General Poster” in lieu of choosing a Mission Area when submitting an abstract. The preferred subcommittee must first be selected so that the identified subcommittee is assigned the Poster abstract for review.

WORKSHOPS/SPECIALIST SESSIONS

Recommendations for workshops or specialist sessions are solicited at this time. Individuals interested in organizing and chairing a workshop or specialist session should contact the JHU WSE ERG Technical Staff member in their respective subcommittee by the deadline of **27 June 2025**.

Workshops

The JANNAF Workshop is reserved for bringing the community together to address a specific task or problem, the outcome of which is important and substantial enough to warrant the publication of a final report detailing the discussions, conclusions, and recommendations that resulted from the workshop.

To request a workshop you must submit a Workshop Request Form to your JHU WSE ERG Technical Representative (see pages 7 - 17 for contact information) or the JANNAF Meeting Planning Team at meetings@erg.jhu.edu. This form must be submitted to ERG by **Friday, 27 June 2025**. The agenda and invitation list is due **Friday, 15 August 2025** for inclusion in the Preliminary Program, and must be approved no later than **eight weeks prior to the meeting** (date TBA) for inclusion in the Final Program.

Specialist Sessions

A JANNAF specialist session is an opportunity for experts in a specific technical area to meet to stimulate ideas and contributions from the audience. These sessions are dedicated to a single topic and often include invited presentations. The organization of these sessions is similar to a regular JANNAF paper session with time allocated to individual presentations; however, specialist sessions often include moderator led discussion periods or a question and answer session with expert panelists. Unlike a regular JANNAF paper session, the presentations from specialist sessions may or may not be published as part of the meeting proceedings. Publication can include an executive summary authored by the session chair if desired.

To request a Specialist Session for this JANNAF meeting, a Specialist Session Request Form must be submitted to JHU WSE ERG. This form requires a statement of justification for the Specialist Session along with a well thought out agenda. Requests will be reviewed by the designated JANNAF subcommittee TSG chair and ERG for approval; this approval is necessary for any Specialist Sessions to be included in the Final Program.

The deadline for submission of a Specialist Session request is **27 June 2025**, and forms must include a draft agenda. In order for the draft agenda to be included in the Preliminary Program, all Invited Presentation details must be submitted online via the Abstract Submittal Site no later than **Friday, 15 August 2025**. To be included in the Final Program, the final agenda and online submission of all Invited Presentation details must be received no later than **eight weeks prior to the meeting** (date TBA) . If you have any questions about planning a Specialist Session please contact your ERG Technical Liaison or the JANNAF Meeting Planning Team at meetings@erg.jhu.edu.

BEST STUDENT PAPER AWARD

The Best Student Paper Award will be given to an undergraduate or graduate student who authors a paper that exhibits excellence and significant merit. One paper will be selected to receive this award, which will be presented at the JANNAF meeting at which the paper is given. To be eligible for consideration, a student must be the paper's primary author. The paper and its signed and completed JANNAF Publication Clearance Form must be submitted to JHU WSE ERG by **nine weeks prior to the meeting** (date TBA). Please indicate within the abstract submission if you wish to be considered.

Student authors must conform to the same JANNAF eligibility requirements as other authors, per the policy on non-government attendees (see page 3), and are encouraged to work with their advisors to ensure they meet these requirements before registration opens. For student eligibility and participation questions, contact Mionna Sharp (msharp@erg.jhu.edu).

More information about JANNAF Awards can be found on pages 15-17 of the JANNAF Technical Committee Manual.

UPCOMING JANNAF MEETINGS

72nd JANNAF Propulsion Meeting
Programmatic and Industrial Base Meeting
53rd Combustion
41st Airbreathing Propulsion
41st Exhaust Plume and Signatures
35th Energetic Systems Hazards
19th Modeling and Simulation
15th Liquid Propulsion
14th Spacecraft Propulsion
Joint Subcommittee Meeting

Winter dates TBA
Spokane, Washington
Visit Winter meeting website

73rd JANNAF Propulsion Meeting
Programmatic and Industrial Base Meeting
50th Structures and Mechanical Behavior
46th Propellant and Explosives Development and Characterization
35th Safety and Environmental Protection
20th Modeling and Simulation
3rd High Temperature Material Applications
Joint Subcommittee Meeting

Spring 2026
Location TBD

54th Combustion
42nd Airbreathing Propulsion
42nd Exhaust Plume and Signatures
36th Energetic Systems Hazards
20th Modeling and Simulation
Joint Subcommittee Meeting
Programmatic and Industrial Base Meeting

December 2026
Location TBD