

**49th SMBS | 45th PEDCS | 34th SEPS | 2nd HTMAS
Joint Subcommittee Meeting | PIB Meeting**

Call for Papers

9 - 13 December 2024

Charlotte, NC



**Abstract Deadline:
17 May 2024**

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What? December 2024 JANNAF Interagency Propulsion Committee meeting

When? Monday through Friday, 9-13 December 2024

Where? Hilton Charlotte University Place in Charlotte, North Carolina

Meeting Chair:

Dr. Heath T. Martin

NASA Marshall Space Flight Center, Huntsville, Alabama

The following subcommittees will meet:

Structures and Mechanical Behavior (SMBS)

Propellant and Explosives Development and Characterization (PEDCS)

Safety and Environmental Protection (SEPS)

High Temperature Material Applications (HTMAS)

Programmatic and Industrial Base (PIB)

For additional information, visit the [December meeting website](#).

ATTENDANCE REQUIREMENTS

The overall security level of the meeting is **Unclassified**. All sessions will be held at the Hilton Charlotte University Place. Attendance is restricted to U.S. citizens employed by a DoD, DoE, or NASA facility, or with a DoD, DoE, or NASA contractor facility eligible for receipt of militarily-critical technical data. No foreign nationals are permitted to attend.

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/>.

University participants—both students and professors—must meet additional requirements, as outlined on the [University Registration Information page](#) of the meeting website.

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 [December meeting website](#) with full details available when registration opens in late 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.

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

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 - 15.
- **The deadline date for submission of the online Abstract Form is 17 May 2024.** 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 by 8 November 2024**, attend the meeting, and deliver a 25-minute presentation. The JANNAF Policy of “No Paper, No Podium” will be in effect for this meeting.
- **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.
- A maximum of five authors may be listed when submitting your abstract for inclusion in the author list for the Preliminary and Final Programs. You may list more than five 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. A “Help” button is provided at the upper right corner of each page should 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, click the grey “Abstract Submissions” 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.

AUTHOR TIMELINE

Dates below are subject to change.

Date	Weeks to Meeting	Action
17 May 2024	22	Deadline for receipt of abstracts via Abstract Submittal Site .
12 Aug 2024	17	Approximate date for committee decision emails sent to authors.
30 Aug 2024	15	Deadline for changes to Meeting Invitation and Preliminary Program.
23 Sep 2024	11	Approximate date for Meeting Invitation, Preliminary Program, and registration materials forwarded to propulsion community.
4 Oct 2024	9	Deadline for award nominations and submittal of Student papers for Best Student Paper award consideration
25 Oct 2024	6	Deadline for submission of changes to the Final Program
8 Nov 2024	4	Last day for discounted Early registration fee.
8 Nov 2024	4	Deadline for receipt of papers and publication clearance forms. Papers not received by this date may be removed from the program.
22 Nov 2024	2	Deadline for receipt of presentations
22 Nov 2024	2	Last day to pre-register online (registration form submission and registration fee payment). On-site registration required thereafter.
25 Nov 2024	2	Deadline for reservations at Hilton Charlotte University Place.
9 Dec 2024	0	Start date for PIB/SMBS/PEDCS/SEPS/HTMAS 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	SMBS	PEDCS	SEPS	HTMAS
I	Service Life / Missile Sustainment	Liquid Propellants	Toxicology	High Temperature Material Modeling and Simulation
II	Materials Properties and Characterization	Explosive Development and Characterization	Atmospheric Dispersion Modeling and Hazards Assessment	High Temperature Material Design, Test and Evaluation
III	Structural Analysis and Design	Propellant and Explosives Process Engineering	Instrumentation	High Temperature Material Development
IV	Experimental Structural and Mechanical Analysis and Test Methods	Energetic Materials Characterization and Raw Material Obsolescence	Environmental	
V	Nondestructive Evaluation	Solid Propellant Ingredients and Formulations	Industrial Hygiene	
VI	Defect Evaluation	Propellant and Explosive Surveillance and Aging	Range Safety and Explosives Safety	
VII	Processing and Characterization of Additively Manufactured Materials [Joint SMBS - PEDCS Mission Area]	Gun Propulsion	Green Energetic Materials (GEM) [Joint PEDCS - SEPS Mission Area]	
VIII		Green Energetic Materials (GEM) [Joint PEDCS - SEPS Mission Area]	Demilitarization, Reclamation, and Reuse Technologies	
IX		Processing and Characterization of Additively Manufactured Materials [Joint SMBS - PEDCS Mission Area]	Review of Accidents and Incidents	

STRUCTURES AND MECHANICAL BEHAVIOR

JHU WSE ERG Technical Representative

Ms. Claire Shamul / JHU WSE ERG / Columbia, MD
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The SMBS addresses the development, application, and verification of experimental, analytical, and statistical techniques required in the preliminary or detailed structural design of solid propellant rocket motors and gun ammunition, the assessment of their structural integrity, and the prediction of their service life based on structural or chemical aging mechanisms.

The 49th Structures and Mechanical Behavior Subcommittee sessions relate to the structures and materials comprising propulsion systems, including composite structures. Papers are solicited on developing, applying, and verifying techniques for preliminary or detailed structural design of propulsion units (rocket motors, liquid- or gel-fueled engines and gun propulsion) and related composite structures, for assessing their structural integrity and reliability, and for predicting their service life. Specific areas of interest are listed below. Questions about any of the SMBS mission areas should be directed toward the JHU WSE ERG Technical Representative for SMBS, listed at the beginning of this section.

Mission Area I:

Service Life / Missile Sustainment

Methodology for service life prediction and assessment.

- Aging systems - surveillance, service life prediction, extension
- Factors which limit the service life of propulsion systems and propellants, such as chemical/structural aging, changes in binder/filler interaction, crystallization, migration/diffusion of ingredients or moisture
- Development approaches for improving service life of solid rocket motors and liquid rocket components
- Motor monitoring - NDE methodologies applicable to service life evaluation
- Factors which limit service life of structural sub-components (nozzles, cases, igniters, combustion chambers, tanks, etc.)
- Hazards related to service life and aging

Mission Area II:

Materials Properties and Characterization

New developments or application experiences related to mechanical properties and characterization.

- New and/or improved test methods for evaluating propellant and case or component construction materials' mechanical properties including tensile, shear, friability, dilatation and bulk, fracture, microstructure, aging, propellant/case bond, etc.
- New and/or improved approaches to material properties optimization during solid rocket motor or gun propellant development
- Advancements in test equipment and procedures, test instrumentation, data acquisition and processing techniques, and data reduction and analysis
- Test specimen preparation techniques and dynamic characterization
- Mechanical properties related to propulsion systems hazards, e.g., material characterization under impact loads or high loading rates
- Effects of propellant formulation on gun tube wear and erosion (GTWE)
- Fundamental molecular modeling related to gun tube wear and erosion
- New and/or improved test methods for evaluating materials used in liquid engine components or liquid engine propellant tanks

Mission Area III:

Structural Analysis and Design

Evaluation and validation of structural analysis methods applicable to initial design, structural integrity, and service life prediction of propulsion systems.

- Advancements in the state-of-the-art in structural analysis, particularly in nonlinear viscoelastic analysis and incorporation of nonlinear constitutive behavior
- Cumulative damage, failure criteria, and thermal and moisture diffusion analysis are included in these areas
- Structural reliability analyses and analysis of nondestructive evaluation results relative to structural reliability are two areas of particular interest
- Approaches to incorporating the results of NDE in a structural analysis code and methods of evaluating the effects of defects on structural integrity are of particular interest
- Applications of nonlinear elastic-plastic analysis to design of metal components, such as cases and pressure vessels
- Application of structural analysis methods to health-monitoring sensors, including sensor design, influence of sensors on motor integrity, and interpretation and application of sensor data

Mission Area IV:

Experimental Structural and Mechanical Analysis and Test Methods

Evaluation of stress measurement tools and techniques for liquid rocket engines and solid rocket motors, analog rocket motor design, analysis and testing.

- State-of-the-art experimental structural methods
- Technology for experimental stress analysis
- Experimental validation of stress analyses and failure analyses
- Experimental investigation of rocket motor structural/ballistic interactions
- Statistical considerations in experimental stress analysis
- Experimental structural analysis and test methods for rocket motor cases, nozzles, and gun propulsion systems
- Experiments related to the fundamental chemistry occurring between gun barrel materials and combustion products
- Macroscopic erosion experiments leading to chemical mechanisms occurring in gun tube wear and erosion

Mission Area V:

Nondestructive Evaluation

Nondestructive evaluation and inspection techniques to solid propellant rocket motors, liquid or gel engines, and gun propulsion systems and components.

- Application of NDE techniques during any portion of the life cycle of the propulsion components
- Application of NDE technology and methods for enhancing propulsion system and/or subcomponent quality and reliability
- Use of NDE methods during the propulsion system life cycle from manufacturing to acceptance (buy-off)
- The monitoring and control of manufacturing processes
- Automated NDE sensing systems for quality control and conformance testing
- Use of embedded sensing system (including Micro-Electromechanical Systems – MEMS) for performance testing
- NDE methods used during static test
- NDE standards for system or component acceptance

- NDE methods for health management
- Role of NDE in service life assessment and extension
- Evaluation of propulsion system aging characteristics
- The post-acceptance evaluation of grain integrity, inert materials aging, chemical attack and migration, corrosion, and environmental storage effects
- Use of NDE technologies in strategic sustainment
- Advanced NDE systems and technologies, including but not limited to, real-time radiography, digital ultrasonics, holography, shearography, computed tomography, acoustic emission, electro-optic fiber embeddings, thermography, lasers, and advanced digital image analysis techniques
- Emerging NDE technologies and their potential application to the propulsion community

Mission Area VI:

Defect Evaluation

Evaluation of the criticality of flaws and defects to the structural integrity of propulsion systems

- Improved methods for predicting crack growth and cumulative damage in viscoelastic materials and solid, liquid and gun propulsion system component materials.
- Applications of crack propagation and fracture theory in structural analysis finite element codes.
- Structural/ballistic interaction, e.g., analysis of pressure-driven crack propagation in a propellant grain.

Mission Area VII:

Processing and Characterization of Additively Manufactured Materials Joint SMBS-PEDCS Mission Area

New or significantly improved methods for manufacturing solid rocket motor or solid-fueled propulsion systems or solid explosive systems (or components thereof)

- Development of additive manufacturing (AM) methods (e.g. fused deposition modeling, direct ink writing, robocasting, stereolithography) for energetic materials
- Material, formulation and process development and optimization of energetic materials to enable effective additive manufacturing
- Advanced manufacturing methods for inert components of propulsion or energetic systems, including automated fiber placement for composite components or AM methods for metallic components
- Methods for automating one or more manufacturing steps to improve speed, repeatability, safety, or other characteristics
- Non-destructive evaluation techniques, particularly in-situ or non-disruptive evaluation techniques that complement advanced manufacturing methods
- Design and analysis methods, techniques, and tools to assess materials and systems produced using manufacturing methods described in this mission area, to include those that address service life, reliability and critical defects assessments
- Studies that assess the merit of applying manufacturing methods described in this mission area to particular systems or classes of systems
- Development of Lot Acceptance Test (LAT) methods to measure the burn rate and mechanical properties that are efficient and effective for materials produced by additive manufacturing, to include alternatives to casting or extruding blocks of propellant to make burn rate strands and/or JANNAF dog-bones

PROPELLANT AND EXPLOSIVES DEVELOPMENT AND CHARACTERIZATION

JHU WSE ERG Technical Representative

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The scope of PEDCS comprises work and issues associated with propellants, explosives, and other energetic formulations used in the development, manufacture, performance, and operation of weapons, propulsion systems, and gas generator devices. This subcommittee covers the technology areas required to develop, manufacture, and characterize propellants and ingredients. The manufacturing technologies of interest include mixing procedures, sampling and quality control, safety and handling practices, and the design and operation of mixing equipment. The characterization tests involve classical wet chemistry, instrumental analysis, chemical stability, compatibility, and calorimetric measurements.

The 45th Propellant and Explosives Development and Characterization Subcommittee sessions will be organized into the topic areas described below. Please submit your abstract according to the interest area. Please direct questions about any of the PEDCS mission areas to the JHU WSE ERG Technical Representative for PEDCS listed at the beginning of this section.

Mission Area I:

Liquid Propellants

Areas of interest include research, development, and improvement of methods of analysis and specifications for liquid propellants; development and characterization of new and existing liquid engine and gun propellants; assessment of materials compatibility, reaction chemistry, and reactivity with various propellants including hydrazine fuels, dinitrogen tetroxide oxidizers, gels, ionic and other monopropellants, and liquid gun propellants. The evaluation of liquid propellant supply status and qualification of new or alternate suppliers is also of importance.

Mission Area II:

Explosive Development and Characterization

Mission Area focuses on development, characterization and testing of explosives to improve ordnance reliability and increase lethal effects. Topics of interest include reactive materials, increased metal acceleration, air-blast performance, as well as advances in the study of initiation and growth of detonation events. Abstracts especially sought in the following areas:

- Improving reliability by understanding initiation via experiments to understand James-Space
- Experimental or theoretical studies to understand thermal initiation of detonation
- The use of detonation wave merging to increase warhead or fuze performance
- Characterization of additively manufactured explosives
- Novel high performance formulations
- Novel high performance explosive chemical ingredients

Mission Area III:

Propellant and Explosives Process Engineering

Papers are sought in the areas of propellant and energetic formulation development and processing technology. Additional areas of interest include the measurement and characterization of rheological properties such as viscosity, yield stress, pot life/gelation time, cure rate, and viscoelasticity and their effect on properties such as processability, burning rate, and mechanical behavior. Of particular interest are the continuous and novel processing of energetic formulations as well as lessons-learned in propellants and explosives manufacture.

Mission Area IV:

Energetic Materials Characterization and Raw Material Obsolescence

Areas of interest include chemical and combustion test methods to analyze and characterize energetic materials and their formulations including solid and liquid propellants, warheads, pyrotechnics, fuses, and initiators,

especially those pertaining to tactical and strategic propellants and associated energetics that contain novel ingredients; modifications of current test methods or alternate procedures that minimize/eliminate the use of ozone depleting solvents or other adverse organic chemicals; statistics of sample selection; techniques of sample preparation; methods development for microcalorimeter instruments, gun propellant, and rocket propellant; and related subjects. Additional focus is an emphasis to document and track on-going propellant and warhead raw material obsolescence and related testing of new replacement materials.

Mission Area V:

Solid Propellant Ingredients and Formulations

Topics include identification of advances and challenges in the area of solid propellant ingredients and formulations with emphasis on ingredient synthesis and production, industrial base and supplier status, chemical, structural and physical characteristics (including reactivity), and recovery, reuse, and disposal of ingredients as well as the qualification and use of new and novel ingredients in propellant formulations.

Mission Area VI:

Propellant and Explosive Surveillance and Aging

Papers are sought on analysis techniques for the determination of the chemical aging behavior and safe storage of solid propellants. Of particular interest are the decomposition of solid propellants that contain nitrate esters and the autoignition risk that may result from their degradation. New areas of interest include Munition Health Management and Predictive Maintenance for ageing and lifetime extension.

Mission Area VII:

Gun Propulsion

Seeking research in the areas of formulation and processing of propellants and associated components (igniters, case and packaging materials, etc.) for use in gun propulsion. This can include new compositions, new ingredient development, novel geometries and structures, propellant development protocols, performance diagnostics, aging and shelf life, increased performance, reduced wear and erosion, as well as insensitive munitions response.

Mission Area VIII:

Green Energetic Materials (GEM) Joint PEDCS-SEPS Mission Area

Papers are sought on the development of environmentally sustainable energetic ingredients, formulations, and processing technologies with an emphasis on the following: reduction of impacts from energetic materials and unexploded ordnance on military ranges, manufacturing and demilitarization facilities; enhancement of recycling, recovery, reuse and reduction of waste; and response to specific impacts that environmental regulations have had on military readiness, such as limiting training with live ordnance, outsourcing of manufacturing overseas or explicit banning of the use of specific materials.

Mission Area IX:

Processing and Characterization of Additively Manufactured Materials Joint SMBS-PEDCS Mission Area

This Mission Area addresses the development of additive manufacturing (AM) methods for energetic materials to include: material, formulation and process development and optimization of energetic materials to enable effective additive manufacturing; advanced manufacturing methods for inert components of energetic systems, including automated fiber placement for composite components or AM methods for metallic components; methods for automating manufacturing steps to improve speed, repeatability, safety, or other characteristics; non-destructive evaluation techniques; design and analysis methods, techniques, and tools to assess AM materials and systems produced to include those that address service life, reliability and critical defects assessments; studies that assess the merit of applying AM methods to particular systems or classes of systems; and development of Lot Acceptance Test (LAT) methods to measure the burn rate and mechanical properties that are efficient and effective for materials produced by additive manufacturing, to include alternatives to casting or extruding blocks of propellant to make burn rate strands and/or JANNAF dog-bones.

SAFETY AND ENVIRONMENTAL PROTECTION

JHU WSE ERG Technical Representative

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SEPS is focused on issues related to the human health, safety and environmental impacts associated with the manufacture, storage and use of propellants, explosives and pyrotechnics. Papers are invited that address all health effects associated with energetic compounds, precursors, combustion products, and waste products as well as safety concerns present during their intentional use, demilitarization, and accidents. New and emerging areas of interest include additive manufacturing of energetic materials, nanomaterials, insensitive high explosive formulations, and brain injury due to exposure to blast and overpressure.

The 34th Safety and Environmental Protection Subcommittee sessions will be organized into the topic areas described below. Please submit your abstract according to the interest area. Questions regarding the SEPS mission areas should be directed to the JHU WSE ERG Technical Representative for SEPS listed at the beginning of this section. Topics to highlight:

Mission Area I: Toxicology

This mission area examines the toxicity of energetic materials such as propellants, pyrotechnics, and munitions, their ingredients, combustion products, and related chemicals and subjects. Also of interest are the use of risk assessment methodologies in the management of toxic hazards and the rationale for the establishment of toxic material exposure criteria for the workplace and the environment.

Mission Area II: Atmospheric Dispersion Modeling and Hazards Assessment

Mission Area II is focused on atmospheric dispersion modeling and hazards assessment applied to propulsion activities. Subjects of interest include modeling transport and diffusion of propellant spills including both dense and trace gases, chemically reactive species, and aerosols; wind flow and dispersion modeling in complex terrain; model validation; source modeling; ozone depletion, ground cloud dispersal, and acid rain from launch vehicles; and models for emergency response systems. Experimental or theoretical work on other atmospheric hazards such as thunderstorms, lightning, wind shear, and precipitation are also welcome. Also includes addressing blast injury effects of new and emerging areas including additive manufacturing of energetic materials, nanomaterials, insensitive high explosive formulations.

Mission Area III: Instrumentation

Interests include instrumentation requirements, basic research, and hardware development of equipment used to measure hazardous environments. Presentations regarding work done in the measurement of hypergolic or other hazardous propellant vapors, oxygen/hydrogen propellant vapors, hydrochloric acid and other propellant combustion products, and other chemical hazards of interest to the propulsion community are sought.

Mission Area IV: Environmental

The Environmental Mission Area is interested in papers that address environmental issues related to energetics and their by-products. Papers and presentations that address any of the following: techniques for measuring and predicting combustion products, environmental fate and transport of energetics and their by-products, emerging

environmental regulations and their impact on energetic materials operations, environmental effects from propulsion-related activities, permitting requirements, hazardous waste treatment, water and air pollution prevention, pollution control technologies related to energetic material production and use, waste minimization, operational ingredient reclamation, or recycling in the production of energetic materials.

Mission Area V:
Industrial Hygiene

Focus is on industrial hygiene aspects of energetic material production, transportation, use, and disposal. Areas of interest include personal protective strategies and equipment used in manufacturing and handling operations; ingredient and product monitoring methods and experience; operational ventilation strategies and experience; hazardous materials control; hazardous waste management; substitution of less hazardous materials in industrial processes and maintenance; and hazardous materials information, including labeling and material safety data sheets.

Mission Area VI:
Range Safety and Explosives Safety

Range safety and explosives safety issues relevant to launch range safety risk assessments and other energetic material safety problems are the focus of this area. Papers are sought that address hazards inherent in solid and liquid propellant/explosive/pyrotechnic (PEP) materials manufacturing, processing, handling, storage, use and disposal; liquid and solid propellant explosive hazards; blast injury; quantity-distance criteria; shielding; and the hazards of damaged or aged propellants. Addresses new and emerging areas including additive manufacturing of energetic materials, nanomaterials, insensitive high explosive formulations, and blast injury.

Mission Area VII:
Green Energetic Materials (GEM) Joint PEDCS – SEPS Mission Area

Papers are sought on the development of environmentally sustainable energetic ingredients, formulations, and processing technologies with an emphasis on the following: reduction of impacts from energetic materials and unexploded ordnance on military ranges, manufacturing and demilitarization facilities; enhancement of recycling, recovery, reuse and reduction of waste; synthesis and development of energetics materials with reduced waste, solvents, and energy requirements; and response to specific impacts that environmental regulations have had on military readiness, such as limiting training with live ordnance, outsourcing of manufacturing overseas or explicit banning of the use of specific materials.

Mission Area VIII:
Demilitarization, Reclamation, and Reuse Technologies

This area's focus is demilitarization, reclamation, and reuse technologies for propellant, explosive, and PEP materials. Interest areas include: thermal degradation/treatment and incineration of PEP materials; chemical or mechanical separation, reclamation, and neutralization technologies; technologies that utilize sub- or super-critical fluids for reclamation or oxidation of PEP materials; biodegradation technology; reuse of energetic materials or ingredients for military and commercial applications; and research that addresses traditional disposal options, such as open burning/open detonation and static firing.

Mission Area IX:
Review of Accidents and Incidents

Review of accidents and incidents involving propellant manufacturing, storage, transportation, use, hazardous material spills, and transportation accident response. Topics of interest include lessons learned, post-accident procedures for liquid propellant spills, propellant spill response systems, spill mitigation activities, and transportation accident response computer systems.

HIGH TEMPERATURE MATERIAL APPLICATIONS

JHU WSE ERG Technical Representative

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This 2nd HTMA Subcommittee meeting selection of sessions will encompass material applications for all propulsion systems including Rocket Nozzle Technology, Hypersonic Systems, Thrust Control, and components of Strategic, Tactical, Space Launch, and other systems. The HTMAS focuses on the application of advanced, high temperature materials, including carbon-carbon, ceramic matrix, and carbon phenolic composites, CERMETS, refractory metals, structural and non-structural insulators, and other advanced materials as applied to propulsion systems and related technology developments.

Sessions will focus on the properties, processing, quality assurance, design, testing, evaluation, analysis and modeling of high-temperature materials for propulsion systems. Papers are sought in the specific areas listed below.

Open Mission Area: HTMAS is interested in exploring new areas and for this call, abstracts that do not align with any of the below Mission Areas will be considered for inclusion in this meeting, or for discussion by the Technical Steering Group. Mission areas and suggested paper topics are listed below.

Mission Area I:

High Temperature Material Modeling and Simulation

- Advances in structural composite materials modeling and failure criteria
- Advances in modeling of ablation and erosion of advanced materials
- Advances in modeling of heat and mass transfer processes in rocket propulsion systems (including, but not limited to: CFD, fluid network analysis, RTE solvers)
- Coupled thermo-structural modeling of heated advanced materials
- Coupled fluid-thermal surface ablation modeling with two-phase surface interaction
- Semi-empirical laboratory methods used for gathering of heated material property data

Mission Area II:

High Temperature Material Design, Test and Evaluation

- Inspection techniques and criteria development (to include new or improved tools and methodologies)
- High temperature material test development
 - Samples/coupon, subscale, and full-scale hot gas testing
- Material characterization and acceptance testing (to include new or improved test methods)
- Post-Test evaluation - comparison of test results to predictive analytical methodologies and tools

Mission Area III:

High Temperature Material Development

- Characterization of new high temperature materials: discussing state-of-the-art research on high-temperature materials in the area of **ceramics, metals, their alloys, and composites which offer excellent chemical, phase, and property stability**, at temperatures exceeding 900 °C.

- Manufacturing and Fabrication techniques for high temperature materials to include refining fundamental manufacturing technologies, development of new additive and subtractive capabilities, as well as encompassing smart manufacturing that integrates modeling, simulation, monitoring and control systems.
- Enhancement and/or optimization of manufacturing procedures and techniques directed at process repeatability and quality control.
- High temperature material research producing new formulations and architectures that enhance high temperature propulsion system applications in the areas of performance, functionality, and manufacturability; creating new and novel design options.

PIB

PROGRAMMATIC AND INDUSTRIAL BASE

The JANNAF Programmatic and Industrial Base (PIB) Committee was created with the approval of the [JANNAF Charter](#) by the Department of Defense and the National Aeronautics and Space Administration in 2014. Its focus is on providing a mechanism for DoD and NASA to collaboratively identify and manage risks and issues within the propulsion industrial base, and to work together to solve them. This requires an integrated understanding of each program's plans and key decision points, and how those decisions may impact the propulsion industrial base. PIB areas of interest include integrated program plans and key decision points; industrial base assessments; risks and opportunities with respect to skills, knowledge, and experience; identification of commonality, innovative acquisition, and partnership opportunities; integrated assessments to identify rocket propulsion industrial base (RPIB) rationalization opportunities; special actions from senior agency, department, or Executive Office of the President (EOP) leadership; and information provided to decision makers for either situational awareness or policy decisions.

POSTERS

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. We will be holding the inaugural Early Career [Poster](#) session on Tuesday, 10 December, the time is TBD. **Poster Abstracts will only be accepted from Early Career Professionals.**

In order to be considered an Early Career Professional, you must be one of the following:

- 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 7-14. When submitting, choose "Early Career Poster" in place of selecting a Mission Area within your preferred subcommittee.

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 **17 May 2024**.

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.

Requirements for JANNAF workshops and established best practices can be found in the [JANNAF Workshop Guide for Chairs](#); this document will guide you through the planning and approval process for workshops held at a JANNAF meeting.

To request a workshop you must submit a [Workshop Request Form](#) to your JHU WSE ERG Technical Representative (see pages 7 - 15 for contact information) or the JANNAF Meeting Planning Team at meetings@erg.jhu.edu. This form must be submitted to ERG by **Friday, 17 May 2024**. The agenda and invitation list is due **Friday, 30 August 2024** for inclusion in the Preliminary Program, and must be approved no later than **Friday, 11 October 2024** 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 **17 May 2024**, 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, 30 August 2024**. To be included in the Final Program, the final agenda and online submission of all Invited Presentation details must be received no later than **Friday, 11 October 2024**. 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.

JANNAF AWARDS PROGRAM

In the tradition of recognizing the outstanding achievements by members of the propulsion community, the JANNAF Technical Executive Committee (TEC) and Programmatic and Industrial Base Committee (PEC), as well as the SMBS, PEDCS, SEPS, and HTMAS, are soliciting nominations for awards to be presented at the meeting. A TEC or PEC Award is justified if the achievement or service is in a technical or programmatic area that is not covered by an existing subcommittee, or is of such scope or magnitude that merits this recognition.

Special Recognition Awards

The Special Recognition awards for Sustained Contribution and Lifetime Achievement honor individual achievements, either in the last 18 months or for a lifetime of dedicated service. These awards are the most prestigious subcommittee awards and reflect on the awardees' contributions to JANNAF.

Special recognition award winners will be selected by respective subcommittee Awards Committees based on review of the nomination in consideration of the following:

- Technical value of the achievement(s) including level of technical complexity and challenge, quality of results, degree of innovation and timeliness of research.
- Impact of the achievement on the broader propulsion community.
- For individuals nominated for lifetime achievement, demonstrated participation in technical societies as evidenced by positions held and papers published will be considered favorably.

Outstanding Achievement Award

The Outstanding Achievement Award is given for the most outstanding technical achievement in the subcommittee's area by an individual, by a team within an organization, or by a team of organizations. To recognize the varied nature of the JANNAF subcommittees and the accomplishments of their communities, nominations may be solicited and given in the two focus areas of R&D Technology and Operational Systems.

- The achievement shall have been accomplished in the previous 18 months.
- The nominees must have worked for the organization during the same 18-month period of performance.

Certificate of Commendation

The Certificate of Commendation is given to recognize an individual whose contributions within the last 18 months have been pivotal in ensuring the success of a JANNAF activity.

Certificate of Appreciation

The Certificate of Appreciation is given to recognize individuals for outstanding contributions and dedicated service to JANNAF.

Nominations

To nominate an individual for one of the above awards please use the [JANNAF TEC/PEC and Subcommittee Award Nomination Form](#). Nomination submissions should include the following:

- A description of the achievement or distinguished service, of no less than 200 and no more than 1000 words. The description must be typed or provided in electronic format (Adobe Acrobat PDF or MS Word) via email.
- Supporting data (if desired) of no more than 10 pages.
- Supporting curriculum vitae, list of publications, and/or professional activities as required to support the nomination.
- Contact information for the nominee(s) and the nominator, including organization affiliation, phone number, and email address.

Nominations should be submitted to the appropriate JHU WSE ERG technical representative no later than **Friday, 4 October 2024**.

Best Paper Awards

In addition to the nomination awards listed above, JANNAF recognizes authors of papers that exhibit excellence and significant merit with the Best Paper Awards. Best Paper Awards from this meeting will be acknowledged in JANNAF News and announced at the next JANNAF Subcommittee meeting.

Best Student Paper Awards

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 the Best Student Paper Award. Please be sure to indicate within the abstract submission if you wish to be considered for the Best Student Paper Award. Please note that a student must be the paper's primary author to be considered for this award.

As a reminder: student authors must conform to the same JANNAF eligibility requirements as other authors, per the policy on non-government attendees at JANNAF meetings given on page 3. Student authors are encouraged to work with their advisors to ensure they meet these requirements, and should contact Mionna Sharp at msharp@erg.jhu.edu at their earliest convenience with questions regarding their eligibility and participation.

Student papers will be reviewed upon submission of their cleared manuscripts. In order to be considered for the student best paper selection, the completed paper must be provided to JHU WSE ERG by **Friday, 4 October 2024**. A signed and completed [JANNAF Publication Clearance Form](#) must be submitted for the paper as well. The Best Student Paper Award will be presented at the JANNAF meeting at which the paper is given.

UPCOMING JANNAF MEETINGS

71st JANNAF Propulsion Meeting
Programmatic and Industrial Base Meeting
18th Modeling and Simulation
14th Liquid Propulsion
13th Spacecraft Propulsion
Joint Subcommittee Meeting

6 - 9 May 2024
Oklahoma City, Oklahoma
[Visit May 2024 meeting website](#)

49th Structures and Mechanical Behavior
45th Propellant and Explosives Development and
Characterization
34th Safety and Environmental Protection
2nd High Temperature Material Applications
Joint Subcommittee Meeting
Programmatic and Industrial Base Meeting

9 - 13 December 2024
Charlotte, North Carolina
[Visit December 2024 meeting website](#)

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
Joint Subcommittee Meeting

Spring 2025
Dates & Location TBA