

Program Solicitation

Atomically Precise Molecules (APM)

Multi X Office

DARPA-PS-26-141

As amended on

October 27, 2026

Amendment 1 Summary:

The purpose of this amendment is to extend the required abstract deadline.

OVERVIEW INFORMATION:

- **Federal Agency Name:** Defense Advanced Research Projects Agency (DARPA), Multi X Office (MXO)
- **Funding Opportunity Title:** Atomically Precise Molecules (APM)
- **Announcement Type:** Amendment
- **Funding Opportunity Number:** DARPA-PS-26-141
- **Assistance Listing Number:** Not applicable
- **Dates/Time: All Times are Eastern Time Zone (ET)**
  - Posting Dates:
    - Initial Solicitation: September 25, 2026
    - Amendment 01: October 27, 2026
  - Proposers Day: September 30, 2026
  - Required Abstract Due Date: October 28, 2026, at 1:00 p.m.
  - Question and Answer Deadline: December 4, 2026, at 5:00 p.m.
  - Deadline to Submit Intent to Propose: December 4, 2026, at 5:00 p.m.
  - Proposal Due Date: December 18, 2026, at 1:00 p.m.
  - Anticipated Oral Presentation Dates: January 5, 2027, to January 20, 2027
- **Anticipated Individual Awards:** Multiple awards are anticipated
- **Types of Instruments That May Be Awarded:** Other Transaction for Prototype Agreements under 10 U.S.C. 4022
- **NAICS Code:** 541715
- **Cybersecurity Maturity Model Certification (CMMC) Required Level**: Level 2 (Self-Assessment)
- **Agency Contact:**

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Program Solicitation
DARPA-PS-26-141

Atomically Precise Molecules (APM)
Defense Advanced Research Projects Agency (DARPA)
Multi X Office (MXO)

Section I: Funding Opportunity Description

The Defense Advanced Research Projects Agency (DARPA) is soliciting innovative proposals in the areas of new synthesis techniques for polymeric materials and nonlinear optical (NLO) materials. Proposed research should investigate innovative approaches that enable revolutionary advances in material synthesis with the ability to scale to quantities relevant for application integration, culminating in the development of a prototype demonstration of a revolutionary NLO material integrated into a functional government-provided electro-optic modulator. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice, or research that pivots on exceptional claims that cannot be technically justified in the proposal. This includes:

- Proposals aiming to employ solely inorganic materials without a polymeric component
- Proposals aiming to modify/repurpose existing NLO materials resulting in incremental improvements to the state-of-the-art (SoA)

A. Background

The synthesis of complex polymeric materials in which monomer sequence, stereochemistry/orientation, and composition are strictly controlled remains an elusive synthetic challenge. Surmounting this bottleneck will establish a novel class of programmable precision polymers (PPPs) that grant unprecedented control over material behavior across time and length scales, from individual molecules to macroscopic, coordinated ensembles.

By controlling properties through PPPs, materials with targeted characteristics required for advanced performance can be made deterministically. Military and commercial capability relies on advanced materials for NLO applications, such as LiDAR and optical communications. A significant performance gap exists between desired capabilities and what can be achieved with today's SoA materials, and improvements have been slow and incremental. Both inorganic crystals and organic dyes, the two primary classes of materials used in this field, face fundamental limitations that constrain their effectiveness. Inorganic crystals, such as barium titanate ($BaTiO_3$), are a mature technology for nonlinear optics, but their performance is inherently limited by the atomic composition of the crystal. The nonlinearity's dependence on the lattice structure means that the material's performance is constrained by the intrinsic properties of the chosen crystal, offering little flexibility for tuning or enhancement.

In comparison, organic dyes are atomically designed to have nonlinear properties an order of magnitude larger than those of inorganics. However, these materials do not possess intrinsic acentric order which necessitates electrical poling forces to achieve nonlinearity. This induced order can be disrupted by exposure to non-ambient environmental conditions limiting long-term performance. Incorporating dyes into random and block polymers improves environmental stability at the cost of sequence definition which hinders achievable materials performance.

APM seeks innovative synthesis capabilities that result in fit-for-purpose materials that deliver revolutionary NLO performance, while being scalable and capable of integration in optical device manufacturing processes. Such capabilities are envisioned to set the foundation for a new class of programmable matter with broad military and commercial impact.

B. Program Description

APM aims to catalyze future materials capabilities through scalable PPP synthesis approaches, where the sequence, orientation, and composition of materials are programmable. APM will employ these approaches to revolutionize NLO materials, with performance measured and evaluated at both the material and device levels.

To effectively enable this vision, APM will emphasize four pillars: (1) *Generalizability*, through demonstration of monomer sequence and orientation control over a wide range of monomer compositions, (2) *Polymer design*, through demonstration of modeling/simulation strategies that guide synthesis towards desired material performance, (3) *Material design*, through demonstration of multiscale modeling/simulation with an emphasis on multi-body and dynamic approaches (e.g., bottom-up or top-down self-assembly), and (4) *Technology sustainability*, through evaluation of material integration into device production and scaling potential to application-specific quantities. Proposals must present a strong technical plan addressing these pillars.

In particular, proposals must:

1. Provide a detailed review of the synthesis approach, including the chemical mechanisms that result in sequence, orientation, and compositional control. Provide quantifiable evidence (e.g., modeling/simulation, preliminary experimental results) that the approach can meet overall phase and program goals, within the schedule established in Table 2. Program Milestones and Deliverables . Approaches that do not advance SoA in materials synthesis and do not provide a clear path to meeting the overall phase and program goals are not selectable.

2. Provide a detailed description of the approach to selection of monomers and subsequent polymers that will be pursued for materials with NLO applications. Include a description of the current SoA and potential performance gains for the types of molecules to be pursued. Include a description of how the proposed polymers are not readily accessible using current synthesis approaches but could be achieved by the proposed technical approach.

3. Provide a detailed description of the analytical methods that will be employed to determine quality and performance metrics of the synthesis approach, proposed polymers, and optical properties described in the proposal, along with relevant amounts and purities.

4. Describe how computational approaches will be used to enhance material development. Include a description of how computational methods (e.g., DFT, molecular dynamics, field-theoretic models) will be used to 1) develop and optimize the synthesis approach, 2) constrain the design space of possible materials (e.g., limit monomer and synthesis choices to those most applicable to achieving the NLO properties in Table 1), 3) simulate multi-body interactions between molecules (e.g., packing, orientation, self-assembly, etc.) in the material, and 4) how these interactions lead to the desired material properties (e.g., electrooptic coefficient, optical losses) and device properties (e.g., $V\pi L$, bandwidth) per Table 1.

5. Discuss technology transition and/or commercialization-activities in the context of the overall scope of the effort, understanding that DARPA may not fund such activities. Describe the vision for scaling material production to relevant levels, detailing how the Phase I and Phase II prototype demonstrations will validate the scalability, reproducibility, and physical attribute of the synthesis approach that supports this vision. This vision must also include the path to material integration in foundry processes that result in fully packaged devices. , Specifically, the proposal must discuss how the prototype will be used as test vehicle to demonstrate the attributes of the synthesis approach, material properties, device integration are compatible with, and transitionable to, commercial foundry environments.

6. Identify appropriate quantitative metrics for each demonstration that facilitate tracking of the research progress towards the overall phase and program goals as described above. Proposers should also include a comparison against the SoA for each metric selected. A successful proposal will thoroughly discuss all details for meeting the metrics set forth for the program as well as the associated risks and risk-mitigation strategies to achieve those metrics and related milestones. Proposers should provide detailed technical rationale supporting the ability to achieve each milestone and plan for the testing and evaluation of tools, capabilities, materials, and/or devices at each milestone.

C. Program Structure

The APM program is structured as a 36-month program divided into two technical phases, each of which will involve performer demonstrations and evaluations. Phase I (12 months) is focused on developing PPP synthesis capabilities culminating in the demonstration of a NLO material with the performance metrics outlined in Table 1. Phase II (24 months) is focused on expanding the synthesis capabilities developed during Phase I to improve/optimize on key performer defined metrics (e.g. yield, purity, scale, etc.) on the path to developing and ultimately demonstrating a revolutionary NLO material and integrating it into a functional device (i.e., a modulator).

Phase I

In Phase I, performers will develop capabilities to synthesize PPPs/materials possessing NLO properties that meet or exceed metrics outlined in Table 1. There will be two demonstrations in this Phase: The first demonstration (month 6) is designed to assess progress towards the viability of the proposed PPP synthesis approach. This demonstration will evaluate benchmark metrics defined by proposers at the program onset and will be corroborated by the Government Independent Verification & Validation (IV&V) team. The second demonstration (month 11) will employ the synthesis approach(es) developed during Phase I to synthesize an NLO material that is equivalent/exceeds the SoA as outlined in Table 1, culminating in the delivery of the Phase I initial prototype (consisting of the physically synthesized NLO material sample and its associated computational design models and synthesis data). It is anticipated that a performer down-select will occur at the end of Phase I based on technical progress, funding availability, and Department of War (DoW) operational needs.

OPTIONAL Phase I Milestone

It is anticipated that performance under APM will involve the generation, receipt, storage, transmission, or processing of Controlled Unclassified Information (CUI). Consequently, **all performers must achieve and demonstrate cybersecurity compliance in accordance with DoW Cybersecurity Maturity Model Certification (CMMC) Level 2 (Self-Assessment) requirements.**

To support performers in meeting these required cybersecurity baselines without impeding program progress, the Government has established an **Optional Phase I CMMC Milestone.**

- **Purpose:** The Optional Phase I CMMC milestone is established to provide the performer with dedicated time, structure, and resources to bring their information system environment into full operational compliance with **CMMC Level 2 (Self-Assessment)** requirements (NIST SP 800-171 Rev. 2).

- **Funding Limitation:** The Government will allocate a fixed amount of **up to $25,000** for the successful execution and completion of the Optional Phase I CMMC Milestone.

- **Compliance vs. Administrative Entry:** Proposers are explicitly notified that this milestone is not merely an administrative exercise to enter an existing or non-compliant score into the Supplier Performance Risk System (SPRS), but requires the actual, verified technical implementation and formal operationalization of all 110 security requirements comprising CMMC Level 2 (Self).[1]

Completion of this milestone serves as a gate for the remaining technical effort. **The Performer will not receive authorization or approval to begin work on any subsequent project milestones—regardless of whether those follow-on milestones have been negotiated, awarded, or funded—until the Government has validated that the performer has achieved full CMMC Level 2 (Self) compliance and verified the corresponding assessment submission in SPRS.**

Phase II

In Phase II, performers will utilize the improved/optimized synthetic capabilities developed over the course of the APM program to synthesize and fabricate revolutionary prototype NLO material and integrate this material into a modulator whose performance can be evaluated. There are two demonstrations in Phase II: The first demonstration (month 23) will assess the ability to synthesize prototype revolutionary NLO material with enhanced performance over SoA as outlined in Table 1. For the final Phase II prototype demonstration (month 35), performer teams will work with the Government IV&V team to design a modulator compatible with their material. The IV&V team will fabricate the device, receive material from the performer team, integrate the material into the device, and finally evaluate material performance within the integrated device.

IV&V

To ensure objective assessment and reliable program execution, DARPA will utilize an IV&V team. This team, comprising subject matter experts, will assess the program deliverables throughout the program. The IV&V team will collaborate with DARPA and performers to validate that key milestones are achieved, determine appropriate testing methods, measure key metrics, and engage with stakeholders at meetings. Performers will provide appropriate deliverables per the program schedule to the IV&V team and DARPA.

[1] Pursuant to Department of War (DoW) procurement regulations, this self-attestation constitutes a material representation of compliance. Under the Department of Justice (DOJ) Civil Cyber-Fraud Initiative, the federal government actively prosecutes cybersecurity misrepresentations across all defense programs. Consequently, any false attestation may subject the proposer to civil prosecution, treble damages, and penalties under the False Claims Act (31 U.S.C. §§ 3729-3733).

Facilitating Demonstrations

IV&V partners will coordinate with each performer team to schedule and drive performance demonstrations per the program schedule. Performer teams will deliver polymer samples to be characterized by the IV&V team at the scheduled demos. The IV&V team will provide a comprehensive analysis validating physical and performance properties per the metrics in Table 1. In Phase II, the IV&V team will closely collaborate with each performer to design test modulators, fabricate the modulators, receive materials from performers and integrate them into the modulator, and test performance of the material within the modulators. Proposals should not include costs for device fabrication.

Phase II Quest Opportunities

Phase II offers performers the potential to realize additional funding by demonstrating enhanced capabilities. DARPA and government transition partners, with inputs from government and industry stakeholders, may issue specific quests beyond the scope of this solicitation. All Quests will be discussed and negotiated in accordance with the terms and conditions of the agreement. Goals may include, but are not limited to (1) testing the performer's ability to synthesize novel polymers for other applications and (2) engagement with commercialization stakeholders to catalyze future commercial investment. **Please note: This information is provided for awareness only, and does not constitute a solicitation for activities under this PS.**

Technical Program Metrics

A summary of the proposed program metrics is provided in Table 1. Proposers must identify appropriate quantitative metrics at each demonstration that facilitate tracking of the progress towards the overall phase and program goals, as described in Section B. This includes quantitative metrics for physical properties of the proposed synthesis approach that enable the nonlinear properties of the material and device at the corresponding demonstration (see Table 1), including justification for why the proposed metric is important to achieving the desired optical property. For each metric, proposers should also include a comparison against the state of the art. As an example, if proposing a linear polymer synthesis approach, potential quantitative metrics might include degree of polymerization, number and class (e.g., polar, nonpolar, charged) of monomers included in the polymer, stepwise monomer addition yield, dispersity, degree of tacticity, glass transition temperature, and purity required for material and/or device integration.

Table 1. Program Metrics

	Metric	Current SOA	Phase 1		Phase 2	
		Organics	Demo 1 (month 6)	Demo 2 (Month 11)	Demo 3 (Month 23)	Demo 4 (Month 35)
Physical	Performer Defined	Performer Defined	Performer Defined: must include quantitative criteria for physical properties of the proposed synthesis approach that enable the non-linear properties of the material and device at the corresponding demonstration			
Performance	n^3r_{33} (pm/V)	~4000		≥ 3000	≥ 8000	≥ 8000
	Optical Loss (dB/cm)	3		1	1	1
	VpiL (V cm)	~0.009				≤ 0.0005
	Bandwidth (Hz)	~10^{11}				≥ 10^{12}

D. Schedule, Milestones, and Deliverables

A summary of the program schedule is presented in Figure 1. For planning and budgetary purposes, proposers should assume a program start date of April 1, 2027.

Proposers should anticipate that the Government will conduct a thorough review of progress at each milestone throughout the program. If it is determined that sufficient progress is not being made or that the effort is unlikely to achieve the desired outcomes, the Government may decide not to fund subsequent milestones.

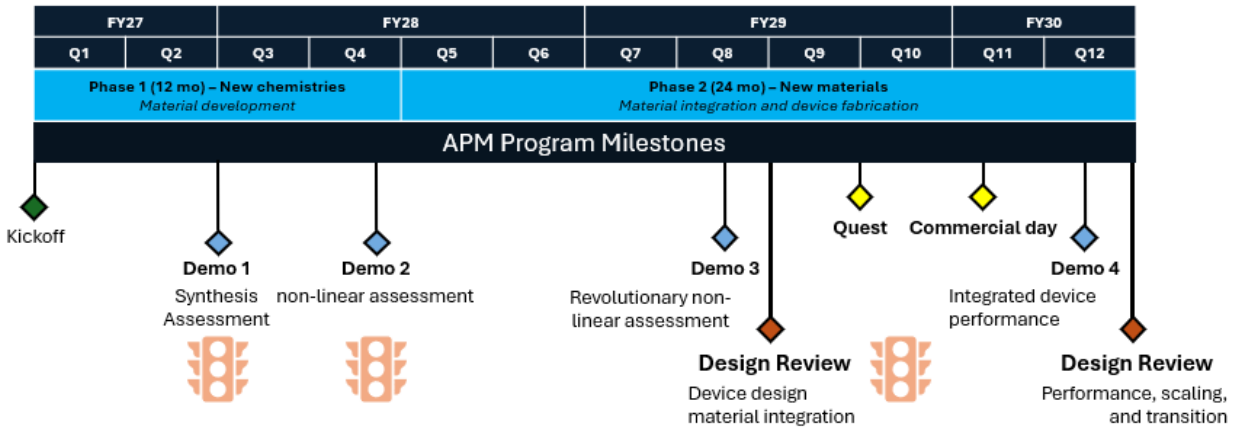

Figure 1. Program Schedule

Deliverables

All products, material and otherwise, to be provided to the Government as outcomes from conducted research should be defined in the proposal. Performers should allot time and budget to fulfill obligations for travel to review meetings and the transmission of report documentation.

Prototype Deliverables

Prototype deliverables will be delivered to the Government at the end of each phase. For Phase 1, the prototype deliverable is the PPP; and for Phase 2, the prototype deliverable is the demonstration of expanded synthesis capabilities developed during Phase I (optimized for performer-defined metrics such as yield, purity, and scale) on the path to developing, demonstrating, and validating a revolutionary NLO material integrated into a functional device. Prototype demonstrations will be validated by delivery of the following:

- All data concerning the processes for synthesizing, purifying, and characterizing polymers
- All data concerning incorporating/formulating polymers into a material
- All data concerning incorporating polymers/materials into functional devices
- All methods, code, data, etc. for computational approaches
- Additional deliverables may include registered reports, experimental protocols, publications, data management plan, intermediate and final versions of software libraries, code and application programming interfaces (APIs), documentation and user manuals, and/or a comprehensive assemblage of design documents, models, modeling data and results, and model validation data

Monthly Technical Reports

Technical review meetings with the APM program manager are anticipated to be held every month, usually as a teleconference. Written technical reports should be submitted monthly beginning after the kick-off meeting and either two working days prior to each subsequently scheduled technical review

meeting or within 10 days from the beginning of each month, whichever is closest to the beginning of the month.

Demonstration Reports

The APM program will conduct four technology demonstrations over the course of the program (see Figure 1). The purpose of these demonstrations is to assess technology development progress towards programmatic milestones and program metrics. Proposers should provide a detailed discussion on the month 6, 11, and 23 demonstrations. Examples of key details include information on the rational for the proposed demonstration in support of validating proposer defined metrics; analytical approaches to assessing key metrics; how the proposed testing will advance further technology development goals, and relevant quantities, yields, purities and timelines to allow for IV&V within 30 days of material delivery. In addition, proposers should provide high-level details on approaches to the month 35 demonstration, as more granular details will be defined/finalized in consultation with DARPA and IV&V partners in Phase II. Each demonstration will consist of a detailed technical report describing progress towards demonstration and prototype deliverables. In addition, performers are required to deliver technical specifications, materials, protocols, and data specified by DARPA to government partners for the independent verification and validation of performance benchmarks.

Design Reviews

There will be two design reviews in Phase II. The first design review will track progress on materials synthesis, modulator design, and material integration. It also will include progress on synthesis scaling and manufacturing process integration. The second design review will be a final summary of capabilities developed in the program, including a review of integrated device performance, synthesis properties, scaling, and manufacturing process integration. It also will include a commercialization/transition plan that includes a discussion of opportunities and risks associated with future development. At the end of Phase II, performer teams will additionally deliver reports on 1) material stability and 2) material scaling and manufacturing process integration.

Scaling Report

The scaling report will describe the vision for scaling material production to relevant levels and includes physical and computational analyses that support this vision. This report must also include the path to material integration in foundry processes that result in fully packaged devices. This report will be delivered with the second design review in Phase II.

Material Stability Report

The material stability report will describe how material performance changes with exposure to environmental conditions outside of ambient. This report will include all relevant experimental conditions, characterization approaches, and test results. This report will be delivered with the second design review in Phase II.

Travel

All proposals must include the following meetings and travel in the proposed schedule and costs:

- To foster collaboration between teams and disseminate program developments, a two-day PI meeting will be held approximately every twelve months, with locations split between the East and West Coasts of the United States. For budgeting purposes, plan for a two-day program kickoff meeting in the Washington, D.C. area followed by three subsequent two-day program review meetings over the course of the program at U.S. locations determined by DARPA. Regular teleconference meetings will

be scheduled with the Government team to report technical results and progress, as well as problem identification and mitigation. Proposers should also anticipate at least one site visit per phase by the DARPA program manager, during which they will have the opportunity to demonstrate progress towards agreed-upon milestones.

A summary of the program milestones and deliverables is presented in Table 2.

Table 2. Program Milestones and Deliverables

Phase I		
Milestone	**Timing / Due Date**	**Exit Criteria / Deliverable**
Initial technical approach and development plan	No later than 5 days after kickoff meeting	• Initial program plan • Presentation and accompanying materials describing the refined technical approach • Detailed program execution plan • Government-approved CUI management plan • Materials, supplies, and equipment larder for order
(OPTIONAL) Operational Compliance with CMMC Level 2 (Self)	Up to 1 month	• All POA&M items associated with NIST SP 800-171 / CMMC Level 2 controls have been fully closed and operationalized • Final self-assessment reflecting full compliance (SPRS score of 110) has been officially posted to SPRS with the required executive affirmation • The Government (or its designated technical representative) reviews and approves the updated SSP, closed POA&M records, and SPRS verification

Progress towards synthesis approach	End of month 3	• Presentation and accompanying materials describing progress towards achieving the technical approach for polymer synthesis • Details on key bottlenecks, risks, and mitigation strategies in preparation for Month 6 demonstration • Plans and preliminary results for improvement/optimization of the synthesis approach
Delivery of Prototype materials; Demonstration of PPP library synthesis	End of month 6	• Delivery of prototype PPP library materials to IV&V for analysis • Presentation and accompanying materials describing library synthesis and progress towards achieving performer defined 6-month metrics • Preliminary plan for achieving performer proposed physical metrics for the synthesis approach at Month 11 demonstration
Characterization of PPP library	End of month 9	• Presentation and accompanying materials demonstrating analytical evaluation of key PPP thermal, physical, chemical, and/or optical properties of polymers • Finalized testing plan for Month 11 demonstration of NLO properties
Demonstration of progress towards NLO properties	No later than the 10th day of month 12	• Demonstration of progress towards $n^3r_{33} \geq 3000$ pm/V and an optical loss of 1 dB/cm • Presentation and accompanying materials describing key optical performance results • Plans and preliminary results for improvement/optimization of NLO performance • Delivery of technical specifications to include all data concerning the processes for synthesizing, purifying, and characterizing polymers; data concerning incorporating/formulating polymers into a material; data concerning incorporating polymers/materials into functional devices

Phase II		
Milestone	**Timing / Due Date**	**Exit Criteria / Deliverable**
Progress towards synthesis of Phase II PPP library generation for month 23 demonstration	End of month 15	• Presentation and accompanying technical results and data describing progress towards achieving synthesis of Phase II PPP library • Details on key bottlenecks, risks, and mitigation strategies to achieving synthesis of PPP library to include number, yield, quantity, and purity of PPPs • Preliminary plan for increasing physical and optical properties of PPPs for Month 23 demonstration
Characterization of Phase II PPP library and initial performance of materials	End of month 18	• Presentation and accompanying materials describing characterization of materials to include performer defined metrics (i.e., purity, dispersity, yield, etc.) • Report on initial polymer performance relative to performer defined metrics (i.e., glass transition temperature, refractive index, etc.) and plans for improvement/optimization progress towards achieving the technical approach for polymer synthesis • Details on key bottlenecks, risks, and mitigation strategies in preparation for Month 6 demonstration • Plans and preliminary results for improvement/optimization of the synthesis approach
Materials scale-up and testing plan for upcoming demonstration	End of month 21	• Presentation and accompanying materials describing scale-up and key quality metrics of materials to be employed in Month 23 demonstration • Finalized testing plan for Month 23 demonstration, including potential risks and mitigation strategies
Month 23 demonstration of NLO performance that exceeds the current SoA	End of month 23	• Demonstration of progress towards $n^3r_{33} \geq 8000$ pm/V and an optical loss of 1 dB/cm • Presentation and accompanying materials describing key optical performance results • Plans and preliminary results for materials integration into a prototype device or testbed
Design review #1: Device design, materials scaling and integration	End of month 24	• Design review with DARPA and IV&V team • Presentation and accompanying materials describing key optical performance results • Plans and preliminary results for materials integration into a prototype device or testbed in preparation for Month 24 design review and for materials stability testing to be completed by end of Month 36
Progress towards materials scaling and processing for device integration	End of month 27	• Presentation and accompanying technical results and data describing progress towards PPP scale-up and key quality metrics for device integration
Commercialization Engagement	End of month 28	• Production of commercialization materials to include slide presentations, posters, marketing materials, etc. as specified by DARPA for engagement

		• Performer attendance at event
Delivery of materials to IV&V team for device integration	End of month 30	• Delivery of materials to IV&V partners at the DARPA specified quantity, yield, and purity of materials along with accompanying analytical verification of polymer quality metrics • Finalized testing plan for Month 35 demonstration
Phase II prototype demonstration of integrated device performance	End of month 35	• Demonstration of progress towards $n^3r_{33} \geq 8000$ pm/V and an optical loss of 1 dB/cm • Demonstration of progress towards VpiL ≤ 0.0005 V/cm and a bandwidth of ≥ 10^{12} Hz • Delivery of technical specifications to include all data concerning the processes for synthesizing, purifying, and characterizing polymers; data concerning incorporating/formulating polymers into a material; data concerning incorporating polymers/materials into functional devices
Design review #2: Device performance, scaling, and transition	End of month 36	• Design review with DARPA and IV&V team • Report on polymer/materials stability testing • Report on polymer/materials scaling and manufacturing integration • Delivery of final report to document repository along with supporting documentation and technical results

Milestone Payment Values: APM will utilize a fixed-price payable milestone structure. Payments will be made exclusively upon the Government's technical verification and written acceptance of predetermined, verifiable milestone deliverables. With the exception of the Phase I Optional CMMC Compliance Milestone, Proposers are responsible for establishing milestone payment amounts that align technical progress, cash flow requirements, and tangible Government value.

The Government recognizes that non-traditional defense contractors, commercial entities, and small businesses require sufficient working capital to sustain operations. However, milestone valuations should represent a balanced allocation of risk and verifiable technical output. Milestones that propose large upfront payments—such as disproportionately high kickoff meetings, initial planning sessions, or preliminary design reviews without corresponding deliverable substance—will be challenged or rejected during negotiations.

If a proposer requires the Optional CMMC Compliance Milestone (Milestone 2), the Government will strictly limit the dollar value allocated to Milestone 1 (Initial technical approach and development plan) to reflect only basic administrative and non-CUI kickoff activities.

E. Intellectual Property (IP)

To enable program goals around commercialization, Performers shall maintain ownership of all IP developed under any APM Agreement resulting from this solicitation and shall have the right to commercialize such IP, including the right to grant licenses to third parties.

For all technical data, computer software, design artifacts, and documentation first generated, developed, or delivered in the performance of this Agreement ("Foreground Data"), the Government expects to receive, at a minimum, Government Purpose Rights (GPR). GPR grants the Government the royalty-free right to use, duplicate, modify, release, perform, display, or disclose technical data and computer software

within the Government, and to release or disclose such data to third parties for Government purposes. The Government requires a level of rights to all processes, hardware, datasets, and software data deliverables—expressly including Form, Fit, and Function (FFF) data—sufficient to allow full test, evaluation, and verification of the deliverables by the Government team and its designated Covered Government Support Contractors.

Potential performers must outline IP assertions in the full proposal, including any pre-existing technical data, computer software, form, fit, and function data, or other Background Intellectual Property (BIP), or portions thereof, proposed for use during program execution or necessary to use, test, evaluate, or transition program deliverables. Proposers must clearly define the nature of all proposed restrictions and the specific rights granted to the Government; identification of BIP in a proposal does not constitute Government acceptance of such restrictions.

To ensure program deliverables can be verified and validated, the Government expects to receive, at a minimum, a non-exclusive, royalty-free, worldwide, non-transferable license - for the Government and its designated Covered Government Support Contractors - to use, operate, maintain, inspect, test, analyze, and evaluate any asserted BIP solely for the purposes of performing IV&V, technical milestone verification, and performance metrics evaluation under the Agreement.

Definitions:

Covered Government Support Contractor: An individual or organization performing work under a contract or agreement with the Government, to furnish independent and impartial advice or technical assistance directly to the Government in support of its management and oversight of a program or effort. Such contractors are granted access to Data necessary for contract performance, and their agreements contain clauses or articles that: 1. Prohibit the public disclosure or release of proprietary and nonpublic information furnished by the Government; 2. Require the handling of Controlled Unclassified Information (CUI) in accordance with 32 C.F.R. Part 2002; 3. Strictly limit the use and disclosure of any Government-furnished technical data or software marked with restrictive legends, ensuring the information is used solely for the performance of the contract and is protected from unauthorized release to third parties.

Form, fit, and function data is technical data that describes the required overall physical, functional, and performance characteristics (along with the qualification requirements, if applicable) of an item, component, or process to the extent necessary to permit identification of physically and functionally interchangeable items.

Government purposes includes, but is not limited to, use by or on behalf of the government, including use by government contractors, for research, development, testing, evaluation, production, operation, maintenance, repair, modification, or disposal. Government Purpose does not include use for commercial purposes.

Section II: Evaluation Criteria

- Proposals will be evaluated using the following criteria listed in ***descending order of importance***: Overall Scientific and Technical Merit; Potential Contribution and Relevance to the DARPA Mission; Budget and Price; and Plans and Capability to Accomplish Technology Transition.

    - **Overall Scientific and Technical Merit**: The proposed technical approach is innovative, feasible, achievable, and complete. The proposed technical team has the expertise and experience to

manage and accomplish the proposed technical approach, tasks, cost, and schedule. The proposal details the approach to team integration and how collaboration will be managed. Similar efforts completed/ongoing by the proposer in this area are fully described including identification of other Government sponsors. Quantitative justification (e.g., modeling/simulation, preliminary experimental results) is provided for technical claims, including proposer-defined metrics. Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that a final outcome that achieves the goal can be expected as a result of award. The proposal identifies major technical risks, and planned mitigation efforts are clearly defined and feasible.

- **Potential Contribution and Relevance to the DARPA Mission**: The potential contributions of the proposed effort bolster the national security technology base and support DARPA's mission to make pivotal early technology investments that create or prevent technological surprise.
- **Budget and Price:** The proposed solution is realistic and affordable. The budget is realistic and accurately reflects the technical goals and objectives of the solicitation and reflects a sufficient understanding of the level of effort and staffing needed to successfully accomplish the proposed technical approach. Each price element provides commensurate technical, schedule, or execution value, and is necessary, appropriately scaled, and neither materially overestimated nor underestimated.
- **Plans and Capability to Accomplish Technology Transition**: The proposer clearly demonstrates its capability to transition the technology to the research, industrial, and/or operational military communities in such a way as to enhance U.S. defense and long-term commercial viability. In addition, the evaluation will take into consideration the extent to which the proposed IP rights structure will potentially impact the Government's ability to assess deliverables and to transition the technology.

Section III: Submission Information

- This Program Solicitation (PS) may result in the award of Other Transaction (OT) for Prototype agreements, which can include not only commercially available technologies fueled by commercial or strategic investment, but also concept demonstrations, pilots, and agile development activities that can incrementally improve commercial technologies, existing Government-owned capabilities, and/or concepts for broad defense and/or public application(s). Follow-on production contracts or transactions may also be awarded pursuant to 10 U.S.C. § 4022. The OT agreement will not require cost sharing unless the offeror is a traditional defense contractor who is not working with a nontraditional defense contractor participating in the program to a significant extent. The following websites are incorporated by reference and contain additional information regarding overall proposer instructions, general terms and conditions, and Other Transactions for Prototype.

    - **Proposer Instructions and General Terms and Conditions**: Proposer Instructions and General Terms and Conditions
    - **Other Transaction agreements**: Proposer Instructions: Other Transactions

- This solicitation contains an abstract phase. Abstracts are required. Abstracts are due no later than the due date and time stated in the Overview section. Additional instructions for abstract submission are contained within **Attachment A**. Proposers will receive a response from the Government encouraging or discouraging a full proposal submission.

- **Notification of Intent to Propose.** Proposers are asked to provide notification of their intent to propose no later than the date and time stated in the Overview section to assist the Government in planning and scheduling Proposal Oral Presentations and related evaluation activities.

  Notifications should be submitted by email with the subject line "APM Intent to Propose" to APM@darpa.mil. Submission of notification is not required for proposal submission or eligibility for award. However, failure to provide advance notice may limit the Government's ability to accommodate proposer scheduling preferences for oral presentations. With respect to this solicitation, proposers must submit an eForm 60 for all U.S. Permanent Residents and foreign nationals who will be participating in the Oral Presentations no later than the due date for the Notification of Intent to Propose specified in the Overview Information section. Failure to submit the required documentation in a timely manner may result in the individual being denied access to the event without exception. It is the responsibility of the prime contractor to ensure that all personnel, including those from subawardees, who are U.S. Permanent Residents or foreign nationals comply with these requirements.

  Submission Link: The form must be submitted electronically via the following secure portal: https://dtsn.darpa.mil/eform60/.

- Full proposals and Oral Presentations are due no later than the due date and time stated in the Overview section. There will be 30-minute virtual Oral Presentations with 45-minute Q&A sessions scheduled for each conforming full proposal following receipt. **Attachments C, D, E, F, G, and H** contain specific instructions and templates and constitute a full proposal submission. **Attachment I** is provided to allow for Proposers access to anticipated APM award terms, which will be finalized specific to each project. Submitting suggested edits is not mandatory and will not be evaluated, but

proposers are urged to submit any requested changes with their initial proposal to facilitate timely negotiations and avoid award bottlenecks.

- Please visit Proposer Instructions and General Terms and Conditions for specific information regarding submission methods through the Broad Agency Announcement Tool (BAAT).

- The virtual Oral Presentations will be held during the time window specified in the Overview section. Pre-recorded presentations, videos, voice recordings, narrated slide decks, or other prerecorded media are not permitted.

- DARPA is interested in whether, and to what extent, proposers are using artificial intelligence (AI) tools to contribute to Volume I of proposals submitted in response to DARPA solicitations. Therefore, proposers must answer the following questions on the cover sheet of Volume I of this solicitation:
  - Did you use AI tools to assist in preparing this proposal?
  - If yes, what tools did you employ?

  Any content in Volume I that utilized an AI tool to generate information, assist in technical understanding, or guide the technical work should have a citation and a corresponding reference in the Bibliography section of Volume I. The citation should specify the tool, content, and purpose. For example, "[AI tool] was used to understand existing state of the art in manufacturing."

  NOTE – THIS INFORMATION WILL NOT BE USED FOR EVALUATION PURPOSES. Proposals will be evaluated in accordance with the Evaluation Criteria outlined in the solicitation regardless of whether AI tools were employed.

- **PS Attachments**:
  - **Attachment A**: Abstract Instructions and Template
  - **Attachment B**: Proposal Summary Slide Template
  - **Attachment C**: Proposal Instructions and Volume I Template (Technical and Management)
  - **Attachment D**: Proposal Instructions and Volume II Template (Price)
  - **Attachment E**: Price Detail Spreadsheet
  - **Attachment F**: Other Transaction Certification Template
  - **Attachment G**: Task Description Document (TDD) Template
  - **Attachment H**: Schedule of Milestones and Payments
  - **Attachment I:** Model Other Transaction for Prototype
  - **Attachment J**: APM Controlled Unclassified Information (CUI) Guide
  - **(Informational) Enclosure 1:** DARPA BAAT Portal Submission Guide
  - **(Informational) Enclosure 2:** Proposer Checklist

- **Cybersecurity Maturity Model Certification Requirements:** As codified in 32 CFR Part 170, the Cybersecurity Maturity Model Certification (CMMC) Program is designed to ensure DoW performers are properly safeguarding Federal Contract Information (FCI) and CUI that is processed, stored, or transmitted on performer information systems. FCI and CUI must be protected to meet evolving threats and safeguard nonpublic, unclassified information that supports and enables the warfighter. The CMMC Program provides a consistent methodology to assess a defense contractor's

implementation of required cybersecurity requirements. Proposers are encouraged to visit the DoW Chief Information Officer CMMC Resources & Documentation site for more information on CMMC: https://dodcio.defense.gov/cmmc/Resources-Documentation/.

This provision outlines the CMMC requirements pertaining to this solicitation, to include the required CMMC level and the corresponding proposal requirements.

Required CMMC Level: The required CMMC level for this solicitation is CMMC Level 2 (Self-Assessment). Level 2 focuses on the protection of CUI and incorporates the 110 security requirements specified in NIST SP 800-171 Rev 2.

Eligibility for Award: Proposers have two potential pathways to demonstrate compliance with the CMMC level required for this solicitation:

- Compliance at Proposal Submission: To be eligible for award under this solicitation, the CMMC Unique Identifier (UID) associated with the prime proposer must reflect a current CMMC status (representing either Final or Conditional status) posted in the Supplier Performance Risk System (SPRS) indicating compliance at the required level above. Additionally, the proposer must have a current annual CMMC affirmation, submitted by an authorized Affirming Official, posted in SPRS. Further, as some entities may have multiple business segments, multiple CAGE codes, etc., DARPA must reasonably be able to relate the CMMC UID in SPRS to the proposing entity. *(Note: SPRS is housed within the Procurement Integrated Enterprise Environment https://piee.eb.mil; an additional resource on SPRS is located here: https://dodcio.defense.gov/Portals/0/Documents/CMMC/CMMC-SPRS.pdf)*

  OR

- Optional Phase I Milestone as detailed in Section 3, Program Structure. *(Note: this alternative pathway is only applicable to attaining compliance with CMMC Level 2; as a prerequisite for award, all proposers must demonstrate compliance with CMMC Level 1 at the time of award.)*

Subcontractor Flow-Down: Prime Proposers are responsible for verifying subcontractor compliance. In the proposal, the prime proposer must attest that all subcontractors who will process, store, or transmit FCI or CUI under a resultant award will meet the applicable CMMC level required by 32 CFR § 170.23, and indicate how proposers will verify subcontractors' status prior to subcontract award. The proposal must also describe the verification method the prime proposer will use to ensure subcontractors have the required CMMC status in SPRS prior to subcontract award.

If the Subcontractor will process, store, or transmit...	***...the Subcontractor's Minimum Required CMMC Level is:***
Federal Contract Information (FCI) only	*CMMC Level 1 (Self-Assessment)*
Controlled Unclassified Information (CUI)	*The CMMC Level required by this solicitation*

- All technical, contractual, and administrative questions regarding this notice must be emailed to APM@darpa.mil. Emails sent directly to the Program Manager or any other address may result in

delayed or no response. All questions must be in English and must include the name, email address, and telephone number of a point of contact. DARPA will attempt to answer all questions in a timely manner and post an FAQ list on the DARPA/MXO Opportunities page at (http://www.darpa.mil/work-with-us/opportunities). The list will be updated on an ongoing basis until two weeks prior to the proposal due date.

Section IV: Special Considerations

A. General Information

- This solicitation, stated attachments, and websites incorporated by reference constitute the entire solicitation. In the event of a discrepancy between the solicitation, attachments, or websites, the solicitation shall take precedence.

- As of the time of publication of this solicitation, all proposal submissions are anticipated to be unclassified.

- This program is subject to **Attachment J: APM Controlled Unclassified Information (CUI) Guide**. All individuals accessing CUI agree to protect CUI in accordance with *DoD Instruction 5200.48 CONTROLLED UNCLASSIFIED INFORMATION (CUI)* and *NIST Special Publication 800-171 Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations*.

- As of the date of publication of this solicitation, the Government expects that program goals as described herein either cannot be met by proposers intending to perform fundamental research or the proposed research is anticipated to present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Therefore, the Government anticipates restrictions on the resultant research that will require the awardee to seek DARPA permission before publishing any information or results relative to the program.

B. Eligibility

- Non-U.S. organizations cannot participate in this solicitation. All other responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA. Historically Black Colleges and Universities, Small Businesses, Small Disadvantaged Businesses and Minority Institutions are encouraged to submit proposals and join others in submitting proposals; however, no portion of this solicitation will be set aside for these organizations' participation due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities.

- DARPA encourages technical solutions from all responsible sources capable of satisfying the government's needs. To ensure fair competition across the ecosystem, DARPA prohibits contractors/performers from concurrently providing Systems Engineering Technical Assistance (SETA), Advisory and Assistance Services (A&AS), or similar support services and being a technical performer, unless the DARPA Deputy Director grants a written waiver.

1) Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and Government Entities to Include National Labs

- Due to their specialized roles and longstanding regulatory relationships with the Government, FFRDCs, UARCs, and Government Entities to include National Laboratories present potential conflicts and advantages that could compromise fair and open competition. **FFRDCs, UARCs, and Government Entities are not eligible to submit proposals as prime proposers under this solicitation. These entities may participate only as subcontractors to an eligible prime proposer, subject to the conditions set forth below.**

- If a FFRDC, UARC, or Government Entity believes they offer unique and innovative capabilities for this solicitation and are interested in this solicitation as a subcontractor to a prime proposer, they should contact the Agency Point of Contact (POC) listed in the Overview section prior to the abstract due date to discuss potential participation as part of the government team or eligibility as a subcontractor for a technical performer. There are three key criteria that will be utilized to determine the ability of these entities to participate in the program as subcontractors:
    - Critical, specialized capabilities such as tool accessibility, critical components or fabrication, characterization, testing, or measurement techniques. They must clearly demonstrate that the proposed work is not otherwise available from the private sector.
    - Demonstration of active plans to transition supporting or enabling technology from the FFRDC, UARC, or Government Entity to the prime contractor on the APM program.
        - A letter of intent from the division director of the FFRDC, UARC, or Government Entity identifying the potential technologies and committing to transitioning the technology to the prime contractor is required at proposal submission. This may include an option for a non-exclusive license for any FFRDC, UARC, or Government Entity-developed technology or process steps required for successful APM prototypes.
        - If the FFRDC, UARC, or Government Entity presents hurdles for technology transition, then they may be removed from the program at the Government's discretion.
- These entities typically may only receive funding through existing awards they hold with their sponsoring agencies. If these entities are proposed as subawardees, their costs must be clearly segregable in cost proposals. Proposals should be structured such that these entities are not essential for the core commercial business model of the prime.
- DARPA may fund work proposed by these entities with the following specific caveats:
    - **FFRDCs:** (1) FFRDCs must clearly demonstrate that the proposed work is not otherwise available from the private sector. (2) FFRDCs must provide a letter, on official letterhead from their sponsoring organization, that (a) cites the specific authority establishing their eligibility to propose to Government solicitations and compete with industry, and (b) certifies the FFRDC's compliance with the associated FFRDC sponsor agreement's terms and conditions. DARPA, under this solicitation, will not award separate contracts to FFRDCs but will instead leverage their existing sponsor's agreements.
    - **UARCs:** While UARCs typically have statutory authority to compete with industry, internal DARPA policy views them as trusted advisors who are only eligible to act as performers in fields where they do not serve in an advisory role. Even in those situations, DARPA still considers UARCs as having organizational conflicts of interest (OCI) when applying for a performer role. Proposals with UARCs as subawardees must include an OCI mitigation plan.
    - **Government Entities:** Government Entities (e.g., Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations. Government Entities must clearly demonstrate that the work is not otherwise available from the

private sector and provide written documentation citing the specific statutory authority and contractual authority, if relevant, establishing their ability to propose to Government solicitations and compete with industry. This information is required for Government Entities proposing to be subawardees.

- **Authority and Eligibility:** At the present time, DARPA does not consider 15 U.S.C. § 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C.§ 4892 may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility. DARPA will consider FFRDC and Government Entity eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the proposer.

- During the abstract review phase, the Government may identify specific FFRDCs and UARCs, or Government Entities proposed as subcontractor teammates who possess unique capabilities, tools, or facilities critical to the broader program. To maximize the utility of these specialized capabilities, the Government reserves the right to fund these entities directly and designate them as Shared Government Resources supporting all selected APM performers. In such cases, the Government will instruct affected proposers to remove the designated entity from their performer team prior to full proposal submission, and the entity's capabilities will instead be provided to all performers as a Government-furnished service during program execution.

  FFRDCs, UARCs, and Government entities interested in participating in the APM program in any capacity should first contact the Agency Point of Contact (POC) listed in the Overview section prior to the Abstract due date to discuss eligibility and potential conflict of interest considerations. Complete information regarding eligibility can be found at Proposer Instructions and General Terms and Conditions.

C. Additional Information

- The APEX Accelerators program, formerly known as the Procurement Technical Assistance Program (PTAP), focuses on building a strong, sustainable, and resilient U.S. supply chains by assisting a wide range of businesses that pursue and perform under contracts with the DoD, other federal agencies, state and local governments and with government prime contractors. See https://www.apexaccelerators.us/ for more information. APEX Accelerators helps businesses:

  - Complete registration with a wide range of databases necessary for them to participate in the government marketplace (e.g., SAM)
  - Identify which agencies and offices may need their products or services and how connect with buying agencies and offices
  - Determine whether they are ready for government opportunities and how to position themselves to succeed
  - Navigate solicitations and potential funding opportunities
  - Receive notifications of government contract opportunities on a regular basis
  - Network with buying officers, prime contractors, and other businesses
  - Resolve performance issues and prepare for audit, only if the service is needed, after receiving an award

- Project Spectrum is a nonprofit effort funded by the DoD Office of Small Business Programs to help educate the Defense Industrial Base (DIB) on compliance. Project Spectrum is vendor-neutral and available to assist businesses with their cybersecurity and compliance needs. Their mission is to improve cybersecurity readiness, resilience, and compliance for small/medium-sized businesses and the federal manufacturing supply chain. Project Spectrum events and programs will enhance awareness of cybersecurity threats within the manufacturing, research, and development, as well as knowledge-based services sectors of the industrial base. Project Spectrum will leverage strategic partnerships within and outside of the DoD to accelerate the overall cybersecurity compliance of the DIB. www.Projectspectrum.io is a web portal that will provide resources such as individualized dashboards, a marketplace, and Pilot Program to help accelerate cybersecurity compliance.

- Subscribe to DARPA MXO's newsletter for timely updates on research opportunities, upcoming events, ways to work with us, and more.

    - MXO will be hosting its next event, MXO's Spark Tank, in Chicago, Illinois, on November 2–4, 2026. For details, visit https://www.darpa.mil/events/2026/spark-tank.

- DARPAConnect offers free resources to potential performers to help them navigate DARPA, including "Understanding DARPA Award Vehicles and Solicitations," "Making the Most of Proposers Days," and "Tips for DARPA Proposal Success." Join DARPAConnect at https://www.darpaconnect.us to leverage on-demand learning and networking resources.

- DARPA has streamlined our Program Solicitations and is interested in your feedback on this new format. Please send any comments to DARPAsolicitations@darpa.mil.