

## *The DOE Webinar will begin shortly . . .*

- **Why is there no sound?**
  - Once you logged into the webinar, you were provided two options to listen to this broadcast. The first option is through your computer speakers, the second option is via dialing the phone number provided to you upon login to the webinar. If you chose to listen through your computer speakers, you may need to turn your speaker volume on or up.
- **Will DOE provide access to the recorded webinar after the meeting?**
  - Yes, all those who registered will receive a link to the slides and to the recorded webinar soon after the meeting. It will also be available on the DOE SBIR/STTR web site.
- **Where can I find the Topics being discussed today?**
  - This link will take you to the Funding Opportunity Announcement (FOA) page that lists the FY 2022 Phase I Release 1 Topics: <https://science.osti.gov/sbir/Funding-Opportunities>
- **What if my question was not answered at today's webinar?**
  - Please contact the point of contact that follows each subtopic in the document listed above for further clarification.
  - If you have a question about the grant application process, please send us an email at: [sbir-sttr@science.doe.gov](mailto:sbir-sttr@science.doe.gov).





**DOE SBIR/STTR  
Phase I Release 1 Topics Webinar**

**Topics associated with the  
FY 2022 Phase I Release 1  
Funding Opportunity Announcement**

**Topics 25-35**

**DOE SBIR/STTR Programs Office**

**July 21, 2021**

# TODAY'S AGENDA

<b>Topics Introduction</b>	<b>DOE SBIR/STTR Programs Office</b>
Topics 25 – 31	Office of Biological and Environmental Research
Topics 32 – 35	Office of Nuclear Physics



# FY 2022 Phase I Schedule

	Release 1	Release 2
<b>Topics Issued</b>	Monday, July 12, 2021	Monday, November 8, 2021
Webinar(s)	Week of July 19, 2021	Week of November 15, 2021
<b>FOA Issued</b>	Monday, August 9, 2021	Monday, December 13, 2021
Webinar(s)	Friday, August 13, 2021	Friday, December 17, 2021
<b>Letters of Intent (LOI) Due</b>	Monday, August 30, 2021	Monday, 3 January, 2022
Non-responsive LOI Feedback Provided	Monday, September 20, 2021	Monday, January 24, 2022
<b>Applications Due</b>	Tuesday, October 12, 2021	Tuesday, February 22, 2022
<b>Award Notification</b>	Monday, January 3, 2022	Monday, May 16, 2022

# Phase I Funding Opportunity Announcements

## Participating DOE Programs (FY 2022)

### Phase I Release 1

- Office of Advanced Scientific Computing Research
- Office of Basic Energy Sciences
- Office of Biological and Environmental Research
- Office of Nuclear Physics

### Phase I Release 2

- Office of Cybersecurity, Energy Security, and Emergency Response
- Office of Defense Nuclear Nonproliferation
- Office of Electricity
- Office of Energy Efficiency and Renewable Energy
- Office of Environmental Management
- Office of Fossil Energy
- Office of Fusion Energy Sciences
- Office of High Energy Physics
- Office of Nuclear Energy



# Funding Opportunity Announcement (FOA) Webinar

- FY22 Phase I Release 1 FOA will be issued on **August 9<sup>th</sup>**
- Join our Mailing List – this field is on every DOE SBIR/STTR web page
  - Following the issuance of the FOA, look for an email with a link to the FOA
- Webinar with Q&A for this FOA on **August 13<sup>th</sup>**
  - Overview of the FY 2022 DOE SBIR/STTR Programs
    - Following the issuance of the FOA, look for an email announcing this webinar



**Contact the DOE SBIR/STTR Programs Office**

<b>Address</b> U.S. Department of Energy SC-29/Germantown Building 1000 Independence Ave., SW Washington, DC 20585	<b>Phone</b> Tel(301) 903-5707 Fax(301) 903-5488	<b>Email</b> Send us a message <a href="mailto:sbir-str@science.doe.gov">sbir-str@science.doe.gov</a>	<b>Join Mailing List</b> Subscribe to email updates from the SBIR & STTR Programs <a href="#">Subscribe</a>
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**Provide Feedback**  
Submit suggestions for improving the SBIR & STTR Programs [here](#)

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# Topic Basics

- Topics are created by DOE program managers and define important technology breakthroughs needed in R&D areas that support the DOE mission
- Topics are organized by DOE Program Office, e.g., ASCR, BES, etc.
- DOE program managers are listed with each subtopic
  - Questions to DOE program managers are limited to clarification of the topic and subtopic (including references)
  - Clarification is provided to help **you** determine whether your technology fits within the topic and subtopic
  - You may communicate with these topic managers from the release of topics until the grant application due date
  - The decision to apply is **yours**

# Example Topic

- Topic & Subtopic
  - You must specify the same topic and subtopic in your Letter of Intent and grant application
- Topic Header
  - Lists the maximum award amounts for Phase I & Phase II and the types of application accepted (SBIR and/or STTR)
- Program Manager
  - Each subtopic lists the responsible DOE program manager
- “Other” Subtopic
- References

## 12. INSTRUMENTATION FOR ADVANCED CHEMICAL IMAGING

Maximum Phase I Award Amount: \$200,000	Maximum Phase II Award Amount: \$1,100,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES

The Department of Energy seeks to advance chemical imaging technologies that facilitate fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels. The Department is particularly interested in forefront advances in imaging techniques that combine molecular-scale spatial resolution and ultrafast temporal resolution to explore energy flow, molecular dynamics, breakage, or formation of chemical bonds, or conformational changes in nanoscale systems.

Grant applications are sought in the following subtopics:

- a. **High Spatial Resolution Ultrafast Spectroscopy**  
Chemical information associated with molecular-scale processes is often available from optical spectroscopies involving interactions with electromagnetic radiation ranging from the infrared spectrum to x-rays. Ultrafast laser technologies can provide temporally resolved chemical information via optical spectroscopy or laser-assisted mass sampling techniques. These approaches provide time resolution ranging from the breakage or formation of chemical bonds to conformational changes in nanoscale systems but generally lack the simultaneous spatial resolution required to analyze individual molecules. Grant applications are sought that make significant advancements in spatial resolution towards the molecular scale for ultrafast spectroscopic imaging instrumentation available to the research scientist. The nature of the advancement may span a range of approaches including sub-diffraction limit illumination or detection, selective sampling, and coherent or holographic signal analysis.

Questions – Contact: James Rustad, [James.Rustad@Science.doe.gov](mailto:James.Rustad@Science.doe.gov)

- b. **Time-Resolved Chemical Information from Hybrid Probe Microscopies**  
Probe microscopy instruments (including AFM and STM) have been developed that offer spatial resolution of molecules and even chemical bonds. While probe-based measurements alone do not typically offer the desired chemical information on molecular timescales, methods that take advantage of electromagnetic interactions or sampling with probe tips have been demonstrated. Grant applications are sought that would make available to scientists new hybrid probe instrumentation with significant advancements in chemical and temporal resolution towards that required for molecular scale chemical interactions. The nature of the advancement may span a range of approaches and probe techniques, from tip-enhanced or plasmonic enhancement of electromagnetic spectroscopies to probe-induced sample interactions that localize spectroscopic methods to the molecular scale.

Questions – Contact: James Rustad, [James.Rustad@Science.doe.gov](mailto:James.Rustad@Science.doe.gov)

- c. **Other**  
In addition to the specific subtopics listed above, the Department invites grant applications in other areas that fall within the scope of the topic description above.

Questions – Contact: James Rustad, [James.Rustad@Science.doe.gov](mailto:James.Rustad@Science.doe.gov)

### References:

1. U.S. Department of Energy, 2006, Office of Science Notice DE-FG01-05ER05-30, Basic Research for Chemical Imaging, BES Chemical Imaging Research Solicitation. (<http://science.energy.gov/~media/grants/pdf/foas/2005/DE-FG01-05ER05-30.pdf>).
2. National Research Council, 2006, Visualizing Chemistry, The Progress and Promise of Advanced Chemical Imaging, National Academies Press. ([http://www.nap.edu/catalog.php?record\\_id=11663](http://www.nap.edu/catalog.php?record_id=11663)).



## Topic 25: TECHNOLOGIES FOR SOIL AND WATER PHOSPHORUS MEASUREMENTS IN TERRESTRIAL-AQUATIC INTERFACES

Maximum Phase I Award Amount: \$250,000

Maximum Phase II Award Amount: \$1,600,000

Accepting SBIR Phase I Applications: YES

Accepting STTR Phase I Applications: YES

- a. Technologies for In situ Measurement of Soil Pore Water and Aquatic Phosphorus in Terrestrial-Aquatic Interfaces
- b. Other

Questions: Daniel Stover, [Daniel.Stover@science.doe.gov](mailto:Daniel.Stover@science.doe.gov) or  
Brian Bencoter, [brian.bencoter@science.doe.gov](mailto:brian.bencoter@science.doe.gov)

## Topic 26: ATMOSPHERIC MEASUREMENT TECHNOLOGY

Maximum Phase I Award Amount: \$250,000	Maximum Phase II Award Amount: \$1,600,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES

- a. Automated Adaptive Sampling for Atmospheric Measurements
- b. Other

Questions: Sally McFarlane, [Sally.McFarlane@science.doe.gov](mailto:Sally.McFarlane@science.doe.gov) or  
Jeff Stehr, [jeff.stehr@science.doe.gov](mailto:jeff.stehr@science.doe.gov)

## Topic 27: ENABLING TOOLS FOR STRUCTURAL BIOLOGY OF MICROBIAL AND PLANT SYSTEMS RELEVANT TO BIOENERGY

Maximum Phase I Award Amount: \$250,000

Maximum Phase II Award Amount: \$1,600,000

Accepting SBIR Phase I Applications: YES

Accepting STTR Phase I Applications: YES

- a. Tools or Instruments for Structural Characterization of Biological Systems Ranging from Atomic to Multi-cellular Scales
- b. Other

Questions: Amy Swain, [Amy.Swain@science.doe.gov](mailto:Amy.Swain@science.doe.gov)

## Topic 28: BIOIMAGING TECHNOLOGIES FOR BIOLOGICAL SYSTEMS

Maximum Phase I Award Amount: \$250,000	Maximum Phase II Award Amount: \$1,600,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES

- a. New Instrumentation and Bioimaging Devices for Non-destructive, Functional Metabolic Imaging of Plant and Microbial Systems
- b. New Quantum Enabled Bioimaging and Sensing Approaches For Bioenergy
- c. Other

Questions: Subtopic a – Prem Srivastava, [Prem.Srivastava@science.doe.gov](mailto:Prem.Srivastava@science.doe.gov)

Questions: Subtopic b – Paul Sammak, [Paul.Sammak@science.doe.gov](mailto:Paul.Sammak@science.doe.gov)

Questions: Subtopic c – Prem Srivastava, [Prem.Srivastava@science.doe.gov](mailto:Prem.Srivastava@science.doe.gov)  
and Paul Sammak, [Paul.Sammak@science.doe.gov](mailto:Paul.Sammak@science.doe.gov)

## Topic 29: TECHNOLOGIES TO ENABLE THE SYNTHESIS OF LARGE DNA FRAGMENTS FOR SYNTHETIC BIOLOGY

Maximum Phase I Award Amount: \$250,000

Maximum Phase II Award Amount: \$1,600,000

Accepting SBIR Phase I Applications: YES

Accepting STTR Phase I Applications: YES

- a. Technologies for the Synthesis of Large DNA Fragments
- b. Other

Questions: Boris Wawrik, [boris.wawrik@science.doe.gov](mailto:boris.wawrik@science.doe.gov)

# Topic 30: BIOLOGICAL APPROACHES AND TECHNOLOGIES FOR BIOENERGY: ENZYMATIC AND MICROBIAL TECHNOLOGIES FOR BIOENERGY AND BIOPRODUCTS PRODUCTION FROM LIGNOCELLULOSIC FEEDSTOCKS

Maximum Phase I Award Amount: \$250,000

Maximum Phase II Award Amount: \$1,600,000

Accepting SBIR Phase I Applications: YES

Accepting STTR Phase I Applications: YES

- a. Lignocellulose Deconstructing Enzymes
- b. Synthetic Biology Approaches for the Microbial Conversion of Lignocellulose to Bioproducts
- c. Microbial Amendments for Enhanced Bioenergy Crop Production
- d. Other

Questions: Subtopic a & d – Kent Peters, [Kent.Peters@science.doe.gov](mailto:Kent.Peters@science.doe.gov)

Questions: Subtopic b – Dawn Adin, [Dawn.Adin@science.doe.gov](mailto:Dawn.Adin@science.doe.gov)

Questions: Subtopic c – Shing Kwok, [Shing.Kwok@science.doe.gov](mailto:Shing.Kwok@science.doe.gov)

# Topic 31: BIOLOGICAL APPROACHES AND TECHNOLOGIES FOR SYNTHETIC POLYMER UPCYCLING

Maximum Phase I Award Amount: \$250,000

Maximum Phase II Award Amount: \$1,600,000

Accepting SBIR Phase I Applications: YES

Accepting STTR Phase I Applications: YES

- a. Biological Approaches and Technologies for Synthetic Polymer Upcycling
- b. Other

Questions: Dawn M. Adin, [dawn.adin@science.doe.gov](mailto:dawn.adin@science.doe.gov)

## Topic 32: NUCLEAR PHYSICS SOFTWARE AND DATA MANAGEMENT

Maximum Phase I Award Amount: \$200,000	Maximum Phase II Award Amount: \$1,100,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES

- a. Tools for Large Scale Distributed Data Storage
- b. Applications of AI/ML to Nuclear Physics Data Science
- c. Heterogeneous Concurrent Computing
- d. Other

Questions: Michelle Shinn, [Michelle.Shinn@science.doe.gov](mailto:Michelle.Shinn@science.doe.gov) or  
Gulshan Rai, [Gulshan.Rai@science.doe.gov](mailto:Gulshan.Rai@science.doe.gov)

## Topic 33: NUCLEAR PHYSICS ELECTRONICS DESIGN AND FABRICATION

Maximum Phase I Award Amount: \$200,000	Maximum Phase II Award Amount: \$1,100,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES

- a. Advances in Digital Processing Electronics
- b. Front-End Application-Specific Integrated Circuits
- c. Next Generation Pixel Sensors
- d. Other

Questions: Michelle Shinn, [Michelle.Shinn@science.doe.gov](mailto:Michelle.Shinn@science.doe.gov) or

Manouchehr Farkhondeh, [Manouchehr.Farkhondeh@science.doe.gov](mailto:Manouchehr.Farkhondeh@science.doe.gov)

## Topic 34: NUCLEAR PHYSICS ACCELERATOR TECHNOLOGY

Maximum Phase I Award Amount: \$200,000	Maximum Phase II Award Amount: \$1,100,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES

- a. Materials and Components for Radio Frequency Devices
- b. Design and Operation of Radio Frequency Beam Acceleration Systems
- c. Particle Beam Sources and Techniques
- d. Polarized Beam Sources and Polarimeters
- e. Rare Isotope Beam Production Technology
- f. Accelerator Control and Diagnostics
- g. Magnet Development for NP Facilities
- h. Other

Questions: Michelle Shinn, [Michelle.Shinn@science.doe.gov](mailto:Michelle.Shinn@science.doe.gov)

## Topic 35: NUCLEAR PHYSICS INSTRUMENTATION, DETECTION SYSTEMS AND TECHNIQUES

Maximum Phase I Award Amount: \$200,000

Maximum Phase II Award Amount: \$1,100,000

Accepting SBIR Phase I Applications: YES

Accepting STTR Phase I Applications: YES

- a. Advances in Detector and Spectrometer Technology
- b. Development of Novel Gas and Solid-State Detectors
- c. Technology for Rare Decay and Rare Particle Detection
- d. High Performance Scintillators, Cherenkov Materials and Other Optical Components
- e. Technology for High Radiation Environments
- f. Other

Questions: Michelle Shinn, [Michelle.Shinn@science.doe.gov](mailto:Michelle.Shinn@science.doe.gov) or

Elizabeth Bartosz, [Elizabeth.Bartosz@science.doe.gov](mailto:Elizabeth.Bartosz@science.doe.gov)

# DOE SBIR/STTR Programs Office Contact Information

- SBIR/STTR Web: <https://science.osti.gov/sbir>
- Email: [sbir-sttr@science.doe.gov](mailto:sbir-sttr@science.doe.gov)
- Phone Assistance Hotline: 301-903-5707
- DOE Phase 0 Assistance Program: <http://www.dawnbreaker.com/doephase0/>
- DOE Application Assistance: <https://science.osti.gov/SBIRLearning>

