

# NJIT Research Newsletter

Issue: ORN-2016-018

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**NJIT Research Newsletter** includes recent awards, and announcements of research related seminars, webinars, national and federal research news related to research funding, and **Grant Opportunity Alerts**. The Newsletter is posted on the NJIT Research Website <http://www.njit.edu/research/>

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(Related to research funding)

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## Recent Research Grant and Contract Awards

Congratulations to faculty and staff on receiving research grant and contract awards!

**PI:** Wenda Cao (PI), Phil Goode (Co-PI)

**Department:** Center for Solar Terrestrial Research

**Grant/Contract Project Title:** Collaborative Research in Solar Physics between KASI, SNU, and BBSO

**Funding Agency:** KASI

**Duration:** 06/01/16-05/31/17

**PI:** Alexei Khalizov (PI)

**Department:** Chemistry and Environmental Science

**Grant/Contract Project Title:** The 2016 ACS (American Chemical Society) Renyi Zhang Symposium

**Funding Agency:** NSF (Correction)

**Duration:** 05/01/16-04/30/17

**PI:** Michael Booty (PI)

**Department:** Mathematical Sciences

**Grant/Contract Project Title:** Conference on Frontiers in Applied and Computational Mathematics

**Funding Agency:** NSF

**Duration:** 06/01/16-05/31/17

**PI:** Colette Santasieri (PI)

**Department:** NJIT

**Grant/Contract Project Title:** Planning and Coordination Services for 2016 Northeast Sustainable Communities Workshop

**Funding Agency:** Brownfield Coalition of the Northeast (BCONE)

**Duration:** 10/01/15-05/30/16

**PI:** Haimin Wang (PI) and Jing Ju (Co-PI)

**Department:** Center for Solar Terrestrial Research

**Grant/Contract Project Title:** Collaborative Research: SHINE: Laboratory, Observational, and Modeling Investigations of the Torus Instability and Associated Solar Corona Eruptive Phenomena

**Funding Agency:** NSF

**Duration:** 06/01/14-05/31/17

**PI:** Edward Dreizen (PI), Mirko Schoenitz (Co-PI)

**Department:** Chemical, Biological and Pharmaceutical Engineering

**Grant/Contract Project Title:** Reactive Materials with Staged Release of Energy and Biocidal Products

**Funding Agency:** DTRA

**Duration:** 08/23/13-08/22/18

**PI:** Boris Khusid (PI)

**Department:** Chemical, Biological and Pharmaceutical Engineering

**Grant/Contract Project Title:** Kinetics Of Electric Field-Driven Phase Transitions In Polarized Colloids

**Funding Agency:** NASA

**Duration:** 10/01/15-05/30/16

**PI:** Abdallah Khreishah (PI) and Durga Misra (Co-PI)

**Department:** Electrical and Computer Engineering

**Grant/Contract Project Title:** REU Site: Optics and photonics: Technologies, Systems, and Devices

**Funding Agency:** NSF

**Duration:** 05/15/16-04/30/19

**PI:** Gale Spak (PI)

**Department:** CPE

**Grant/Contract Project Title:** Advanced Manufacturing Talent Network

**Funding Agency:** NJDOL

**Duration:** 07/01/14-12/31/15

**PI:** Namas Chandra (PI)

**Department:** Center for Injury Biomechanics, Materials and Medicine

**Grant/Contract Project Title:** Characterization of the mechanisms causing blast-induced brain injury

**Funding Agency:** US Army

**Duration:** 05/01/15-04/30/17

**PI:** Reginald Farrow (PI)  
**Department:** Physics  
**Grant/Contract Project Title:** Student Support for EIPBN 2016 Conference  
**Funding Agency:** US Army  
**Duration:** 05/31/16-11/01/16

**PI:** Michael Ehrlich (PI) and Judith Sheft (Co-PI)  
**Department:** School of Management  
**Grant/Contract Project Title:** NSF I-Corps Site at NJIT  
**Funding Agency:** NSF  
**Duration:** 03/15/15-02/28/18

**PI:** Donald Sebastian (PI)  
**Department:** NJIT  
**Grant/Contract Project Title:** Information Technology Infrastructure Process and Projects Assessment  
**Funding Agency:** NJDOH  
**Duration:** 10/01/15-06/30/16

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### **In the News...**

(National and Federal News Related to Research Funding and Grant Opportunities)

**Office of Management and Budget (OMB), White House:** Summer is the normal period for federal agencies to develop budget proposals in anticipation of a formal review by the Office of Management and Budget (OMB) in the fall. During presidential transitions, the outgoing president traditionally submits a budget with the expectation that it will be modified by the next President. In actual practice, some outgoing presidents have not submitted detailed budgets, and some incoming presidents have not modified the budget proposal during the first year. The OMB has provided instructions in [Memorandum m-16-10](#) to the federal agencies for the upcoming transition. Essentially, agencies must prepare a “current services” budget and identify special programs or issues that may require special attention by the next president. That is, the budget request will be for a flat budget except for programs that can be justified as requiring significantly different funding.

Read More: [Government Executive](#).

**NASA:** The NASA Aeronautics Directorate is seeking information that would lead to the establishment of a *University Student Research Challenge* program. The [Request for Information](#) envisions a program that provides matching funds for U.S. students who have an aeronautics-related research idea aligned with NASA’s strategic objectives. The matching funds would be achieved by **crowdfunding platforms and social media outreach**. NASA is soliciting public input on nine specific questions until May 31. Read More: [NASA Aeronautics Strategic Objectives](#).

**Clean Energy Manufacturing Innovation Institute:** As part of the National Network for Manufacturing Innovation (NNMI), the Department of Energy has released a solicitation for a [Clean Energy Manufacturing Innovation Institute](#). This would be a major initiative on the part of

NNMI toward the goal of doubling U.S. energy productivity by 2030. The Institute will focus on developing breakthrough technologies to increase the energy efficiency of manufacturing processes. [NNMI institutes](#) are a suite of linked institutions funded by five-year cooperative agreements up to \$70 million. They are intended to be collaborations between small- and medium-sized companies, academic institutions, industrial research organizations, and national laboratories. Federal funding is matched by funding from private industry and other non-federal sources. Proposals for this solicitation are due June 15.

**High Performance Computing and NSF:** Data enabled discovery has emerged as new paradigm for the conduct of science, joining traditional domains of *experiment, theory, and modeling*. In 2015, the White House launched the [National Strategic Computing Initiative](#) with a goal of ensuring continued U.S. leadership in the development and application of high performance computing systems. A key objective of that initiative was to ensure academic researchers could gain access to such advanced systems. At the request of NSF, the National Research Council (NRC) has issued a report, entitled [Future Directions for NSF Advanced Computing Infrastructure to Support U.S. Science and Engineering in 2017-2020](#), intended to recommend a framework for future decision making of NSF's advanced computing strategy and programs. Enabling transformative research will require leadership from NSF in both simulation and data-driven science.

In implementing its advanced computing infrastructure strategy, NSF has attempted to collect and understand requirements from the various data intensive science communities. However, the NRC committee found the overall planning process for advanced computing resources and programs is not systematic or uniform and is not visibly reflected in NSF's strategic planning. Among other recommendations, the report finds NSF should ensure it can support large-scale simulations and data analytics that would otherwise be unavailable to academic researchers. It should also monitor the cost-effectiveness of commercial cloud services and eliminate barriers to cost-effective academic use of the commercial cloud. In its [legislative report](#) accompanying the Commerce, Justice, Science Subcommittee FY17 Senate Appropriations Bill S.2837, the Senate Appropriations Committee directed NSF to prepare a response to the NRC report within 180 days of its completion. Read More: [Information Technology & Innovation Foundation Report](#)

**Department of Defense:** With the advent of new lightweight super strong materials, new concepts for shapes and structures, and new manufacturing methods, traditional computer aided design tools have not kept pace. To address this the Defense Advanced Research Projects Agency (DARPA) has announced the [TRAnsformative DESign](#) (TRADES) program to develop new design algorithms that can take advantage of the design space that has been enabled by new materials and fabrication methods. To provide a full description of the vision and goals of the program and funding opportunities that are planned for a future Broad Agency Announcement, a [proposer's day](#) has been scheduled for May 13. DARPA also envisions the proposer's day will encourage and promote teaming arrangements among participating organizations. More on [https://defensesystems.com/articles/2016/04/27/darpa-trades-additive-manufacturing.aspx?s=ds\\_020516&m=1](https://defensesystems.com/articles/2016/04/27/darpa-trades-additive-manufacturing.aspx?s=ds_020516&m=1)

**Unmanned Aerial Vehicles and Drones:** A major impediment to research and educational use of unmanned aerial vehicles (UAV) has been a requirement that operators possess a pilot's license and obtain special permission from the Federal Aviation Administration (FAA) under section 333 of the *FAA Modernization Reform Act of 2012*. Based on rulemaking activity and comments received over the past two years, FAA has announced a [new policy on the educational](#)

[use of unmanned aircraft systems](#) which, in essence, permits such operations under section 336 of that act which allows model aircraft operations. The crux of the clarification is “..Faculty teaching aviation-related courses at accredited educational institutions may assist students who are operating a model aircraft under section 336 and in connection with a course that requires such operations, provided the student maintains operational control of the model aircraft such that the faculty member's manipulation of the model aircraft's controls is incidental and secondary to the student's (e.g., the faculty member steps-in to regain control in the event the student begins to lose control, to terminate the flight, etc.).” The FAA also announced the establishment of an [advisory committee](#) that would be an ongoing forum for developing additional policies on safe introduction of unmanned aircraft systems into the national airspace system. It is expected that this advisory committee will address the remaining impediments universities are facing in conducting UAV operations. **Definition of the Unmanned Aircraft Systems (UAS):** A UAS is the unmanned aircraft (UA) and all of the associated support equipment, control station, data links, telemetry, communications and navigation equipment, etc., necessary to operate the unmanned aircraft. The UA is the flying portion of the system, flown by a pilot via a ground control system, or autonomously through use of an on-board computer, communication links and any additional equipment that is necessary for the UA to operate safely. The FAA issues an experimental airworthiness certificate for the entire system, not just the flying portion of the system.

**American Academy of Arts and Sciences Report on Higher Education:** Public higher education is key to U.S. educational infrastructure and the foundation of competitiveness. As centers of learning, culture, research, and entrepreneurship, these institutions drive social mobility and economic growth. Yet over the past decade, state funding to these universities has declined precipitously, forcing campuses across the country to make difficult choices about institutional spending and resource allocation.

In [Public Research Universities: Recommitting to Lincoln's Vision—An Educational Compact for the 21st Century](#), members of the **American Academy's Lincoln Project** recommend **three strategies** to ensure a bright future for these institutions and the communities they serve:

- **[Recommendation 1: Address current financial challenges](#)** through renewed state support and new cost efficiencies and additional revenue streams at public research universities;
- **[Recommendation 2: Create public-private partnerships](#)** to sustain and strengthen research and education for the future; and
- **[Recommendation 3: Improve student access and performance](#)** by simplifying financial aid, tracking student performance and improving transfer pathways.

Additional [recommendations customized for public research universities and their partners](#) also provide ways in which these institutions may consider responding to evolving societal, economic, and financial pressures. More on <https://www.amacad.org/content.aspx?i=22174>

#### **Armed Services Panel's R&D Priorities:**

**Hyperspectral Imaging Technologies:** The committee encourages their development for the detection of improvised explosive devices (IEDs) and explosive constituent chemicals.

**3-D Printing:** The Pentagon ought to "stay actively involved in this community to understand and develop a better appreciation for both the opportunities it could provide, as well as the threats it could pose in the hands of a resourceful adversary," the panel argues. It should "leverage existing organizations, such as the National Additive Manufacturing Innovation

Institute, as well as expand that community to include other universities, non-profit research institutes, and other industry partners to expand the state of the art for the use of additive manufacturing technology."

**Human Systems Integration:** The panel wants to know how the Pentagon plans to improve its use in acquisition programs.

**Low-Energy Nuclear Reactions:** This could be a disruptive technology, producing ultra-clean, low-cost renewable energy and potentially revolutionizing energy production and storage, the committee suggests. If so, it would have "strong national security implications."

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### Events and Announcements

#### **Event: Webinar: Contextual Integrity at the Intersection of Ethics and Technology**

**When:** May 11, 2016 2.00 PM-3.00 PM

**Where:** [http://www.nsf.gov/events/event\\_summ.jsp?cntn\\_id=138512&org=NSF](http://www.nsf.gov/events/event_summ.jsp?cntn_id=138512&org=NSF)

**Brief Description:** Advances in digital technologies have stirred great anxiety over threats to privacy, in turn, spawning concentrated efforts to pin point the sources of these threats and to understand the nature of privacy and its value to individuals and societies. The theory of contextual integrity traces privacy threats to novel, technology-enabled practices that disrupt information flows, in particular, flows that contravene entrenched, context specific informational norms. The theory further contends that although some norms will give way in the face of novel practices, norms that deserve strong protection, on ethical grounds, are those that not only serve the interests of individual data subjects, but also support the integrity of critical societal institutions and their associated ends and values. The talk will trace the origins of contextual integrity to philosophical analysis, but will reveal ways that the theory has been profoundly shaped and sharpened through cross-disciplinary collaborations with computer, data, and social scientists as well as engineers and legal scholars. As privacy researchers and advocates are increasingly looking to technological means to safeguard privacy (e.g. through initiatives such as privacy-by-design, and Privacy Enhancing Technologies, PETs) there is an increasing need to elucidate design and implementation with meaningful operational definitions. Interpretive and pragmatic lenses of the sciences and engineering have sustained contextual integrity's relevance to policy, practice, and design.

**Biographical Sketch of the Speaker:** Helen Nissenbaum is Professor of Media, Culture, and Communication, and Computer Science, at New York University, where she is also Director of the Information Law Institute. Her work spans societal, ethical, and political dimensions of information technology and digital media. Prof. Nissenbaum's eight books include *Obfuscation: A User's Guide for Privacy and Protest*, with F. Brunton (MIT Press, 2015), *Values at Play in Digital Games*, with M. Flanagan (MIT Press, 2014), and *Privacy in Context: Technology, Policy, and the Integrity of Social Life* (Stanford, 2010). Her research has been published in journals of philosophy, politics, law, media studies, information studies, and computer science. The National Science Foundation, Air Force Office of Scientific Research, Ford Foundation, and the U.S. Department of Health and Human Services Office of the National Coordinator have supported her work on privacy, trust online, and security, as well as studies of values embodied in design, search engines, digital games, facial recognition technology, and health information systems. Recipient of the 2014 Barwise Prize of the American Philosophical Association, Prof. Nissenbaum has contributed to privacy-enhancing software, including TrackMeNot and AdNauseam. Prof. Nissenbaum holds a Ph.D. in philosophy from Stanford University and a B.A. (Hons) from the University of the Witwatersrand. Before joining the faculty at NYU, she served as Associate Director of the Center for Human Values at Princeton University.

**To Join the Webinar:** Please register at:

<https://nsf.webex.com/nsf/j.php?RGID=r2c0eb8974c1a6d52079a9d43e3b2310a>  
by 11:59pm EST on Tuesday, May 10, 2016.

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**Event: Webinar: Applying Evidence-Based Teaching Practices in Computing Education**

**When: June 1, 2016 1.00 PM-4.00 PM**

**Where:** <https://docs.asee.org/public/Webinars/2016ComputingWorkshopFlyer.pdf>

**Brief Description:** Computers are now as important to research as telescopes and test tubes, but most researchers in STEM are still not taught the equivalent of basic lab skills for computing. In this interactive 3-hour online workshop, Software Carpentry co-founder Greg Wilson will introduce several evidence-based teaching practices and show how they can be used when teaching graduate and undergraduate STEM students.

Attendees will learn:

- The cognitive differences between novices, competent practitioners, and experts
- How and why to design formative assessment instruments that have diagnostic power
- Motivation and demotivation, and their effect on both teachers and learners
- How to scale the construction and maintenance of shared lesson materials
- Popular myths about education and learning
- Teaching as a performance art

Who should attend?

- Computing and engineering/engineering technology graduate students
- Computing and engineering/engineering technology postdocs
- Computing and engineering/engineering technology students who are pursuing academic careers
- New computing and engineering/engineering technology faculty
- Students interested in engineering education

Register at <https://docs.asee.org/public/Webinars/2016ComputingWorkshopFlyer.pdf>.

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**Event: IEEE Webinar: The Future of Systems Modeling: Exploring SysML Today and Tomorrow**

**When: May 18, 2016 11.00 AM**

**Where:**

<https://event.on24.com/eventRegistration/EventLobbyServlet?target=reg20.jsp&referrer=&eventid=1175566&sessionid=1&key=C65A04E52C205E39539AF4E9BD8A48C5&partnerref=SOL&sourcepage=register>

**Brief Description:** Systems modeling is one of the hottest topics in engineering today. This one-hour presentation will break down the vision, value and practical benefits of system modeling, with an emphasis on the standards-based SysML language. We'll cover a short history of systems modeling, explore the pros and cons of alternative approaches, then provide you with a whirlwind tour of the six key principals and seven core diagrams of the SysML language. Finally we'll take a sneak peek into the future of the SysML: integration with other systems engineering tools, asset-based modular design and model-based product line engineering (MB-PL). Don't miss the opportunity to get a thorough grounding in this important and rapidly expanding technology.

**About the Speakers:** Matthew Hause is an Engineering Fellow at PTC, the co-chair of the UPDM group a member of the OMG Architecture Board, and a member of the OMG SysML specification

team. He has been developing multi-national complex systems for over 35 years. He started out working in the power systems industry and has been involved in military command and control systems, process control, communications, SCADA, distributed control, office automation and many other areas of technical and real-time systems. Matthew studied Electrical Engineering at the University of New Mexico and Computer Science at the University of Houston, Texas.

**MODERATOR:** Dexter Johnson is the author of IEEE Spectrum's online blog The Nanoclast. He has researched and written reports and analysis in the areas of nanotechnology, sensors, IT, advanced manufacturing and economic trends within a number of different industries. He has been the program director for international conferences in the areas of telecommunications, digital content delivery and nanotechnology. In addition to his work at IEEE Spectrum, Dexter is a senior analyst with Cientifica, a UK-based business intelligence company for emerging technologies

**Register at the above URL.**

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### **Grant Opportunity Alerts**

Keywords and Areas Included in Grant Opportunity Alerts:

**NSF: Prediction of and Resilience against Extreme Events (PREEVENTS); Physics Frontiers Centers (PFC);** Electronics, Photonics and Magnetic Devices (EPMD)

**NIH: BD2K** Mentored Career Development Award in Biomedical Big Data Science for Clinicians and Doctorally Prepared Scientists (K01); Mechanism for Time-Sensitive Research Opportunities in Environmental Health Sciences (R21); Growing Great Ideas: Research Education Course in Product Development and Entrepreneurship for Life Science Researchers (R25)

**Department of Defense/US Army/DARPA/ONR:** FY 17 Communications and Networking Discovery and Invention; Peer Reviewed Medical Research Program: Investigator-Initiated Research Award; Basic Research Challenge (BRC) Program

**Department of Energy:** Solar Energy Evolution and Diffusion Studies II – State Energy Strategies (SEEDSII-SES); Renewable Energy To Fuels Through Utilization Of Energy-Dense Liquids (REFUEL)

**NASA:** ROSES 2016: Citizen Science for Earth Systems Program

**National Endowment for Humanities:** Grant Program: Summer Stipends

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### **Grant Opportunities**

#### **National Science Foundation**

**Grant Program: Prediction of and Resilience against Extreme Events (PREEVENTS)**

**Agency: National Science Foundation NSF 16-562**

**RFP Website:** <http://www.nsf.gov/pubs/2016/nsf16562/nsf16562.htm>

**Brief Description:** Natural disasters cause thousands of deaths annually, and in 2013 alone caused over \$130 billion in damage worldwide. There is clear societal need to better understand and mitigate the risks posed to the US by natural hazards, consistent with the mandate of the National Science Foundation (NSF) "...to promote the progress of science [and] advance the national health, prosperity, and welfare..."



NSF and the Directorate for Geosciences (GEO) have long supported basic research in scientific and engineering disciplines necessary to understand natural hazards and extreme events, including through the Interdisciplinary Research in Hazards and Disasters (Hazards SEES) program and multiple core programs in the GEO Directorate. PREEVENTS is designed as a logical successor to Hazards SEES and is one element of the NSF-wide Risk and Resilience activity, which has the overarching goal of improving predictability and risk assessment, and increasing resilience, in order to reduce the impact of extreme events on our life, society, and economy. PREEVENTS will provide an additional mechanism to support research and related activities that will improve our understanding of the fundamental processes underlying natural hazards and extreme events in the geosciences.

PREEVENTS is focused on natural hazards and extreme events, and not on technological or deliberately human-caused hazards. The PREEVENTS portfolio will include the potential for disciplinary and multidisciplinary research at all scales, particularly aimed at areas ripe for significant near- or medium-term advances.

PREEVENTS seeks projects that will (1) enhance understanding of the fundamental processes underlying natural hazards and extreme events on various spatial and temporal scales, as well as the variability inherent in such hazards and events, and (2) improve our capability to model and forecast such hazards and events. **All projects requesting PREEVENTS support must be primarily focused on these two targets.** In addition, PREEVENTS projects will improve our understanding of the effects of natural hazards and extreme events and will enable development, with support by other programs and organizations, of new tools to enhance societal preparedness and resilience against such impacts.

**Awards:** Standard grants. **Anticipated Funding Amount:** \$18,000,000 to \$25,000,000

**Letter of Intent:** Submission of Letters of Intent is required by July 29, 2016. Please see the full text of this solicitation for further information.

**Full Proposal Submission Due Date:** September 19, 2016

**Contacts:**

- Gregory J. Anderson, telephone: (703) 292-4693, email: [greander@nsf.gov](mailto:greander@nsf.gov)
- Paul Cutler, telephone: (703) 292-4961, email: [pcutler@nsf.gov](mailto:pcutler@nsf.gov)
- Eric T. DeWeaver, telephone: (703) 292-8527, email: [edeweave@nsf.gov](mailto:edeweave@nsf.gov)
- Eric C. Itsweire, telephone: (703) 292-7593, email: [eitsweir@nsf.gov](mailto:eitsweir@nsf.gov)

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**Grant Program: Physics Frontiers Centers (PFC)**

**Agency: National Science Foundation NSF 16-561**

**RFP Website:** <http://www.nsf.gov/pubs/2016/nsf16561/nsf16561.htm>

**Brief Description:** The Physics Frontiers Centers (PFC) program supports university-based centers and institutes where the collective efforts of a larger group of individuals can enable transformational advances in the most promising research areas. The program is designed to foster major breakthroughs at the intellectual frontiers of physics by providing needed resources such as combinations of talents, skills, disciplines, and/or specialized infrastructure, not usually available to individual investigators or small groups, in an environment in which the collective efforts of the larger group can be shown to be seminal to promoting significant progress in the science and the education of students. Activities supported through the program are in all sub-fields of physics within the purview of the Division of Physics: atomic, molecular, optical, plasma, elementary particle, nuclear, particle astro-, gravitational, and biological physics. Interdisciplinary projects at the interface between these physics areas and other disciplines and physics sub-fields may also be considered, although the bulk of the effort must fall within one of those areas within the purview of the Division of Physics. The successful PFC

activity will demonstrate: (1) the potential for a profound advance in physics; (2) creative, substantive activities aimed at enhancing education, diversity, and public outreach; (3) potential for broader impacts, e.g., impacts on other field(s) and benefits to society; (4) a synergy or value-added rationale that justifies a center- or institute-like approach.

**Awards:** Cooperative Agreement. Anticipated Funding Amount: \$10,000,000

**Limit on Number of Proposals per Organization: 2.** No more than two preliminary proposals may be submitted by any one institution. The same limitation applies to full proposals.

**Preliminary Proposal Due Date(s) (required) (due by 5 p.m. submitter's local time):**

August 01, 2016

**Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):**

January 30, 2017

**Contacts:**

- Jean Cottam Allen, Program Director, 1015N, telephone: (703) 292-8783, fax: (703) 292 9078, email: [jcallen@nsf.gov](mailto:jcallen@nsf.gov)
- Kathleen McCloud, Program Director, 1015N, telephone: (703) 292-8236, email: [kmcccloud@nsf.gov](mailto:kmcccloud@nsf.gov)
- Ramona Winkelbauer, Computer Specialist, FastLane/Technical Problem Solver, telephone: (703) 292-7390, email: [rwinkelb@nsf.gov](mailto:rwinkelb@nsf.gov)

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**Grant Program: Electronics, Photonics and Magnetic Devices (EPMD)**

**Agency: National Science Foundation NSF PD 16-1517**

**RFP Website:**

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505250&org=NSF&sel\\_org=NSF&from=fund](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505250&org=NSF&sel_org=NSF&from=fund)

**Brief Description:** The **Electronics, Photonics, and Magnetic Devices (EPMD) Program** seeks to improve the fundamental understanding of devices and components based on the principles of micro- and nano-electronics, optics and photonics, optoelectronics, magnetics, electromechanics, electromagnetics, and related physical phenomena. The *Electronics & Magnetic Devices* component of EPMD enables discovery and innovation advancing the frontiers of nanoelectronics, spin electronics, molecular and organic electronics, bioelectronics, biomagnetics, non-silicon electronics, and flexible electronics. It also addresses advances in energy-efficient electronics, sensors, low-noise, power electronics, and mixed signal devices. The *Optic & Photonic Devices* component of EPMD supports research and engineering efforts leading to significant advances in novel optical sources and photodetectors, optical communication devices, photonic integrated circuits, single-photon quantum devices, and nanophotonics. It also addresses novel optical imaging and sensing applications and solar cell photovoltaics.

EPMD further supports topics in quantum devices and novel electromagnetic materials-based device solutions from DC to high-frequency, millimeter-wave and THz, monolithic integrated circuits built with them, and electromagnetic effects, components needed for communications, telemedicine, and other wireless applications. Wide bandgap semiconductor devices, device design, processing and characterization, as well as metamaterial and plasmonic based devices are of interest. Novel electronic, photonic and magnetic devices with organic, inorganic or hybrid materials on conformable or transparent substrates are also of interest, as are carbon-based and emerging 2D atomic-layered materials for electronic, photonic, magnetic, energy harvesting and other related device application areas. Interest also extends to novel ideas for next generation memory devices.

The program supports cooperative efforts with the semiconductor industry on new nanoelectronics concepts beyond the scaling limits of silicon technology. EPMD additionally emphasizes emerging areas of diagnostic, wearable and implantable devices, and supports manipulation and real-time measurement with nanoscale precision through new approaches to imaging and metrology.

Proposals for the EPMD program may involve collaborative research to capture the breadth of expertise needed for such multidisciplinary integrative activities. ECCS will consider supporting a limited number of small team proposals of three or more investigators from different disciplines and/or universities.

**Awards:** Standard Grants.

**Letter of Intent:** Not Required.

**Full Proposal Deadlines:** Full Proposal Window: October 1, 2016 - November 1, 2016

**Contacts:**

<a href="mailto:uvarshne@nsf.gov">Usha Varshney</a>	<a href="mailto:uvarshne@nsf.gov">uvarshne@nsf.gov</a>	(703) 292-8339
<a href="mailto:dpavli@nsf.gov">Dimitri Pavlidis</a>	<a href="mailto:dpavli@nsf.gov">dpavli@nsf.gov</a>	(703) 292-8339

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## **National Institutes of Health**

**Grant Program: BD2K Mentored Career Development Award in Biomedical Big Data Science for Clinicians and Doctorally Prepared Scientists (K01)**

**Agency: National Institutes of Health RFA-ES-16-002**

**RFP Website:** <http://grants.nih.gov/grants/guide/rfa-files/RFA-ES-16-002.html>

**Brief Description:** Extracting useful knowledge from biomedical Big Data is a major limiting factor to understanding health and disease. The focus of the Big Data to Knowledge (BD2K) Initiative is to support the research and development of innovative and transformative approaches and tools with the goal of maximizing and accelerating the utility of Big Data and data science in biomedical research. For the purposes of this FOA, biomedical is broadly defined to include biomedical, behavioral, or clinical science research focused on health.

To address the growing need for skilled researchers to fully utilize the vast amount of heterogeneous biomedical Big Data, there must be an increase in the number of individuals: (1) trained in developing tools, methods, and analyses to make Big Data useful, and (2) knowledgeable about how to use the tools, methods, and analyses. Thus, the primary goals of training and education efforts for the BD2K Initiative are 1) to increase the number of expert biomedical data scientists, and 2) to elevate general data science competencies of all biomedical scientists.

Data Science training and education needs in the biomedical workforce vary greatly based on an individual's prior knowledge and their intended use of data. Thus, BD2K programs to support training, education, and career development reflect a variety of needs within the workforce.

- For biomedical scientists to become conversant in data science and learn to utilize existing tools, courses and open educational resources are available.
- To address the growing need for specialists in biomedical data science, predoctoral students and early career scientists are supported.
- To foster the development of new interdisciplinary teams consisting of biomedical scientists and data scientists, BD2K is collaborating with the National Science Foundation.

- To train a diverse workforce, under-resourced institutions serving diverse populations are developing data science curriculum and providing short-term research experiences for students and faculty.

To ensure that BD2K's training and education efforts have maximum impact in generating knowledge, educational resources should be findable, accessible, interoperable, and reusable (FAIR). The FAIR principles (<https://www.force11.org/group/fairgroup/fairprinciples>) are applied in the development of an Educational Resource Discovery Index that will help biomedical scientists find and access the most appropriate data science educational resources to meet their training and educational needs. The BD2K Training Coordination Center (TCC) (<http://www.bigdatau.org>) is developing this Educational Resource Discovery Index and is providing coordination and communication among those interested in Big Data training and education (the BD2K Training Consortium).

Taken together, the BD2K training and educational programs will improve the ability of the entire biomedical science community to utilize the growing volume and complexity of data. Additional information about BD2K's portfolio of training and education awards is available online at <https://datascience.nih.gov/bd2k/funded-programs/enhancing-training>.

### **Mentored Career Development Award in Biomedical Big Data Science**

The BD2K Mentored Career Development Award in Biomedical Big Data Science is designed to facilitate the career development of interdisciplinary researchers who will develop technology, methods, and tools to capitalize on the Big Data already being generated by biomedical researchers. Big Data Science is interdisciplinary and involves three major scientific areas: (1) computer science or informatics, (2) statistics and mathematics, and (3) biomedical science. It is anticipated that, by the end of the award period, the awardee will have acquired breadth across all of these areas as well as depth in areas of specialty.

Candidates may enter the program from various backgrounds: (1) biologists or clinicians who want to be cross-trained in the quantitative sciences (which includes computer science, statistics, mathematics, informatics, etc.), (2) quantitative scientists who want to be cross-trained in clinical/biological areas or other quantitative areas, and (3) biomedical data scientists who already have some background in areas relevant to Big Data Science but who want to gain further expertise.

Solving the challenges brought about by Big Data will likely involve a team science approach to problem solving. Candidates are expected to acquire knowledge and skills to become independent investigators, but they are also encouraged to work effectively as a member of a team to solve the challenges. In addition, candidates are encouraged to seek multiple mentors from disciplines necessary for capitalizing on Big Data.

**Awards:** NIH will contribute up to \$ 185,100 per year toward the salary of the career award recipient. Further guidance on budgeting for career development salaries is provided in the SF424 (R&R) Application Guide. NIH will contribute \$40,000 per year toward the research development costs of the award recipient, which must be justified and consistent with the stage of development of the candidate and the proportion of time to be spent in research or career development activities. Salary for mentors, secretarial and administrative assistants, etc. is not allowed

**Letter of Intent:** Not Required.

**Deadline:** August 1, 2016, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on this date.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

## **Grant Program: Mechanism for Time-Sensitive Research Opportunities in Environmental Health Sciences (R21)**

**Agency: National Institutes of Health RFA-ES-16-005**

**RFP Website:** <http://grants.nih.gov/grants/guide/rfa-files/RFA-ES-16-005.html>

**Brief Description:** This Funding Opportunity Announcement (FOA) is intended to support research in environmental health science in which an event has or will imminently occur that provides a limited window of opportunity to collect samples and data to support the assessment of exposures and human health impact. The goal of the program is to characterize initial exposures (measured either by sampling air, water, soil, etc.), collect human biological samples, or collect human health and exposure data in order to provide critical information to understand exposure-health outcome relationships, with the goal of providing data that will facilitate timely public health action to protect health.

The distinguishing features of an appropriate study are 1) the unforeseen nature of the event and 2) the need for rapid review and funding (substantially shorter than the typical NIH grant review/award cycle) in order for the scientific question to be approached and for the research design to be implemented. It should be clear that the event offers a limited opportunity to address unique and important research questions that could only be answered if the project is initiated with minimum delay. Ideally, the results from the research funded by the time-sensitive R21 would lead to analyses of longer term health outcomes, although funding of these analyses would not be appropriate for this mechanism, but rather for future regular application processes.

An application submitted to this time-sensitive FOA will be considered only one time. Resubmission applications are not permitted.

This FOA encourages partnerships between researchers and the affected community (e.g., community-based organizations, environmental justice groups, local health and environmental agencies, worker organizations, etc.) as appropriate.

Applications seeking funds for the following are considered non-responsive to this announcement: 1) expansion of an existing study; 2) hazard remediation or cleanup; 3) studies of environmental hazards or chemical agents that alone do not impact human health; 4) estimating exposure to pathogens, and lastly studies proposing to use animals (e.g., pets, laboratory animals, or wildlife) as surrogates for human exposure.

Examples of appropriate studies include, but are not limited to, the following:

- Assessing short-term health impacts resulting from environmental exposures following a natural or man-made disaster, using biomarkers, survey instruments, medical assessments, or other appropriate methods. Examples might include acute toxic responses or exacerbation of existing diseases. Subjects in these studies could include local residents or early responders.
- Collecting biospecimens and/or data on exposures to environmental agents immediately following a natural or man-made disaster to use in assessment of the effects of these exposures on short- or longer-term health outcomes.
- Collecting data on the release of environmental toxicants that could result in exposures and consequently to adverse health outcomes. Applications should discuss how these data might be used in health outcome or exposure research.
- Examining the environmental health impact of rapid changes in policy or legislation that affect air or water treatment, content, and quality. For example, in an effort to improve air quality, a Department of Public Health issues a clean air mandate to convert heating oil to cleaner sources within 6 months. An application would be considered responsive in proposing to collect baseline and/or post levels of environmental and/or human biospecimens to examine the effects of changes to fine particulate matter.

All appropriate applications responding to this FOA will be subject to an accelerated review and award process. The entire cycle from submission to award is expected to be within 3-4 months. However, administrative requirements and other unforeseen circumstances may delay issuance dates beyond that timeline. While institutions may propose to investigate time-sensitive opportunities outside the U.S., it must be clear within the application that all the proper logistics, human subjects concerns and approvals, both domestic and international, can be addressed within the limited time frame outlined in this announcement.

**Awards:** The combined budget for direct costs for the 2-year project period may not exceed \$275,000. No more than \$200,000 may be requested in any single year.

**Letter of Intent:** 30 days prior to the application due date.

**Deadline:** June 3, 2016, July 1, 2016, August 1, 2016, September 1, 2016, October 3, 2016, November 1, 2016, December 1, 2016.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

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**Grant Program: Growing Great Ideas: Research Education Course in Product Development and Entrepreneurship for Life Science Researchers (R25)**

**Agency: National Institutes of Health RFA-DA-17-007**

**RFP Website:** <http://grants.nih.gov/grants/guide/rfa-files/RFA-DA-17-007.html>

**Brief Description:** The prosperity of the United States has been largely based upon the ability to capitalize economically on ground-breaking discoveries from science and engineering research. Innovation is properly defined as realized (commercialized) invention. Thus, the competence to bring a scientific breakthrough to market is necessary for true biomedical innovation. Unfortunately, an overwhelming majority of the life science workforce does not receive any formal training to empower the innovation process.

The purpose of this FOA is to solicit applications to develop a highly specialized curriculum/training course in biomedical innovation and entrepreneurship that prepares NIDA research force to extend their focus beyond the laboratory and broaden the impact of basic research projects. While knowledge gained from NIH-supported basic research frequently advances the field of science, some results also show immediate potential for broader applicability and impact in the commercial and public health realms. The sought curriculum will be designed to teach interested basic scientists to recognize this potential.

The institution proposing the course must have an established and well-recognized entrepreneurship teaching program with the demonstrated ability and willingness to adapt or develop the integrated curriculum for the academic life scientists, including scientists working in the field of drug abuse and addiction research. With this research education grant, the awardee institution is expected to focus on teaching "bench" researchers, including those whose research projects are being supported by NIDA, how to gain a clearer understanding of the value of their research inventions in the marketplace, to foster the development of early-stage biomedical technologies and ultimately how to advance their technologies from the research lab into the commercial world.

The program must be specially tailored for biomedical research. The program must be focused on academic researchers who have early ideas and technologies and may be interested in the formation of a startup company around those ideas and technologies. The program must expose the trainees to the practicing biomedical entrepreneurial community (successful technology entrepreneurs, investors, venture capitalists, regulators, etc.) and to offer an opportunity for ongoing mentorship and collaborations.

Special emphasis must be placed on the challenges inherent in the early stages of the innovation process in life sciences, such as protecting intellectual property and developing regulatory and reimbursement strategies. Special topics of prominence may include:

- Recognizing whether the research idea is truly an opportunity for product development.
- Understanding the end user, the regulator, and the purchaser of the biomedical technology, and the distinctions between them. Customer Discovery. Developing regulatory and reimbursement strategies.
- Protecting intellectual property (IP) and understanding how biomedical technology can be commercialized (for example, licensing a technology through a university technology transfer office vs. setting up a startup).
- Establishing a startup business in biotechnology
- Sustaining the business and the sources of capital (SBIR/STTR, Angel Investors, Venture Capital, Corporate VC, etc.)

Research education programs may complement ongoing research training and education occurring at the applicant institution, but the proposed educational experiences must be distinct from those training and education programs currently receiving Federal support. R25 programs may augment institutional research training programs (e.g., T32, T90) but cannot be used to replace or circumvent Ruth L. Kirschstein National Research Service Award (NRSA) programs.

**Awards:** Direct costs of up to \$250,000 per year may be requested. The budget should be designed to defray participant costs in the years when the courses will be held.

**Letter of Intent:** June 20, 2016

**Deadline:** July 20, 2016, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on this date.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

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## **Department of Defense/US Army/DARPA/ONR**

### **Grant Program: FY 17 Communications and Networking Discovery and Invention**

**Agency: Department of Defense ONR N00014-16-S-BA11**

**Website:** <http://www.onr.navy.mil/~media/Files/Funding-Announcements/BAA/2016/N00014-16-S-BA11.ashx>

**Brief Description:** Communications technology that can provide seamless, robust, connectivity is at the foundation of the Sea Power 21 and FORCENet Vision "... to have the right information, at the right place, at the right time ..." The performance of Command and Control (C2) systems and decision making at all levels of command depend critically on reliable, interoperable, survivable, secure, and timely communications and networking, and the availability of high capacity multimedia (voice, data, imagery) communication networks is fundamental to nearly all Department of Navy missions.

The current evolution of naval warfighting from a platform-centric to a network-centric paradigm depends on successfully meeting the implied need for significantly enhanced communications and networking capabilities of C2, sensor and weapon systems. These systems are deployed on a variety of platforms and users, both manned and unmanned, operating under challenging battlefield conditions (lack of infrastructure, mobility, spectrum, interference, multipath, atmospheric, size/weight/power constraint, etc.) in different environments (space, terrestrial and undersea).

The goal of the Communications and Networking Program within the Office of Naval Research (ONR 311) is to support the FORCENet vision by developing measurable advances in

technology that can directly enable and enhance end-to-end connectivity and quality-of-service for mission- critical information exchange among such widely dispersed naval, joint, and coalition forces. The vision is to provide high throughput robust communications and networking to ensure all warfighters -- from the operational command to the tactical edge -- have access to information, knowledge, and decision-making necessary to perform their assigned tasks.

White papers for potential FY17 Exploratory Development/Applied Research (Budget category 6.2) projects are sought under the following focus areas:

1. Compact and deployable circular polarization antenna in the UHF-, X-, or Ka-, band with high radiation efficiency and adaptive gain pattern for multi-U form factor cubesatellite communications.

2. Near-capacity (Shannon) wideband communications mode operation over multi-channel AESA pulsed radar hardware chain (beamformer - T/R module - antenna array). Potential challenges for high bit rate communications include, amongst others, novel coding/modulation schemes resilient to saturated nonlinear power amplifier regimes, exploitation of pulse-to-pulse phase coherence and MIMO.

3. Enhanced waveform and diversity techniques including innovative tracking for mobile troposcatter (C- to Ku- bands). S&T focus on solutions that can reuse existing apertures, minimally impact HW, and permit modular upgrade.

4. Robust and (throughput) efficient wireless medium access mechanisms for mobile LPI/LPD network communications operating under high dynamic range, and high-interference rejection (e.g., spectral underlay), receive conditions.

5. Mechanisms to guarantee delivery of traffic across a multi-hop ad-hoc network within a specified latency; optimization of traffic based on multiple parameters (e.g., priority, latency, jitter, etc.); multi-path TCP implementations that are cognizant of variations in path characteristics and traffic priority, and do not impact application performance; store/forward and disruption-tolerant network implementations across a cipher-text core .

**Awards:** ONR plans to fund \$300,000 to \$500,000 per year per award using Applied Research funds (Budget Category 6.2). However, lower and higher cost proposals will be considered. The average funding level of past awards was approximately \$500,000 per year.

**Deadline:**

White Papers: June23, 2016

Full Proposals: September 23, 2016

**Agency contact:**

Caitlin O'Neill (Primary)

Contract Specialist

C4ISR AND SEA WARFARE CONTRACT BRANCH ONR Code 252

875 North Randolph St.

Arlington, VA 22203-1995

Email: Caitlin.o'neill@navy.mil

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**Grant Program: Peer Reviewed Medical Research Program: Investigator-Initiated Research Award**

**Agency: Department of Defense; Defense Health Program: Congressionally Directed Medical Research Programs W81XWH-16-PRMRP-IIRA**

**RFP Website:** [http://cdmrp.army.mil/funding/pa/16prmrpiira\\_pa.pdf](http://cdmrp.army.mil/funding/pa/16prmrpiira_pa.pdf)

**Brief Description:** Applications to the Fiscal Year 2016 (FY16) Peer Reviewed Medical Research Program (PRMRP) are being solicited for the Defense Health Agency, Research,



Development, and Acquisition (DHA RDA) Directorate, by the U.S. Army Medical Research Acquisition Activity (USAMRAA). As directed by the Office of the Assistant Secretary of Defense for Health Affairs (OASD[HA]), the DHA RDA Directorate manages the Defense Health Program (DHP) Research, Development, Test, and Evaluation (RDT&E) appropriation. The managing agent for this Program Announcement/Funding Opportunity is the Congressionally Directed Medical Research Programs (CDMRP). The PRMRP was initiated in 1999 to provide support for military health-related research of exceptional scientific merit. Appropriations for the PRMRP from FY99 through FY15 totaled \$1.092 billion. The FY16 appropriation is \$278.7 million (M).

The vision of the FY16 PRMRP is to improve the health and well-being of all military Service members, Veterans, and beneficiaries. The PRMRP challenges the scientific and clinical communities to address at least one of the FY16 Topic Areas with original ideas that foster new directions along the entire spectrum of research and clinical care. The program seeks applications in laboratory, clinical, behavioral, epidemiologic, and other areas of research to advance knowledge in disease etiology, improve prevention, detection, diagnosis, treatment, and quality of life for those affected by a relevant disease or condition, and to develop and validate clinical care or public health guidelines.

**Awards:** The anticipated direct costs budgeted for the entire period of performance will not exceed **\$1.2M**. Indirect costs are to be budgeted in accordance with the organization's negotiated rate. No budget will be approved by the Government exceeding **\$1.2M** direct costs or using an indirect rate exceeding the organization's negotiated rate.

**Deadline: Pre-Application Submission Deadline:** 5:00 p.m. Eastern time (ET), June 23, 2016

- **Invitation to Submit an Application:** August 2016
  - **Application Submission Deadline:** 11:59 p.m. ET, October 19, 2016
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**Grant Program: Broad Agency Announcement for the Office of Naval Research (ONR) Navy and Marine Corps FY2017 Basic Research Challenge (BRC) Program**

**Agency: DoD Office of Naval Research N00014-16-S-BA10**

**RFP Website:**

<https://www.fbo.gov/index?s=opportunity&mode=form&id=e7208e0d17a6a139c4105d3e43e4ca65&tab=core&cvview=0>

**Brief Description:** The Office of Naval Research (ONR) is interested in receiving proposals for basic research relating to the following topic areas:

- \_Topic 1 Establishing a Multiscale Theory for Cavitation in Complex Soft Materials
- \_Topic 2 Understanding the Phase-Resolved Bottom-Side IONosphere (BSION)
- \_Topic 3 Decentralized Perception in Data-Rich Dynamic Environments
- \_Topic 4 A Scientific Basis for Enhanced Manufacturability with Electrical Currents
- \_Topic 5 Distributed Sensing, Actuation and Control in Soft Materials for Flexible Appendages
- \_Topic 6 Predictive and Causal Modeling - Bridging the Gap
- \_Topic 7 New Opportunities to Transform Wall-bounded Turbulence Understanding

**Awards:** Various

**Deadline:** White Papers: 3 June 2016 (Friday) 11:59 Eastern Daylight Time

Full Proposals: 12 August 2016 (Friday) 11:59 Eastern Daylight Time

**Agency contact:**

Mr. David Broadwell, Grant Management Specialist

Office of Naval Research

[david.broadwell@navy.mil](mailto:david.broadwell@navy.mil)

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## Department of Energy

### **Grant Program: Solar Energy Evolution and Diffusion Studies II – State Energy Strategies (SEEDSII-SES)**

**Agency: Department of Energy Advanced Research Projects Agency Energy**

**DE-FOA-0001496**

**RFP Website:** <https://eere-exchange.energy.gov>

<https://eere-exchange.energy.gov/#Foald5aa6f510-8e5c-4012-8d3a-f89f90e5d66c>

**Brief Description:** As part of the Department of Energy's Grid Modernization and SunShot Initiatives, this Enabling Extreme Real-Time Grid Integrations of Solar Energy (ENERGISE) Funding Opportunity Announcement (FOA) supports the research and development of highly scalable distribution system planning and real-time operation solutions that enables seamless interconnection and integration of high penetration solar generation onto the electricity grid in a cost-effective, secure, and reliable manner. The envisioned ENERGISE solutions will require the extensive use of sensor, communication, and data analytics technologies to gather up-to-the-minute measurement and forecast data from diverse sources and perform continuous optimization analysis and active control for existing and new PV installations in real time. The solutions need be compatible with the existing grid architecture in the near term and with the advanced grid architecture in the long term. The solutions should also be designed with consideration of the interoperability and cybersecurity requirements. The full Funding Opportunity Announcement (FOA) is posted on the EERE eXCHANGE website at <https://eere-exchange.energy.gov>. Applications must be submitted through the EERE eXCHANGE website to be considered for award. The applicant must first register and create an account on the EERE eXCHANGE website. A User Guide for the EERE eXCHANGE can be found on the EERE website <https://eere-exchange.energy.gov/Manuals.aspx> after logging in to the system. Information on where to submit questions regarding the content of the announcement and where to submit questions regarding submission of applications is found in the full FOA posted on the EERE eXCHANGE website.

**Awards:** Up to \$4,000,000. Anticipated Funding: approximately \$25 million.

**Deadline:** August 26, 2016

**Agency contact:** To apply to this FOA, Applicants must register with and submit application materials through ARPA-E eXCHANGE (<https://arpa-e-foa.energy.gov/Registration.aspx>). For detailed guidance on using ARPA-E eXCHANGE, see Section IV.H.1 of the FOA

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### **Grant Program: Renewable Energy To Fuels Through Utilization Of Energy-Dense Liquids (REFUEL)**

**Agency: Department of Energy Advanced Research Projects Agency Energy**

**DE-FOA-0001562**

**RFP Website:** <https://arpa-e-foa.energy.gov/#Foald1f46538f-5fae-45c0-a12d-59cbe2e6992e>

**Brief Description:** The purpose of the Renewable Energy to Fuels through Utalization of Energy-dense Liquids (**REFUEL**) program is to develop scalable technologies for conversion of electrical or thermal energy from renewable sources into chemical energy contained in energy dense Carbon-Neutral Liquid Fuels (CNLF) that can be stored, transported, and later converted into hydrogen or electricity to provide power for transportation and distributed energy generation. Because CNLFs can be stored for extended periods of time and then transported to consumers using existing and inexpensive technology for liquid fuel delivery and distribution, they offer a unique opportunity to reduce both the need for energy imports and carbon

emissions from the transportation sector. In meeting that need, they also have the potential to enable increased penetration of intermittent renewable energy sources. The success of this program depends on developing technologies in two categories: (1) the synthesis of CNLFs using intermittent renewable energy sources and water and air (N<sub>2</sub> and CO<sub>2</sub>) as the only chemical input streams and (2) the conversion of CNLFs delivered to the end point to another form of energy (e.g. hydrogen or electricity)

**Awards:** Approximately \$25 million, subject to the availability of appropriated funds

**Deadline:** First Deadline for Questions to [ARPA-E-CO@hq.doe.gov](mailto:ARPA-E-CO@hq.doe.gov): 5 PM ET, May 18, 2016

Submission Deadline for Concept Papers: 5 PM ET, May 25, 2016

Second Deadline for Questions to [ARPA-E-CO@hq.doe.gov](mailto:ARPA-E-CO@hq.doe.gov): 5 PM ET, TBD

Submission Deadline for Full Applications: 5 PM ET, TBD

**Agency contact:** To apply to this FOA, Applicants must register with and submit application materials through ARPA-E eXCHANGE (<https://arpa-e-foa.energy.gov/Registration.aspx>). For detailed guidance on using ARPA-E eXCHANGE, see Section IV.H.1 of the FOA

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## **NASA**

### **Grant Program: ROSES 2016: Citizen Science for Earth Systems Program**

**Agency:** NASA NNH16ZDA001N-CSESP

**RFP Website:**

<https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={96C8752A-37DF-B46A-C2C3-3F0EC4C599E9}&path=init>

**Brief Description:** This ROSES NRA (NNH16ZDA001N) solicits basic and applied research in support of NASA's Science Mission Directorate (SMD). This NRA covers all aspects of basic and applied supporting research and technology in space and Earth sciences, including, but not limited to: theory, modeling, and analysis of SMD science data; aircraft, scientific balloon, sounding rocket, International Space Station, CubeSat and suborbital reusable launch vehicle investigations; development of experiment techniques suitable for future SMD space missions; development of concepts for future SMD space missions; development of advanced technologies relevant to SMD missions; development of techniques for and the laboratory analysis of both extraterrestrial samples returned by spacecraft, as well as terrestrial samples that support or otherwise help verify observations from SMD Earth system science missions; determination of atomic and composition parameters needed to analyze space data, as well as returned samples from the Earth or space; Earth surface observations and field campaigns that support SMD science missions; development of integrated Earth system models; development of systems for applying Earth science research data to societal needs; and development of applied information systems applicable to SMD objectives and data. Awards range from under \$100K per year for focused, limited efforts (e.g., data analysis) to more than \$1M per year for extensive activities (e.g., development of specialized science experimental hardware). The funds available for awards in each program element offered in this NRA range from less than one to several million dollars, which allow selection from a few to as many as several dozen proposals, depending on the program objectives and the submission of proposals of merit. Awards will be made as grants, cooperative agreements, contracts, and inter- or intraagency transfers, depending on the nature of the work proposed, the proposing organization, and/or program requirements. The typical period of performance for an award is three years, but some programs may allow up to five years and others specify shorter periods. Organizations of every type, domestic and foreign, Government and private, for profit and not-for-profit, may submit proposals without restriction

on teaming arrangements. Note that it is NASA policy that all investigations involving non-U.S. organizations will be conducted on the basis of no exchange of funds. Electronic submission of proposals is required by the respective due dates for each program element and must be submitted by an authorized official of the proposing organization. Electronic proposals may be submitted via the NASA proposal data system NSPIRES or via Grants.gov. Every organization that intends to submit a proposal in response to this ROSES NRA must be registered with NSPIRES; organizations that intend to submit proposals via Grants.gov must be registered with Grants.gov, in addition to being registered with NSPIRES. Such registration must identify the authorized organizational representative(s) who will submit the electronic proposal. All principal investigators and other participants (e.g., co-investigators) must be registered in NSPIRES regardless of submission system. Potential proposers and proposing organizations are urged to access the system(s) well in advance of the proposal due date(s) of interest to familiarize themselves with its structure and enter the requested information. Details of the solicited programs are given in the Appendices of this ROSES NRA. Names, due dates, and links for the individual calls are given in Tables 2 and 3 of this ROSES NRA. Interested proposers should monitor <http://nspires.nasaprs.com/> or subscribe to the electronic notification system there for additional new programs or amendments to this ROSES NRA through February 2017, at which time release of a subsequent ROSES NRA is planned. A web archive (and RSS feed) for amendments, clarifications, and corrections to this ROSES NRA will be available at: <http://nasascience.nasa.gov/researchers/sara/grant-solicitations/roses-2016/> Frequently asked questions about ROSES-2016 will be on the web at <http://science.nasa.gov/researchers/sara/faqs/>. Further information about specific program elements may be obtained from the individual Program Officers listed in the Summary of Key Information for each program element in the Appendices of this ROSES NRA and at <http://science.nasa.gov/researchers/sara/program-officers-list/>. Questions concerning general ROSES NRA policies and procedures may be directed to Max Bernstein, Lead for Research, Science Mission Directorate, at [sara@nasa.gov](mailto:sara@nasa.gov)

THP uses NASA's unique view from space to study hydrologic processes associated with runoff production, hydrologic fluxes at the land-air interface, and terrestrial water stores. THP works in concert with other Earth Science Division (ESD) programs, also studying the global water cycle (e.g., precipitation, physical oceanography), to describe and understand the connections between the cycle's different parts. THP fosters the development of hydrologic remote sensing theory, the scientific basis for new hydrologic satellite missions, hydrologic remote sensing field experiments, and the interface of hydrology with other disciplines, such as those addressed by the Terrestrial Ecology program and Modeling Analysis and Prediction (see ROSES-2016 elements A.4 and A.13, respectively). Particular emphasis is placed on the application of satellite-based remotely sensed data for characterizing, understanding, and predicting the terrestrially linked components of the hydrologic cycle and the dynamics of large-scale river basins. THP is currently focused on research relating to multiple missions, either currently operating, such as Gravity Recovery and Climate Experiment (GRACE), Global Precipitation Measurement (GPM) and Soil Moisture Active Passive (SMAP); or in planning and development, such as the Gravity Recovery and Climate Experiment Follow-On (GRACE-FO) and the Surface Water Ocean Topography (SWOT). THP projects are also extensively using data collected at previous or current field campaigns and projects, such as SMAPVEX (<http://smap.jpl.nasa.gov>), AirMOSS (<http://airmoss.jpl.nasa.gov>), or numerous others, both national and international. THP furthers study of the relationship between satellite interferometric measurements of surface deformation and changes in underground water stores

**Award:** \$275K - \$550K

**Letter of Intent:** The Program is using a mandatory two-step proposal submission process. The overall description of a two-step process can be found in Section IV. (b) vii of the ROSES-2016 *Summary of Solicitation*. A Step-1 proposal is required and must be submitted electronically by the Authorized Organizational Representative (AOR). The five-page Step-1 proposal must present the proposed concept based on the Scope of Solicitation from Section 2.

After review of submitted Step-1 proposals and decisions by the selecting official, a subset of the proposers will be invited to submit Step-2 proposals. Only those who are invited to submit a Step-2 proposal will be able to do so.

**Proposal Deadline:**

THP16 NOIs Due      May 27, 2016

THP16 Proposals Due      Jul 21, 2016

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**National Endowment for Humanities**

**Grant Program: Summer Stipends**

**Agency: National Endowment for Humanities**

**RFP Website:** <http://www.neh.gov/grants/research/summer-stipends>

**Brief Description:** Summer Stipends support individuals pursuing advanced research that is of value to humanities scholars, general audiences, or both.

Eligible projects usually result in articles, monographs, books, digital materials and publications, archaeological site reports, translations, editions, or other scholarly resources.

Summer Stipends support continuous full-time work on a humanities project for a period of two consecutive months. Summer Stipends support projects at any stage of development.

**Program Statistics**

In the last five competitions the Summer Stipends program received an average of 892 applications per year. The program made an average of 81 awards per year, for a funding ratio of 9 percent. The number of applications to an NEH grant program can vary widely from year to year, as can the funding ratio. Information about the average number of applications and awards in recent competitions is meant only to provide historical context for the current competition. Information on the number of applications and awards in individual competitions is available from [stipends@neh.gov](mailto:stipends@neh.gov).

**Awards:** Summer Stipends support continuous full-time work on a humanities project for a period of two months. Successful applicants receive a stipend of \$6,000 .

**Deadline:** Applications must be submitted on or before 11:59 P.M. (Eastern Time) on September 29, 2016

**Contact Information:** Contact NEH's Division of Research Programs at 202-606-8200 or [stipends@neh.gov](mailto:stipends@neh.gov)

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