

***Space Technology
Mission Directorate***

August 22, 2017

Space Technology Research Grants *Opportunities to Propose*



Engage Academia: tap into **spectrum** of academic researchers, from graduate students to senior faculty members, to examine the theoretical feasibility of ideas and approaches that are critical to making science, space travel, and exploration more effective, affordable, and sustainable.

NASA Space Technology Research Fellowships

- Graduate student research in space technology; research conducted on campuses and at NASA Centers and not-for-profit R&D labs

Early Career Faculty

- Focused on supporting outstanding faculty researchers early in their careers as they conduct space technology research of high priority to NASA's Mission Directorates

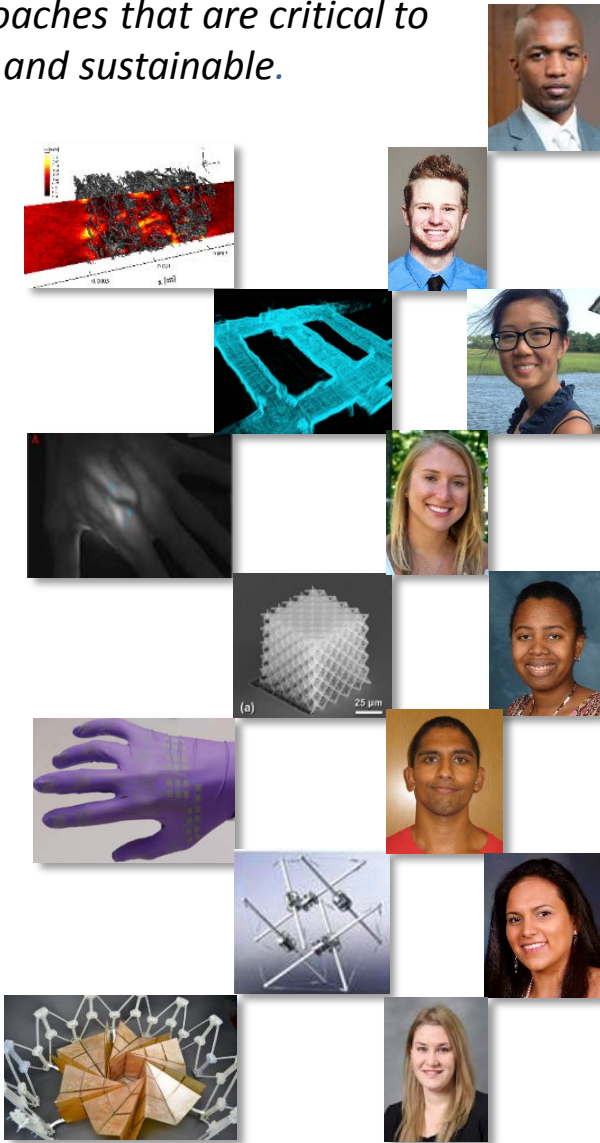
Early Stage Innovations

- University-led, possibly multiple investigator, efforts on early-stage space technology research of high priority to NASA's Mission Directorates
- Paid teaming with other universities, industry and non-profits permitted

Space Technology Research Institutes

- University-led, integrated, multidisciplinary teams focused on high-priority early-stage space technology research for several years

***Accelerate development of groundbreaking
high-risk/high-payoff low-TRL space technologies***



STRG Opportunities to Propose NSTRF



Eligibility Requirements for NSTRF17

1. Pursuing or seeking to pursue advanced degrees directly related to space technology.
2. Are U.S. citizens or permanent residents of the U.S.
3. Are or will be enrolled in a full-time master's or doctoral degree program at an accredited U.S. university in fall 2017.
4. Are early in their graduate careers.

Application Components

- | | | | |
|---|----------------------------------------------------------|---|------------------------------------|
| 1 | Proposal Cover Page
(Program Specific Data Questions) | 5 | Curriculum Vitae |
| 2 | Personal Statement | 6 | Transcripts |
| 3 | Project Narrative | 7 | GRE General Test Scores |
| 4 | Degree Program
Schedule | 8 | Three Letters of
Recommendation |

Award Value

Fellowship Budget Category	Max value
Student Stipend	\$36,000
Faculty Advisor Allowance	\$10,000
Visiting Technologist Experience Allowance	\$10,000
Health Insurance Allowance	\$1,000
Tuition and Fees Allowance	\$17,000
TOTAL	\$74,000

NSTRF17: <http://tinyurl.com/NSTRF2017>.
NSTRF16: <http://tinyurl.com/NSTRF2016>.
NSTRF15: <http://tinyurl.com/NSTRF2015>.
NSTRF14: <http://tinyurl.com/NSTRF14>.
NSTRF13: <http://tinyurl.com/NSTRF13>.
NSTRF12: <http://tinyurl.com/NSTRF12-OCT>.
NSTRF11: <http://tinyurl.com/NSTRF11-OCT>.

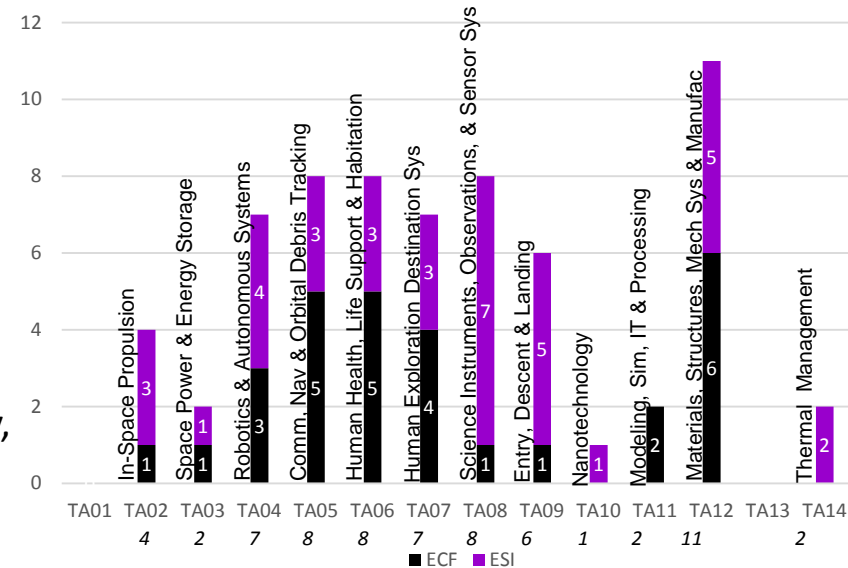
STRG Opportunities to Propose ECF and ESI



Technical Characteristics:

- Unique, disruptive or transformational space technologies
- Low TRL
- Specific topics tied to Technology Area Roadmaps and the NRC's review of the roadmaps
- Big impact at the system level: performance, weight, cost, reliability, operational simplicity or other figures of merit associated with space flight hardware or missions

66 Topics



<http://tinyurl.com/NASA-14ECF> <http://tinyurl.com/NASA-15ECF> <http://tinyurl.com/NASA-16ECF> <http://tinyurl.com/NASA-17ECF>

<http://tinyurl.com/NASA-ESI13> <http://tinyurl.com/NASA-14ESI> <http://tinyurl.com/NASA-15ESI> <http://tinyurl.com/NASA-16ESI> <http://tinyurl.com/NASA-17ESI>

Eligibility Summary:

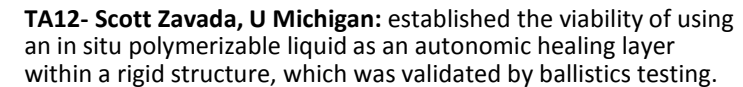
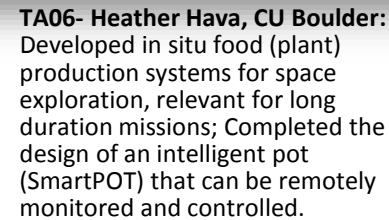
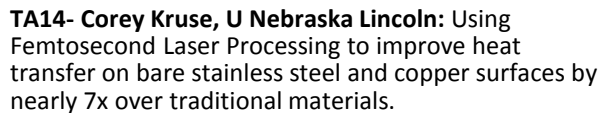
Both ECF and ESI proposals must be submitted by accredited U.S. universities

Early Career Faculty

- Untenured assistant professor and on tenure track
- U.S. citizen or permanent resident
- No current or former Presidential Early Career Awards for Scientists and Engineers (PECASE)
- No co-investigators

Early Stage Innovations

- PI must be from proposing university
- Co-investigators are permitted
- ≥ 50% of the proposed budget must go to the proposing university
- ≥ 70% of the proposed budget must go to universities



TA08- Kathleen Harrington, Johns Hopkins: successfully installed and operated Variable-delay Polarization Modulators (VPMs) on the Cosmology Large Angular Scale Surveyor (CLASS) telescope in Atacama, Chile.

Solicitation	Date
NSTRF	8/1/2017: NSTRF17 awards in place
ECF	8/8/17: ECF17 announcement
ESI	5/11/17: ESI17 release
STRI	2/16/17: STRI selection

Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec							
FYQ4			FYQ1			FYQ2			FYQ3			FYQ4			FYQ1									
Release			NSTRF									Selection												
						Release			ECF									Selection						
										Release			ESI									Selection		
(STRI)						Selection			Release			STRI (released biannually)												

NASA Innovative Advanced Concepts (NIAC) Program

Space Technology
Mission Directorate

August, 2017

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What is **NIAC**?

NASA Innovative Advanced Concepts

NASA Innovative Advanced Concepts

A program to support
early studies of
innovative, yet credible,
visionary concepts
that could one day
“change the possible”
in aerospace.



NIAC Awards, Scope, Criteria

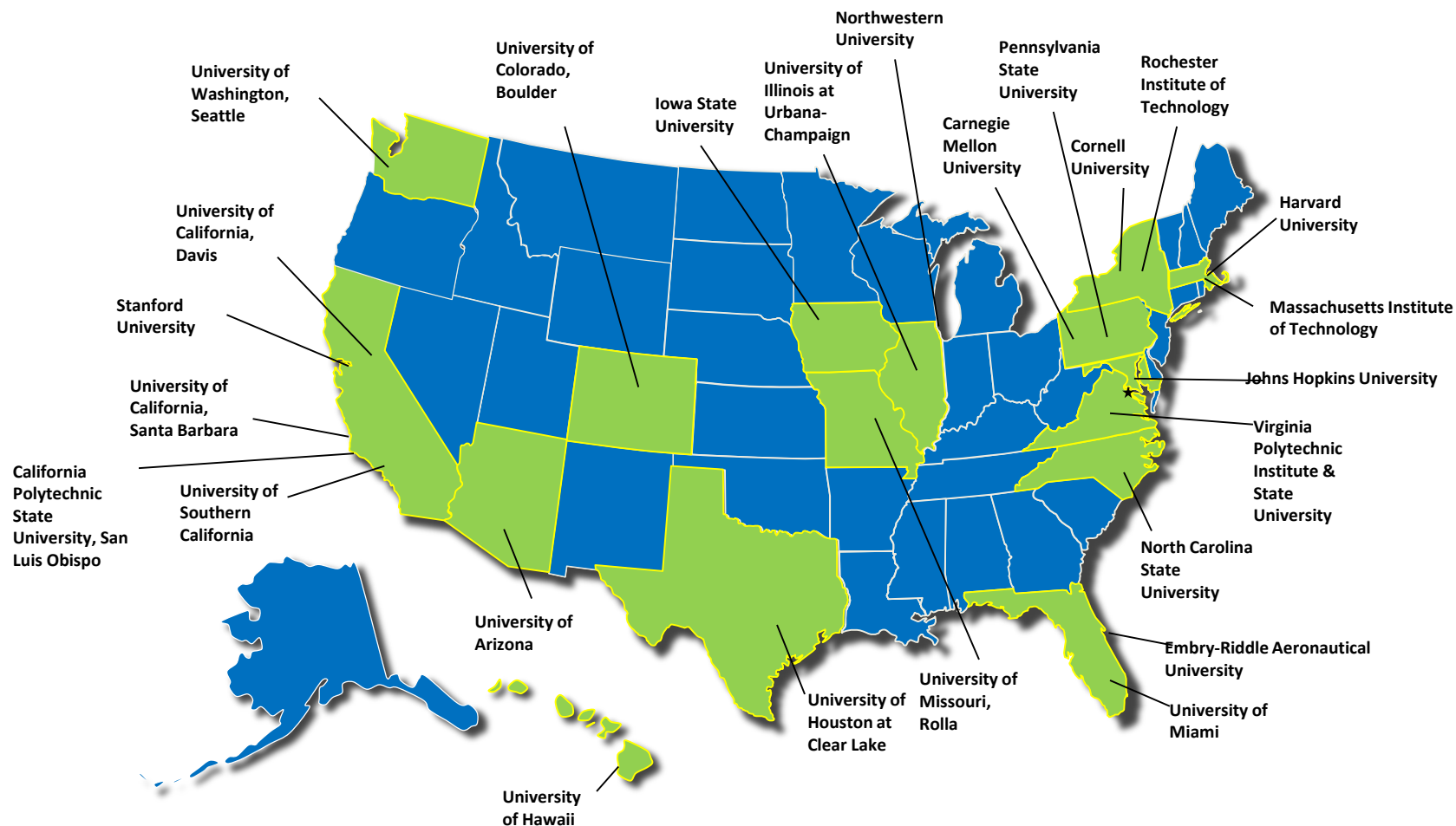


- NIAC grant awards support 2 phases of study:
 - **Phase I:** up to \$125K, ~9 months, for concept definition and initial analysis in a mission context
 - **Proposal Submission & Selection Process:** Two-step Process; Step A is fully- open; Step B by Invitation only; Independent Peer Review. (<https://www.nasa.gov/directorates/spacetech/niac/niac-phase-I-solicitation>)
 - **Phase II:** up to \$500K, 2 years, for further development of most promising Phase I concepts, comparative mission analysis, pathways forward
 - **Eligibility:** All categories of U.S organizations may apply. Non-U.S. organizations may partner in, or lead, NIAC studies on a no-exchange of funds basis, and subject to NASA's policy on foreign participation. **How to Apply:** (<https://www.nasa.gov/feature/how-to-apply-to-niac>)
 - **Goal:** Early studies of visionary aerospace architecture or mission concept
 - **Technology Readiness Level (TRL):** TRL 2 or lower at start of award
 - **NIAC Key Dates:** 2018 Phase I Proposals Due: **13 Sep '17**; Selections: **28 Mar '18**; 2018 Phase II Call for new proposals—Early Dec. 2018 (Planned); (<https://www.nasa.gov/content/key-dates-and-solicitations>)
- Scope of NIAC Phase I Studies:
 - **Aerospace architecture or mission concepts** (not focused tech.)
 - **Exciting:** offering a potential breakthrough or revolutionary improvement
 - **Unexplored:** novel, with basic feasibility and properties unclear
 - **Credible:** sound scientific/engineering basis and plausible implementation
- NIAC proposal evaluation criteria:
 - **Potential of the Concept** (all scope elements above, especially exciting)
 - **Strength of the Approach** (research objectives, technical issues, suitability of team and cost)
 - **Benefits of the Study** (concept definition, mission analysis, wider benefits, scientific/engineering contributions, notably new/different/inspiring)

NIAC Educational Institutions



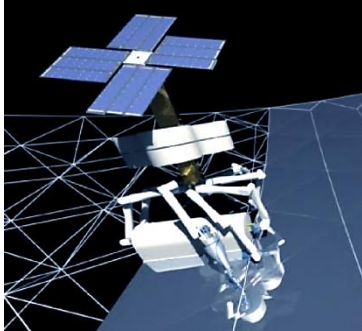
UNIVERSITY PARTNERS: Inspiring Our Nation's Innovators



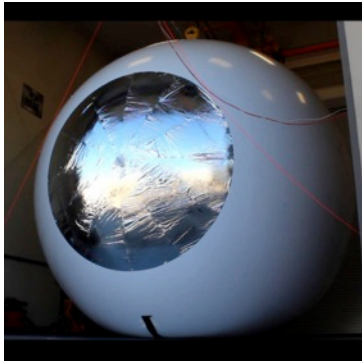
NIAC Awards & Successes



Notable Awards & Successes of NIAC Fellows



\$100M institute created for NIAC concept:
Prof. Philip Lubin, University of California, Santa Barbara
Private Funding - Directed energy interstellar work



Prof. Chris Walker, University of Arizona
was testing his 10 Meter Sub-Orbital Large Balloon
Reflector (LBR) in Antarctica with NASA

NIAC Fellow and NEC Member, Prof. Penny Boston was
selected as NASA's new Director for Astrobiology at NASA
ARC, effective May 31st 2016



Prof. Behrokh Khoshnevis, University of Southern
California- Space Based Manufacturing First place award
at the NASA In-Situ Materials Challenge