The Air Force Office of Scientific Research

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Chief Scientist
Air Force Office of Scientific Research

Integrity ★ Service ★ Excellence
United States Air Force Mission

The Mission of the United States Air Force is to Fly, Fight, and Win…In *Air, Space, and Cyberspace*

“The first essential of air power necessary for our national security is preeminence in Research.”

- General Henry “Hap” Arnold
AFRL
One Lab / Many Locations

<table>
<thead>
<tr>
<th>Employees</th>
<th>Civilian</th>
<th>Military</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>5,827</td>
<td>79%</td>
</tr>
<tr>
<td>S&amp;Es</td>
<td>3,455</td>
<td>80%</td>
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</table>

S&E Education

- 20% B.S.
- 33% Ph.D.
- 47% M.S.
Turning Science Into Capability

Driven by Service Core Functions + Air Force Strategy + S&T Vision/Horizons + Product Center Needs + MAJCOM Needs

Initial Operating Capability Timeline

- Basic Research
- Applied Research
- Advanced Tech Demo

Science Knowledge
Technologies
Capability Concepts
Fielded

Outputs:
- New Technologies
- Mature Technologies
- Flagship Capability Concepts

~ $5B

25 Years 10 Years 5 Years 1 Year

Initial Operating Capability Timeline
Air Force Office of Scientific Research
What is Basic Research?

• Systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind.

• Implications
  – AFOSR investments impact far-term capabilities
  – Basic research can be published without restrictions
  – AFOSR is free to invest internationally with very few restrictions
Why the United States Air Force Invests in Basic Research

• To probe today’s technology limits and ultimately lead to future technologies with DoD relevance

• Attract the most creative minds to fields of critical DoD interest

• Create a knowledgeable workforce in fields of critical DoD interest

AFOSR has sponsored 78 Nobel Laureates

2013 Nobel Prize in Physics – Dr. Peter Higgs, Univ of Edinburgh

2012 Nobel Prize in Physics
Dr. David Wineland, Univ of Colorado/NIST

Dr. Chad Mirkin’s research on Dip Pen Nanolithography was featured in National Geographic’s ‘100 Scientific Discoveries That Changed the World’, 2011

Dr. Greg Pitz & Dr. Onome Scott-Emuakpor, AFRL scientists, received 2013 PECASE awards.
Snapshot of AFOSR

*Discover, shape, and champion basic science that profoundly impacts the future Air Force*

- **Manage the basic research investment for the Air Force**
  - Basic research is the foundation of all scientific discovery
  - Leads to revolutionary new concepts & technology

- **Find and fund the most dynamic & promising world-class researchers in academia, industry, & government**
  - 297 intramural research projects & 1052 research grants at about 177 U.S. universities
  - 346 research grants at 213 international institutions

- **Ensure timely transitions of research results**
  - Offer significant benefits to national warfighting and peacekeeping capabilities, and society at large
AFOSR Locations

- Arlington
- London
- Tokyo
- Santiago
<table>
<thead>
<tr>
<th>Engineering and Information Science</th>
<th>Physical and Biological Sciences</th>
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</thead>
<tbody>
<tr>
<td>Engineering and Complex Systems</td>
<td>Physical Sciences</td>
</tr>
<tr>
<td>Multiscale Structural Mechanics and Prognosis</td>
<td>Atomic and Molecular Physics</td>
</tr>
<tr>
<td>Test Science for Test and Evaluation</td>
<td>Space Sciences</td>
</tr>
<tr>
<td>Unsteady Aerodynamics &amp; Turbulent Flow</td>
<td>Ultrashort Pulse Laser-Matter Interactions</td>
</tr>
<tr>
<td>Energy Combustion and Non-Equilibrium Thermodynamics</td>
<td>Sensing, Optics, and Imaging</td>
</tr>
<tr>
<td>Electronic Materials and Devices</td>
<td>Optoelectronics and Photonics</td>
</tr>
<tr>
<td>Low Density Materials</td>
<td>Aerospace Materials for Extreme Environments</td>
</tr>
<tr>
<td>Space Power and Propulsion</td>
<td>Quantum Information Science</td>
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<tr>
<td>Dynamic Materials and Interactions</td>
<td>Electromagnetics</td>
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<tr>
<td>High Speed Aerodynamics</td>
<td>Plasma and Electro-Energetic Physics</td>
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<tr>
<td></td>
<td>Lasers, Sources, and Materials</td>
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<td></td>
<td>Quantum Electronic Solids</td>
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https://community.apan.org/wg/afosr/
AFRL Opportunities for Faculty

- Grants

- Multidisciplinary University Research Initiatives
  - http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842111#anchor2

- Defense University Research Instrumentation
  - http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842111#anchor1

- Small Business Tech Transfer Program
  - http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842100#anchor3
AFRL Opportunities for Faculty

- National Research Council Programs
  - [http://www.wpafb.af.mil/Welcome/Fact-Sheets.Display/Article/842058#anchor5](http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842058#anchor5)

- Young Investigator Program
  - [http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842100#anchor2](http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842100#anchor2)

- Summer Faculty Fellowship Program
  - [http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842058#anchor6](http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842058#anchor6)

- Air Force Visiting Scientist Program
  - [http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842058#anchor1](http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842058#anchor1)
AFRL Opportunities for Students

• Awards to Stimulate and Support Undergraduate Research Experiences
  – http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842058#anchor2

• National Defense Science and Engineering Graduate Fellowship Program
  – http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/842058#anchor4

• Science, Math, and Research for Transformation Program
  – https://smart.asee.org/

• AFRL internship and career opportunities
  – http://teamafrl.com
AFOSR invites proposals in broad research areas through the general BAA and other broad agency announcements. Proposals submitted under the BAAs are evaluated using a peer or scientific review process and selected for award on a competitive basis.

To apply for AFOSR funding opportunities listed in the BAA, visit [www.grants.gov](http://www.grants.gov). All application forms and instructions are provided on the site. You can search grants.gov by CDFA numbers 12.800, 12.630 and 12.910. There you can also search for opportunities by all grant issuing agencies.

Quick Links:
2016 AFOSR BAA
AFOSR Funding Opportunities
Search for other opportunities on Grants.gov