

The rising STAR of Texas

MSEC Seminar and Commercialization Forum



INVITED SPEAKER:

Dr. KEN CASTER & Mr. ED LEE

"AFOSR – Funding Opportunities and Collaboration – Working with DoD Funding Agencies"

January 24th, 2020 1:30 – 3:00 PM RFM 3224

Biographies:

Ken Caster received a B.S. degree (cum laude) in Chemistry from Stetson University in 1979 and a Ph.D. degree in organic chemistry from Duke University in 1983. He then moved to the University of Florida as a National Institute of Health (NIH) postdoctoral fellow. In 1985, he joined Union Carbide Corporation where he performed exploratory research on homogeneous and heterogeneous catalytic processes. In 1994, he moved to Lord Corporation where he managed a Controllable Materials R&D program within the Materials Division. There, as principle scientist and inventor, he created an intellectual property portfolio centered on innovative olefin metathesis-based adhesion and coatings technology. In 2003, he spent one year at Duke University as a visiting scientist in the Center for Biological Inspired Materials and Material Systems (CBIMMS) before joining the US Army Research Office (ARO) to provide scientific support of the Polymer Science Program, Institute for Soldier Nanotechnologies (ISN), and Institute for Collaborative Biotechnologies (ICB). In late 2009, he moved to the Air Force Office of Scientific Research (AFOSR) as a program officer to create and manage a synthetic chemistry program. In 2012, he transferred to an international assignment in Japan at AFOSR's Asian Office of Aerospace Research and Development (AOARD) to manage Materials, Chemistry, and USAF-Taiwan Nanoscience Programs and serve as Technical Director. In 2017, he returned to AFOSR as Program Officer to manage the Organic Materials

FOR MORE INFORMATION OR IF YOU WOULD LIKE TO HAVE LUNCH WITH THE SPEAKER,
PLEASE CONTACT DR. SHANNON WEIGUM AT SWEIGUM TXSTATE.EDU



The rising STAR of Texas

Chemistry research program. From 2007-2009, he was an adjunct Associate Professor in the Department of Chemical and Biomolecular Engineering at North Carolina State University.

Ed Lee received a B.S. for Business Administration in 1980 from Morgan State University in Baltimore, Maryland. Ed has worked in both the private as well as the federal sector, and simply considers himself a "businessman." Ed has spent the past just over 19 years working for the US Air Force Office of Scientific Research as Program Manager for Historical Black College and University/Minority Institutions (HBCU/MI) programs with the budgetary responsibility of \$4.5M. Before working with ASFOSR, Ed was President and CEO of EJL Associates, as well as Personnel Director and Safety Officer for MTI Construction Co., Inc. Ed also published a book titled "The Soul of Man" in 2013.

Abstract:

The US Government funds basic and applied research across many disciplines using multiple funding agencies. This presentation will focus on processes used by the Air Force Office of Scientific Research (AFOSR) to fund domestic and international basic research projects that broadly address R&D activities within the Air Force Research Laboratories (AFRL). An overview of the AFRL structure will be provided to put the presentation into context. The presentation will focus on funding processes used by AFOSR but will also be relevant to other DoD funding agencies (Army Research Office, ARO; Office of Naval Research, ONR). The presentation will address topics related to the Broad Agency Announcement, BAA; white papers; proposal submission; funding timelines; program reviews; opportunities to collaborate with AFRL scientists and engineers, and communications all from the mindset of the program manager. The talk will also include a short description of AFOSR and OSD HBCU-MI programs and differences between them.



Air Force Research Laboratory





Working with DoD Funding Agencies

A Program Officer's Perspective

24-Jan-2020

Dr. Ken Caster

Mr. Ed Lee

Air Force Office of Scientific Research (AFOSR)

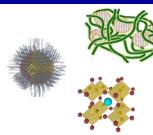




Overview

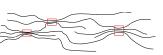


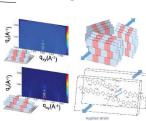
- AFRL, AFOSR, DoD
- Funding Procedures
 - Funding Streams and Grants
 - BAA
 - HBCU/MI Program
- Working with Program Officers (POs)
 - Funding decisions
 - Communication
 - Working with laboratories

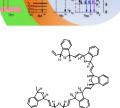


















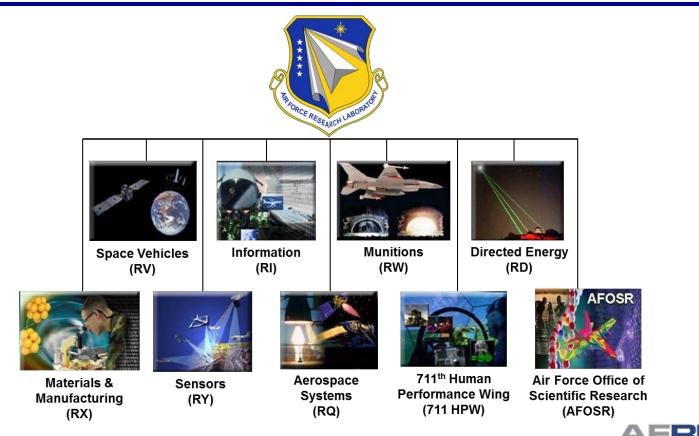




Air Force Research Laboratory (AFRL)



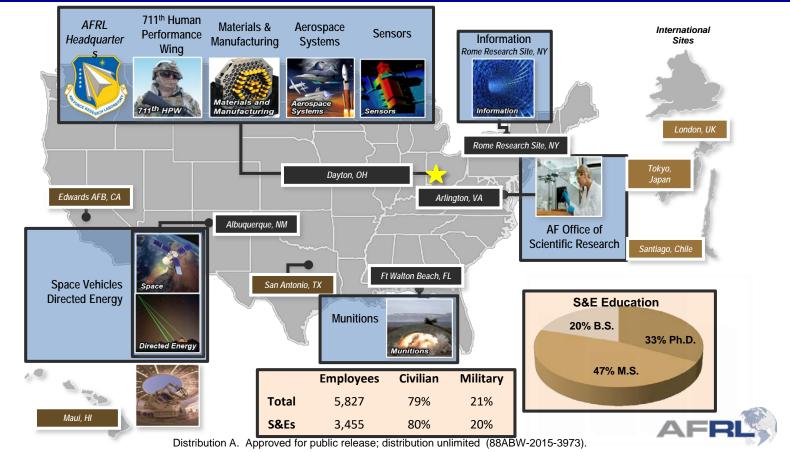
Technical Directorates





Air Force Research Laboratory One Lab / Many Locations



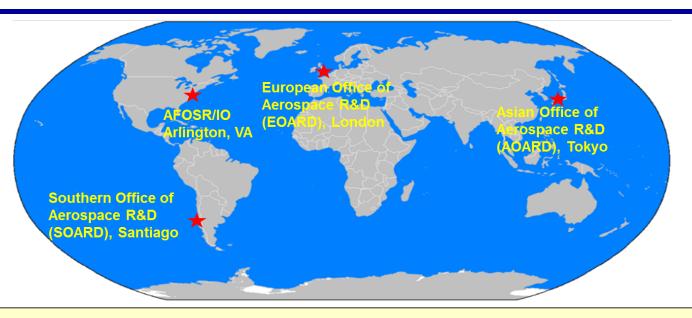




AFOSR International Office



The sun never sets on AFOSR



Support long-term basic research – scientific impact, unique approaches

Expect publication in high quality journals

Support collaborative research with AFRL scientists and engineers





AFOSR World-Wide Mission



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

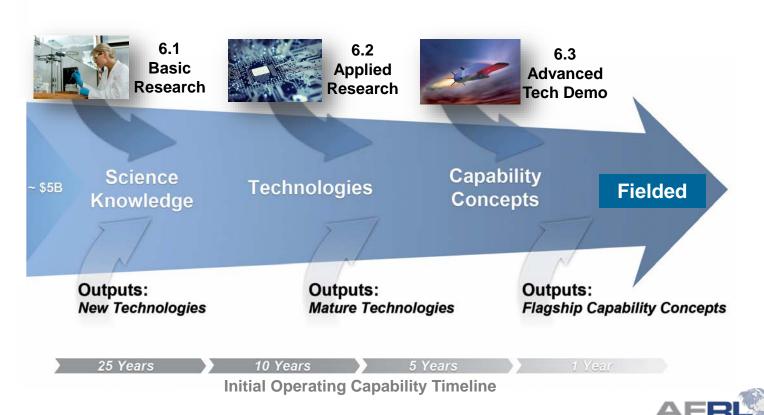
- ID Breakthrough Research Opportunities in the USA & <u>Abroad</u>
- Foster Revolutionary Basic Research for the Air Force
- Develop collaborative relationships communication and research

Probe today's technology limits that ultimately lead to future AF capabilities



Turning Science Into Capability







AFOSR Research Portfolios



Engineering and Complex Systems

Dynamic Materials and Interactions

GHz-THz Electronics and Materials

Energy, Combustion, and Non-Equilibrium Thermodynamics

Unsteady Aerodynamics and Turbulent Flows

High-Speed Aerodynamics

Low Density Materials

Multiscale Structural Mechanics and Prognosis

Space Propulsion and Power

Agile Science of Test and Evaluation (T&E)

Information and Networks

Computational Cognition and Machine Intelligence

Computational Mathematics

Dynamics and Control

Dynamic Data and Information Processing

Information Assurance and Cybersecurity

Optimization and Discrete Mathematics

Science of Information, Computation, Learning, and Fusion

Trust and Influence

Complex Networks

Cognitive and Computational Neurosciences

Physical Sciences

Materials with Extreme Properties

Atomic and Molecular Physics

Electromagnetics

Laser and Optical Physics

Optoelectronics and Photonics

Plasma and Electro-Energetic Physics

Quantum Information Sciences

Remote Sensing

Space Science

Ultrashort Pulse Laser-Matter Interactions

Condensed Matter Physics

Chemistry and Biological Sciences

Biophysics

Human Performance and Biosystems

Mechanics of Multifunctional Materials and Microsystems

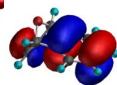
Molecular Dynamics and Theoretical Chemistry

Natural Materials, Systems, and Extremophiles

Organic Materials Chemistry













DoD Funding Streams & Research Grants



- AFOSR, ARO, ONR, ASD (R&D) Office of Secretary of Defense (OSD)
- Single-Investigator
 - Multi-year funding, depends on PO budget, proposals usually accepted at any time
- Multi-Investigator
 - Who is doing what, and why synergy is critical to success
- Young Investigator Program (YIP)
 - Competitive, multi-year funding at lower level
- Presidential Early Career Award for Scientists and Engineers (PECASE)
 - VERY competitive, multi-year, funding depends on organization
- Deadlines Hard vs Soft





Research Grants - continued



Multi-Disciplinary University Research Initiative (MURI)

- Team proposal; communicating with PO critical; hard deadline
- If encouraged to submit a proposal, follow proposed White Paper research plan

• Defense University Research Instrumentation Program (DURIP)

- Except for large proposals, everybody can write a strong proposal
- Secondary criteria are important (how is equipment going to be repaired, # of students)
- Watch \$ amount budget

Small Business Innovative Research (SBIR); Small Business Technology Transfer (STTR) Programs - Phase 1 and 2

- For proposal based on your research, work with author during proposal writing
- Make idea very clear; objectives of project
- STTR (company; university mix required)

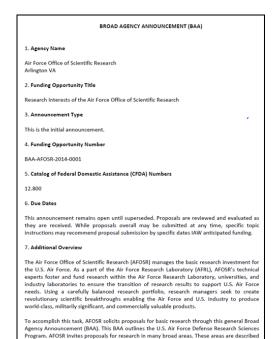




AFOSR Broad Agency Announcement (BAA)



- Updated for 2019
- Doesn't change significantly from year to year
- BAA remains open all year
 - Proposals are peer reviewed
 - Contact with AFOSR program officers is encouraged prior to full proposal submission



in detail in Section I, Funding Opportunity Description.

http://www.grants.gov/web/grants/search-grants.html?keywords=afosr



HBCU/MI Program Objective/Goals



- •The objective of the program established by subsection (a)(1) is to enhance defenserelated research and education at covered educational institutions. Such objective shall be accomplished through initiatives designed to—
- •(1) enhance the research and educational capabilities of such institutions in areas of importance to national defense, as determined by the Secretary;
- •(2) encourage the participation of such institutions in the research, development, testing, and evaluation programs and activities of the Department of Defense;
- •(3) increase the number of graduates from such institutions engaged in disciplines important to the national security functions of the Department of Defense, as determined by the Secretary; and
- •(4) encourage research and educational collaborations between such institutions and other institutions of higher education, Government defense organizations, and the defense industry.



AFOSR HBCU/MI Program Execution



- Historically Black Colleges & Universities and Minority-Serving Institutions (HBCU/MI)
 Program
 - Provides grants for research and instrumentation at HBCU/MIs
 - 22 grants awarded at \$2.0M in FY09 and \$2.5M in FY11, FY12 and FY13
 - \$3.8M in 2014
 - \$4.5M in 2015
 - \$4.5M in 2016
 - \$4.5M in 2017
 - \$4.5M in 2018
 - \$4.5M in 2019

The program is tied to the open BAA so no specific deadlines exist.





(USDR&E) HBCU/MI Program Execution



- DoD Research and Education Program
 - Solicitation open to all HBCU/MI's, closed on 15 July 2019
 - Research only up to \$660,000
 - DoD intends to award approximately \$25M
 - Grants fully funded for a 36 month period
 - Three applications per institution
 - *Managed by the Army Research Office (ARO)
 - *Content of the solicitation changes every year





HBCU/MI Program Current Status



- FY19, 36 projects were awarded totaling \$4.5M (cost shared \$900,216)
 - To be determined, evaluations closed on 31 January 2020
- FY18, 36 projects were awarded totaling \$4.5M (cost shared \$858,336)
 - 12 projects funded under the USDR&E program totaling \$6.8M
- FY17, 34 projects were awarded totaling \$4.5M (cost shared \$356,770)
 - 12 projects funded under the USDR&E program totaling \$4.9M
- FY16, 33 projects were awarded totaling \$4.5M
 - 22 projects funded under the USDR&E program totaling \$8.4M





HBCU/MI Peer Reviewer's



- I'm in the process of creating a database/spreadsheet of potential peer reviewer's from the HBCU/MI community to be utilized here at AFOSR.
- If you know of someone who would be interested in reviewing proposals from our office, please send me your:

- NAME
- WORK PHONE
- E-mail ADDRESS
- INSTITUTION
- DISCIPLINE





XORs, DARPA, NSF



AFOSR/ARO/ONR

 PO drives technical areas - major decisions on project funding, basic science with high relevance to DoD, high risk/high reward approach, variable size grants, collaboration with labs, publications

DARPA

 PO drives technical areas, - major decisions on project funding, large grants, more applied, expectation is producing a widget, SETA support

NSF

 PO has technical areas – rack-n-stack is primary decision maker, variable size grants, education is important





Getting Your Ideas Across



- BAA covers nearly everything by design
- Areas may change but BAA changes very little
- Selective funding of research areas
- Short introductory paragraph explaining your basic research areas
- Listen to what PO requests from you
 - Basic research vs applications
 - Basic science behind ideas
 - Solving a problem generally has low chance of success
 - DoD Relevance (broad application)
 - Polyethylene fibers solve ballistic problems
 - Do not force fit your research





Proposals - Evaluation & Selection



- Program officers weigh several factors in selecting proposals for funding
 - White paper process to identify overlap with program interests
 - Encourage proposals with high potential for breakthroughs
 - Peer review to gauge scientific merit
 - Programmatic issues
 - Strategic directions
 - Portfolio coverage
 - Budget realities

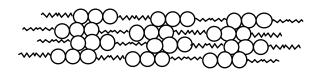




White Papers



- Find out what PO wants in a white paper
 - Ask, suggest, don't just send what you think is wanted
 - e.g., if 2 pages is limit, PO may not read past page 2
 - PO may state requirements in BAA or on webpage
- Initial paragraphs are critical to hook PO
- Include name, institution, contact info (phone, e-mail) on first page



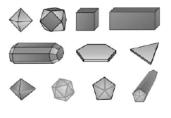




Proposals



- Submission instructions are set in BAA (e.g., font size, margins)
- Clear, concise writing is critical
 - Funding Criteria (from BAA)
 - Technical Merit; Relevance (AFRL website)
 - Budget
 - Available money (likely to result in budget cut)
 - Revised statement of work and budget
 - Equipment
 - Computers (justification must show direct tie to accomplish project)
 - PO should not have to figure out what you are trying to do (SBIR/STTR)
- Peer Review
 - Suggest evaluators
 - Notification of competitors







Funding Decisions Too many good ideas – not enough \$



- POs build programs and portfolios DoD focused
- Probe and create new research areas
- Budget
 - Mortgage
 - New starts
 - Special pots of money
- Previous funding does not guarantee future funding
 - # funding cycles





Working with DoD Laboratories AFRL, ARL, NRL



- Laboratory visit sometime during funding period
 - Immediate feedback on relevance of your research to Lab/DoD interests
 - Application areas
 - Potential employment for students
- Collaboration
 - PM determines research direction modification, not Lab
- Tech Transition
 - Joint Publication, Sample/data exchange/analysis





Grants



Money

Spend it – check with business office



- Reports (Public release)
 - Heavily scrutinized AFRL Commander
 - Report effort should be proportional to funding amount
 - e.g., Don't submit a \$300k report for a \$50k grant or submit a \$50k report for a \$300k grant
 - Annual Reports
 - Final Reports
 - PI does not want PO to have to write it not a good situation





AFOSR Reviews



• Program, Portfolio, Contractor Review - PO

- Purpose is multi-fold
 - Research progress (should I continue to fund?)
 - Highlight research to AFRL and AFOSR management
 - Research advancements and trends to other PMs (ONR, ARO, NSF)
 - Build collaborative relationships with AFRL S&T
 - Stay on time (ex. sit down)

AFOSR Spring Review – Chief Scientist

- Portfolio is reviewed by AFRL management, AFRL Chief Scientists, external panel
- Future funding decisions are made
- Constant justification of why basic science is critical to AF



Press Release



- Send Journal Cover and citation
- Significant technical accomplishments
 - Send notification to PO before it goes to press
- Significant Awards
 - Promotion
 - Prize
 - Notable recognition in press or scientific circles





Program Officer/Manager/Director



All are different

- Phone call or e-mail?
- Understand requirements
 - Funding
 - WP
 - Proposal submission

Relationships

- Evaluation Requests
- Info requests
- Slides
- Hundreds of contacts each year



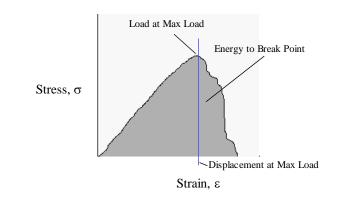


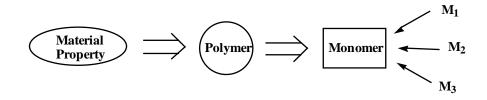


Program Officer Community



- Small Community
- POs know each other
- Well-connected network
- Interagency Meetings
- Working groups
- Reliance









Communication



- Follow PO instructions or requests
 - If you don't understand, get clarification
- If the PO asks you to submit something in a specific file name format, there is a good reason
 - AFOSR 20RT#### (e-mail subject line)
 - 20RT####, Last Name, First date (file name)

Responsiveness

- Prompt is appreciated
- Give plenty of warning if you are going to be late with a submission or meeting an information request





To Do or Not To Do



- Don't Send CD or link to your website so PO can read all documents
- Don't harass PO about proposal funding
- Don't ignore when PO encourages you to submit a white paper or proposal

- Do send short summary (can include supporting info but be very choosy)
- Do request status funding decision (tone)
- Do follow up with white paper or proposal or more info to answer a request
- Disagreement is ok





Summary



- Inter-relationships between AFRL, AFOSR, DoD
- Relationships critical to success
- **Funding procedures and processes**
- **Program Officer mindset**



kenneth.caster@us.af.mil

edward.lee@us.af.mil



OPON https://community.apan.org/afosr



www.facebook.com/afosr



www.youtube.com/TheAFOSR



www.twitter.com/afosr





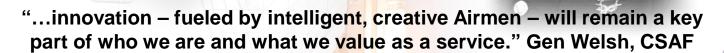
United States Air Force Mission



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







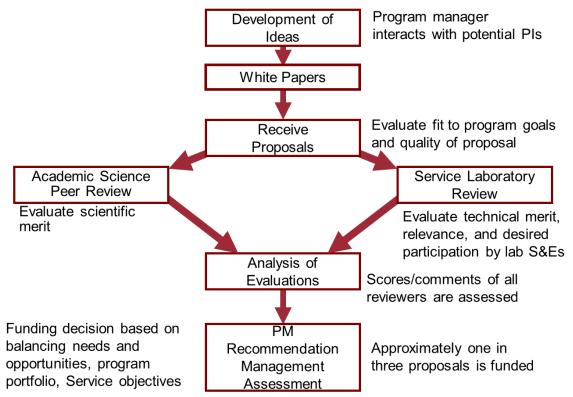
Back-up slides





Pre-Award Grant Workflow



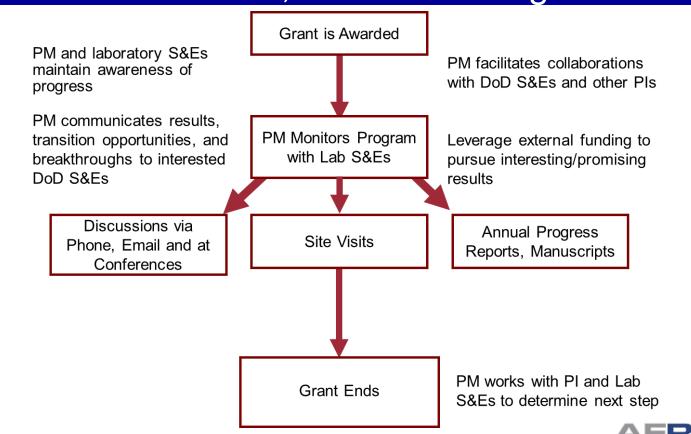






Post-Award Grant Workflow







DoD Agency Funding Cycle AFOSR, ARO, ONR



