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## AFRL announces six new fellows

*by Lanourra Gillmaster, AFRL Public Affairs*

*WRIGHT-PATTERSON AIR FORCE BASE, Ohio* — The Air Force Research Laboratory has announced its selection of six new AFRL Fellows.

The Fellows program annually recognizes and rewards AFRL's most outstanding scientists and engineers for achievements and technical excellence. The 2004 recognition banquet will be held Sept. 29 at the United States Air Force Museum, Wright-Patterson Air Force Base, Ohio.

This year's honorees are: Dr. Edward Watson, Sensors Directorate, Wright-Patterson Air Force Base, Ohio; Dr. Alok Das, Space Vehicles Directorate, Kirtland Air Force Base, N.M.; Dr. Nelson Forster, Propulsion Directorate, Wright-Patterson Air Force Base, Ohio; Larry Perkins, Materials and Manufacturing Directorate, Wright-Patterson Air Force Base, Ohio; Dr. Craig Denman, Directed Energy Directorate, Kirtland Air Force Base, N.M.; and Dr. Gregory Ginet, Space Vehicles Directorate, Hanscom Air Force Base, Mass.

Dr. Watson has been recognized for outstanding contributions in laser radar and agile beam-steering, especially steering of broad spectral band radiation. His contributions are

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*Pictured left to right are Dr. Edward Watson, Sensors Directorate, Wright-Patterson Air Force Base, Ohio; Dr. Alok Das, Space Vehicles Directorate, Kirtland Air Force Base, N.M.; Dr. Nelson Forster, Propulsion Directorate, Wright-Patterson Air Force Base; Larry Perkins, Materials and Manufacturing Directorate, Wright-Patterson Air Force Base; Dr. Craig Denman, Directed Energy Directorate, Kirtland Air Force Base; and Dr. Gregory Ginet, Space Vehicles Directorate, Hanscom Air Force Base, Mass.*



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## Demonstrator engine testing completed

by Sarah Hubbard, Propulsion Directorate

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — The Integrated High Performance Turbine Engine Technology (IHPTET) program is building on a year marked with success.

Established in 1987 as a collaborative effort between the Defense Department, National Aeronautics and Space Administration, and industry, IHPTET's main goal was to double the propulsion system capability of turbine engines by 2005. Currently in its third phase of operation, IHPTET has achieved a 48 percent propulsion system capability increase and is continuing to raise this number.

"This was the most successful year of demonstrator testing in the 17-year history of the IHPTET program because we advanced the status of four IHPTET goals (the most ever in a single year) and (transferred) technology to major weapon systems," said Rich McNally, chief of the propulsion branch.

Introducing the line of success, the Pratt & Whitney advanced turbine engine gas generator XTC67/1 completed testing in April 2003. Testing of the General Electric/Allison Advanced Development Company (GE/AADC) XTC76/3B commenced in August 2003 and ended in October of that same year. "The XTC67/1 and the XTC76/3B are the highest temperature demonstrator core engines ever run," explained Mr. McNally. "Also, the core engines demonstrated a 48 percent increase in engine thrust-to-weight ratio, a 23 percent reduction in production cost, and a 19 percent reduction in maintenance cost."

On June 5, 2003, a baseline high cycle fatigue test was done on the AADC XTL17/SE1 engine. The test was a joint validation of new instrumentation and forced response modeling/simulation tools developed by both the United States and the United Kingdom.

Testing of AADC's XTL17/ASE1 core engine, equipped with a low spool generator, was successfully completed in October 2003. The XTL17/ASE1 is based on the Allison commercial AE3007 engine, the Global Hawk's propulsion system. The Global Hawk System Program Office here has initiated activity to transition the low spool generator since the test demonstrated tripled electrical power capability.

The Honeywell XTC57/1 multipurpose core test was successfully completed in October of 2003. The core engine was built for a future commercial turbofan engine and encompasses a high performance IHPTET compression system. According to McNally, this technology specifically supports Unmanned Air Vehicle propulsion and is an excellent example of how commercially developed core engines could be used to reduce the developmental cost of future military engines.

The Pratt & Whitney XTE67/SE1, based on the F119 engine for the F/A-22 Raptor, also completed testing within the last year. The highly successful XTE67/SE1 test achieved all of its goals. High cycle fatigue (HCF) technology from this test will transition to the F/A-22 F119 engine as well as the F-35 F135 Joint Strike Fighter engine.

The GE XTE77/SE1 recently completed testing designed to validate HCF technologies, demonstrate component performance and mechanical integrity, and validate the secondary flow system. Technology from this test will transition to the F-35 F136 Joint Strike Fighter engine. @

# AFRL annual awards ceremony recognizes top performers

by Bob Wintermeyer, AFRL Public Affairs

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — The Air Force Research Laboratory recognized outstanding accomplishments of its top performers at the fifth annual AFRL Corporate Awards Luncheon July 22 in Rome, N.Y.

Both team and individual award winners were selected from finalists in each of the AFRL directorates. Finalists and winners were chosen by the AFRL corporate award selection board and approved by AFRL Commander Brig. Gen. Perry L. Lamy.

“The 11 award categories were hotly contested by an outstanding group of individuals and teams,” General Lamy said. “All of AFRL commends the finalists in each category, and we are proud of our association with each of them. These men and women lead the AFRL team as we continue our support to the Air Force of the future.”

Beginning the presentations was the award for Administrative Excellence (Individual) presented to Chanda Smith, Propulsion Directorate, Edwards Air Force Base, Calif. Ms. Smith’s long list of accomplishments include updating laboratory storage procedures, creating a library for frequently accessed references, and managing an inventory of more than 3,000 chemicals.

Tech. Sgt. Joe Robinson, Human Effectiveness Directorate, Brooks City-Base, Texas, garnered the Senior Administrative Excellence (Individual) Award for his focus, dynamic organization abilities and extensive fiscal/management acumen.

The Mission Support (Team) Award was presented to the 30 members of the Air Force Health Study Support Team, Human Effectiveness Directorate, Brooks City-Base, for their support of an internationally recognized Air Force epidemiological health study.

The Mission Support (Individual) Award was accepted by Charles McClenahan, Munitions Directorate, Eglin Air Force Base, Fla., for his innovative ideas and efforts at keeping the Massive Ordinance Air Blast program on track.

Marc Masquelier, Sensors Directorate, Wright-Patterson Air Force Base, received the Leadership (Individual) Award for his outstanding guidance to a 20-person team that executed a \$120 million classified program to field vital homeland defense capability.

The Senior Leadership (Individual) Award went to Lt. Col. Kevin Craig, Sensors Directorate, Wright-Patterson Air Force Base, in part for leading a Secretary of the Air Force directed program valued at \$60 million in FY03 and \$500 million over the future years.

The Critical Pulsed Detonation Engine Experiment Team, in the Propulsion Directorate, Wright-Patterson Air Force Base, earned the Scientific/Technical Achievement (Team) Award for completing the first ever pulsed detonation engine demonstration under simulated supersonic flight conditions.

The Scientific/Technical Achievement (Individual) Award was presented to Dr. Morris Dilmore, Munitions Directorate, Eglin Air

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## Fellows from page 1

crucial to finding a solution to one of the most important problems facing the Air Force—reliable combat identification.

Dr. Das was selected, in part, for his outstanding technical and leadership skills of spacecraft structures and vibration isolation. His vision of small satellite technologies and motivation to develop technology strategies both AFRL and nationally attest to his world recognized authority in this field.

Dr. Forster is an internationally recognized scientist and technical leader in mechanical systems for gas turbine engines. He was selected for quality research, personal talents and dedication which have had dramatic effects on mechanical systems for gas turbine engines.

Mr. Perkins is a renowned expert in three major areas: welding and joining, failure analysis, and technology transition. He was chosen for exemplary work across several DoD weapons systems to include Air, Space and weapon platforms. His team of scientists and engineers were classified as Category 1 (World Class) by the Scientific Advisory Board panels in 1999, 2001 and 2003.

Dr. Denman was chosen for outstanding technical contributions as a visionary technical leader in the areas of high energy laser weapons and related systems development. The Sodium Guidestar Laser, developed by Dr. Denman and his team, is essential for the successful application of large ground based telescopes for Space Situational Awareness and Offensive Counter Space Missions.

Dr. Ginet was selected for scientific and technical leadership in space physics, space weather, and the effects of space environmental hazards on the operation and lifetime of DoD and national systems. Dr. Ginet has been key in creating AFRL’s world-class

space weather program.

To be selected for the Fellows program, military and civilian scientists and engineers must have been assigned to AFRL for the past three consecutive years and have at least seven years of active federal service. Their laboratory work being recognized for its significant contribution to the Air Force mission must adhere to the following criteria:

- Discovery of a factor, theory, etc., of sufficient magnitude to warrant recognition as a pioneering breakthrough in the scientific or engineering community;
- Recognition as a national or international authority in more than one field, including widespread recognition in the Air Force;
- Continual advanced achievements in programs of the utmost importance to AFRL, the Air Force, or national defense;
- Large personal contributions above and beyond normal lab expectations; and
- Maintaining an impeccable record of scientific and technical achievements, creativity and leadership, patents, referenced publications, organizational skills, and development of lab programs.

“The scientists and engineers of AFRL pride themselves on working in a world-class organization with world-class researchers,” said Dr. Thomas Cruse, AFRL’s chief technologist. “This year’s fellows represent our ideals of technological superiority, scientific achievement, and commitment to excellence.”

If you are interested in attending the banquet to honor the new AFRL Fellows, tickets may be purchased for \$27.50 from any directorate chief scientist’s office or from AFRL/CT no later than Sept. 12, 2004. On-line registration for the banquet can be found at: <http://www.afrl.af.mil/index2.html>. @

# ML Directorate wraps 22nd annual Roadmap Review

by Pete Meltzer Jr., *Materials and Manufacturing Directorate*

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — Leaders and representatives from industry, government and education gathered at the Dayton Convention Center July 13-15 to take part in the Air Force Research Laboratory's Materials and Manufacturing Directorate's 22nd annual Roadmap Review.

"The review offers a unique opportunity to learn more about the directorate's planned technology programs not only for the upcoming fiscal year but even further in the future," said Craig L. Neslen, program chief organizer and spokesman. This year's theme was "Materials solutions to enable the warfighter," and about 350 people attended.

"Roadmap Review provides an ideal forum for (directorate) scientists and engineers to interface with industry and academia on technology programs and jumpstart future technical collaborations," Mr. Neslen said. "The interaction and feedback we receive will inevitably result in a better technical product for the Air Force and the warfighter."

George F. Schmitt Jr., chief of the integration and operations division, welcomed attendees with a brief introduction, followed by Director Dr. Charles E. Browning, who provided an overview of the directorate's mission aimed at helping the Air Force and industry maintain affordable and effective defense materials and manufacturing capabilities.

"We look forward to Roadmap Review each year because it allows us to discuss our program accomplishments, present planning

activities and future new starts, and provide our peers in industry and academia with direction and guidance that will keep the defense materials and manufacturing community headed in the right direction," Mr. Schmitt said.

In addition to overview briefings provided by the directorate's scientists and engineers on core technology areas, the program offers several workshops designed to provide more in-depth information about specific research areas being pursued. The workshops included discussions on polymers, organic matrix composites, tribology and coatings, metals, nondestructive evaluation, ceramics, materials and processes for sensors, system support, manufacturing and air base technologies.

Dr. Thomas A. Cruse, AFRL chief technologist, was the featured guest speaker. He serves as senior technical adviser to the AFRL commander. This year's Roadmap Review also included a special presentation by Terry J. Jagers, director of AFRL's Washington office and associate deputy assistant secretary of the Air Force for science, technology and engineering.

"We integrated our small business innovation research workshop with the Roadmap Review again this year, so that attendees could participate in both events," Mr. Neslen said. "The Small Business Innovative Research (SBIR) workshop allows our researchers to share topics for aerospace materials research and development that require innovative, 'out-of-the-box' solutions."

For more information about the directorate, visit <http://www.ml.afil.af.mil>. @

## Eleven Wright Scholars graduate at top of their class

submitted by AFRL Public Affairs

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — The Wright Scholar Research Assistant program has resumed for its third summer, ushering intelligent, motivated high school students and recent graduates into Air Force Research Laboratory, Air Force Institute of Technology, and Aeronautical Systems Center. Of the 30 Dayton-area students admitted into the program, 11 recently graduated at the top of their class.

The Wright Scholar Research Assistant program is a 10-12 week paid internship in which high school juniors and seniors have the opportunity to work hand-in-hand with scientists and engineers base-wide. The recent top-ranking graduates from the Dayton area are:

Irene Brockman, valedictorian of Troy High School, is currently in her first year of the Wright Scholar program working in the power division superconductivity lab of the Propulsion Directorate as an engineering aide.

Carroll High School's valedictorian, Daniel DeBrosse, graduated as his school's math department award winner and as the student voted "most likely to succeed."

Irene Duke, valedictorian of Kings High School, is a first-year Wright Scholar in the find,

fix, track and identify branch of the Sensors Directorate, where she is using MATLAB interactive programming software to conduct image registration.

Amanda Hong graduated as valedictorian of Beaver Creek High School. She is a second-year Wright Scholar, working in the Propulsion Directorate fuels branch identifying and quantifying reactive and non-reactive sulfur-containing compounds in jet fuel samples.

Sarah Hubbard of Greeneview High School graduated valedictorian in her class. She is a second-year Wright Scholar who does technical writing for the Plans and Programs Branch of the Propulsion Directorate and assists in brochure design for the Sensors Directorate.

Miamisburg High School valedictorian David Kapka is in his first year of the Wright Scholar program. Employed in the energy storage and thermal sciences branch of the Propulsion Directorate, he is experimenting on the efficiency of heat pipes.

Salutatorian Andrew Mizener graduated among the Lehman Catholic High School Class of 2004. He is currently in his third year of the Wright Scholar program working in the design

and analysis methods branch of the Air Vehicles Directorate with adaptive structures and morphing aircraft designs.

Michael Ooten, a second-year Wright Scholar, graduated from West Carrollton Senior High School as valedictorian of his class. He works in the design and analysis methods branch of the Air Vehicles Directorate testing the joined-wing aircraft.

Alter High School valedictorian Amanda Reeber, a second-year Wright Scholar, works in the Human Effectiveness Directorate conducting research involving centrifuge studies and data collection.

Brent Stahlman, Fairborn High School salutatorian, is a second-year Wright Scholar in the flight mechanics branch within the Engineering Directorate of Aeronautical Systems Center. He produces and analyzes graphs related to flight performance and aerodynamics.

Carlisle High School salutatorian, William Von Hagen, works at the Air Force Institute of Technology electrical and computer engineering branch as a lab technician. A first-year Wright Scholar, he is working within the microelectronics lab with microelectro mechanical systems. @ Sarah Hubbard contributed to this report.

# Wearable computers bring aid to air traffic controllers

by Francis L. Crumb, Information Directorate

ROME, N.Y. — Air Force Research Laboratory (AFRL) engineers are directing research to develop small, powerful computers that can be worn by military and civilian air traffic controllers to enhance their ability to monitor crucial information.

The work will be performed by Information in Place, Inc., of Bloomington, Ind., under a nine-month contract: "Military and Civilian Air Traffic Management Information Exchange and Visualization." The agreement is funded under the federal government's Small Business Innovative Research (SBIR) program.

"This research is intended to develop and apply augmented reality and wearable computer technology to the problems of air traffic control," said Alexander C. Sarnacki III, program manager at the AFRL Information Directorate.

The technology will center on relatively powerful computers about the size of two decks of playing cards stacked together. The hardware is currently being used by shipbuilders who require access to voluminous blueprints.

"Augmented reality technology will allow a tower controller

to look through a lens such as goggles or eyeglasses and get information on aircraft they are observing — such as the type of plane and flight number," said Mr. Sarnacki. "The lens could annotate what the controller is looking at by adding information such as weather conditions. The technology could potentially enhance a controller's ability to operate in low-visibility situations."

Wearable computer and augmented reality technology is envisioned to help integrate and assimilate the large amounts of information presented to air traf-

fic controllers. This will provide controllers with an effective tool with which they can maintain situational awareness and make rapid, accurate decisions.

The SBIR program funds early-stage research and development at small, high-technology companies. It is designed to stimulate technological innovation; increase private sector commercialization of federal research and development; increase small business participation in federally funded research and development; and foster participation by minority and disadvantaged firms in technological innovation. @

## Top performers continued from page 3

Force Base, for developing and transitioning Eglin Steel to the BLU-121B program.

Dean Lawry, Directed Energy Directorate, Kirtland Air Force Base, N.M., received the Scientific/Technical Management (Individual) Award, in part, for bringing the PING Ultra-Wideband Target Identification System from concept to successful working prototype.

The Commander's Cup (Team) Award went to the Active Denial Technology Team and the Battlefield Air Operations Team. The Active Denial Technology Team, with members from the Directed Energy Directorate at Kirtland Air Force Base, and the Human Effectiveness Directorate at Brooks City-Base, received recognition for their work on the world's longest range and AFRL's #1 non-lethal weapon technology.

The Battlefield Air Operations Team, with members from AFRL technology directorates all over the United States, significantly enhanced AFRL's image to warfighting customers through vision-

ary cross-directorate efforts that enable a truly transformational approach to quickly mature and transition technologies.

This year's Commander's Cup (Individual) Award went to both Capt. Michelle Rauch-Johnson, Propulsion Directorate, Wright-Patterson Air Force Base, and Dr. Peter D. Klupar, Space Vehicles Directorate, Kirtland Air Force Base.

Captain Rauch-Johnson's list of accolades includes leading the branch safety/environmental assessment program, orchestrating joint research with the Air Force Institute of Technology and the University of Dayton, and helping the government save \$15 million through her aircraft fuel microbial contamination research.

Dr. Klupar is recognized for single-handedly developing four separate flight programs. He also led a team to develop a payload to track a boosting ICBM, which later turned into a \$100 million space-based Kinetic Boost Phase Intercept program. @

## Information Directorate engineer honored by Old Crows

by Francis L. Crumb, Information Directorate

ROME, N.Y. — Bernard J. Clarke, a research engineer in the Air Force Research Laboratory's Information Directorate, has been named recipient of the Association of Old Crows (AOC) Directed Energy Warfare Award for 2004.

The AOC is an independent, international professional association promoting public understanding in the science and practice of electronic warfare, information operations and related disciplines.

Mr. Clarke was cited for distinguishing himself "in the development of Laser Intelligence Systems for rapid deployment against threats in the Iraqi theatre."

As a research engineer and program manager in the directorate's Multi-Sensor Exploitation Branch, Mr. Clarke directed the development of Laser Intelligence (LASINT) collection systems. These programs investigated the feasibility of collecting LASINT from

portable, ground-based and airborne platforms.

In response to an emerging threat in the Iraqi theater, one of these developmental systems was hardened for deployment and improved for collection against the specific threat. This hardware development, testing and user training was accomplished in less than 60 days — meeting the deployment schedule of a national intelligence customer.

The award will be presented during the 41<sup>st</sup> Annual AOC Inter-

national Symposium and Convention, scheduled Oct. 17-20 in San Diego, Calif.

Mr. Clarke is a 1989 graduate of the U.S. Air Force Academy, with a degree in engineering physics. Following his assignment to the Rome Air Development Center, he became a civilian employee of AFRL in Rome, where he manages research and development in measurement in signatures intelligence, directed energy intelligence, concealed weapon detection and through-the-wall surveillance. @

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# Net Index

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Due to the number of submissions we receive, some sections of *news@afrl* are available exclusively on-line. The on-line version of the newsletter allows users to view the AFRL corporate calendar, news releases generated by AFRL headquarters, operating instructions, L@b L@urels and Roundups sections.

The L@b L@urels section of the electronic newsletter is dedicated to members of Air Force Research Laboratory who receive awards and honors. The Roundups section of the electronic newsletter keeps Air Force Research Laboratory employees informed about contracts AFRL has awarded. Below is an index of articles one can find in each of these on-line sections.

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## Roundups

- \$1.4M contract awarded to improve high-energy lasers
- AFRL awards \$1.5M contract to Maryland company
- AFRL awards \$1.9M contract for advanced radar
- AFRL awards SBIR contract for engine development

To view the full text of these and other articles visit the *news@afrl* page on the Internet at <http://extra.afrl.af.mil/news/index.htm>.

To submit L@b L@urels or Roundups from your directorate, send a query to AFRL Public Affairs at:

[Jill.Bohn@wpafb.af.mil](mailto:Jill.Bohn@wpafb.af.mil)

For more on these stories see *news@afrl*  
<http://www.afrl.af.mil/news>.

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## AFRL Commander visits Kirtland's Directorates



KIRTLAND AIR FORCE BASE, N.M. — Brig. Gen. Perry L. Lamy, newly assigned commander of the Air Force Research Laboratory, conducts a Commander's Call for personnel at the Directed Energy and Space Vehicles Directorates. On July 7-8, General Lamy visited key facilities and outlined his background and philosophy to the lab's military and civilian workforce. @