Photonics Research Center Charter

"As the Army modernizes in an increasingly complex technological environment, it is essential that Army officers understand the advanced technologies which form critical elements of our evolving weapons systems. One technology field which is already exerting a major influence on force planning, and whose impact is certain to grow over the next two decades, is the physics and engineering of lasers, and the technologies associated with their development and applications. The Army needs a strong base of research and development in laser-related fields. It also needs an officer corps generally familiar with laser technologies and a subset of that officer corps whose members are experts in developing and applying those technologies."

Memorandum of Understanding between the Vice Chief of Staff of the Army and the Superintendent of the United States Military Academy, May 1987

Photonics Research Center Staff and Faculty

Center Director

LTC John Hartke Ph.D. in Optical Sciences, University of Arizona, 2005, Academy Professor, Department of Physics.

Board of Directors

COL David C. Allbee, Ph.D. in Physical Chemistry, Pennsylvania State University, 1985, Professor and Head, Department of Chemistry and Life Science.

COL Andre H. Sayles, Ph.D. in Electrical Engineering, Georgia Institute of Technology, 1990, Professor and Head, Department of Electrical Engineering and Computer Science.

COL Raymond J. Winkel, Jr., Ph.D. in Physics, University of California at Berkeley, 1984, Professor and Head, Department of Physics.

Principal Investigators and Faculty

COL Barry L. Shoop, Ph.D. in Electrical Engineering, Stanford University, 1992, Professor of Electrical Engineering, Department of Electrical Engineering and Computer Science.

LTC John Hartke Ph.D. in Optical Sciences, University of Arizona, 2005, Academy Professor, Department of Physics.

LTC Robert Sadowski, Ph.D. in Electrical Engineering, Stanford University, 1995, Academy Professor, Department of Electrical Engineering and Computer Science.

LTC John Ingram, MS in Physical Chemistry, University of Idaho, 1999, Assistant Professor, Department of Chemistry and Life Sciences

United States Military Academy

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Photonics Research Center

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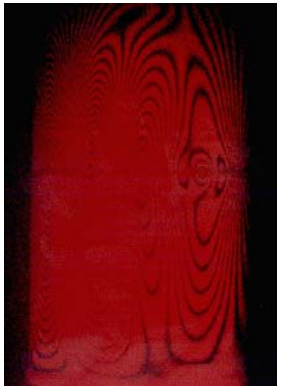


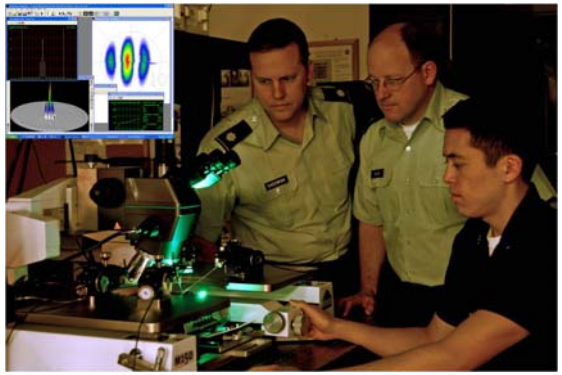
Laser Holography

The Photonics Research Center was established at the United States Military Academy in May of 1987 through a Memorandum of Understanding between the Superintendent of the United States Military Academy and the Vice Chief of Staff of the Army.

The Center's three principle missions focus on education of both cadets and officers, the conduct of basic and applied research, and support to the Army and DoD in the area of lasers and photonics.

Sustained funding is provided by the Army Research Office with project specific funding coming from agencies such as the Defense Advanced Research Project Agency, Defense Threat Reduction Agency, JIEDDO, Redstone Arsenal, HEL-JTO, National Reconnaissance Office, Army Research Laboratory, Army Research, Development, Test, and Engineering (RDT&E) Centers, and major weapons system program and project managers.

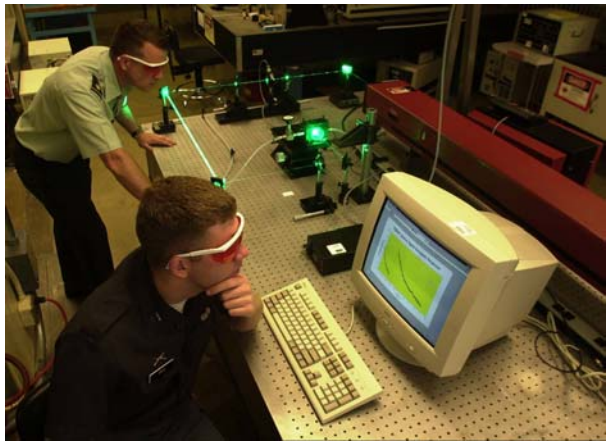
Each year, educational programs associated with the Center introduce over 1000 cadets to a general familiarity with laser technology, provide over 50 cadets with an in-depth understanding of lasers and laser technology, and returns officers to the field Army who are now considered experts in developing and applying laser technologies.



Optical Probe Station

The Center has a world-class recognized research program and is a National Research Council approved postdoctoral associate research site. The Center faculty come from the Departments of Chemistry and Life Science, Electrical Engineering and Computer Science, and Physics who conduct basic and applied research in the Center using laser technology.

In its support role, the Center provides direct technical support to the Army Research Office, Army Research Laboratory; Edgewood Chemical and Biological Command; U.S. Army Special Operations Command; National Reconnaissance Office; National Security Agency; Defense Threat Reduction Agency; Ballistic Missile Defense Office; Natick RDT&E Center; Program Executive Office, National Missile Defense Program, Ground Based Radar System; TACOM-ARDEC; HEL-JTO, JIEDDO, and the Department of Energy.



Kapton Research

Cadet working on picosecond pulsed laser
©Roger Miller

The faculty from the Center are members of the Army Research Office Board of Visitors and participate as technical analysts and advisors to many Program Managers. In addition to DoD support, these faculty are also significantly involved in professional societies and hold leadership positions in organizations such as the Optical Society of America (OSA), the Society for Applied Spectroscopy (SAS), the Institute of Electrical and Electronics Engineers (IEEE), the American Chemical Society (ACS), Society of Photo-optical Instrumentation Engineers Engineers (SPIE) and the American Physical Society (APS).