

# Người Việt Giúp Hải Quân Mỹ Diệt Hoả Tiễn Đồi Hạm (1 việc làm tạ ơn Nước Mỹ)



Thursday, 26 May 2011

[phiemdam.com](http://phiemdam.com) (tác giả)



Một Khoa Học Gia Gốc Việt,  
Tiến Sĩ Đinh Nguyễn, hiện là  
Trưởng Công Trình Nghiên  
cứu Chế tạo loại Vũ khí mới  
mang tên Free Electron Laser

(FEL). Đây là loại Vũ khí mới để phá huỷ Hoả Tiễn tấn công của đối phương, kể cả Hoả Tiễn DF-21D của Trung Cộng hiện đang đe dọa các Hàng Không Mẫu Hạm và các Chiến Hạm Hải Quân Hoa Kỳ.

Trong bản Tường Trình trước Quốc Hội Hoa Kỳ { CRS Report for Congress } của Ronald O' Rourke ngày 21 tháng 1 năm 2011, trang 38 có tường trình về Công trình nghiên cứu và sáng chế Vũ khí mới Free Electron Laser (FEL) program của Tiến Sĩ Đinh Nguyễn.

Trung Cộng đang ngạo mạn phô trương sức mạnh của Hoả Tiễn DF-21D, đe dọa các Hàng Không Mẫu Hạm Hai Quan Hoa Kỳ! Nhưng họ đâu ngờ một loại Vũ Khí mới mang tên Free Electron Laser (FEL) của TS Dinh Nguyen sẽ phá huỷ được DF-21D, làm tiêu tan tham vọng Đại Hán của họ !

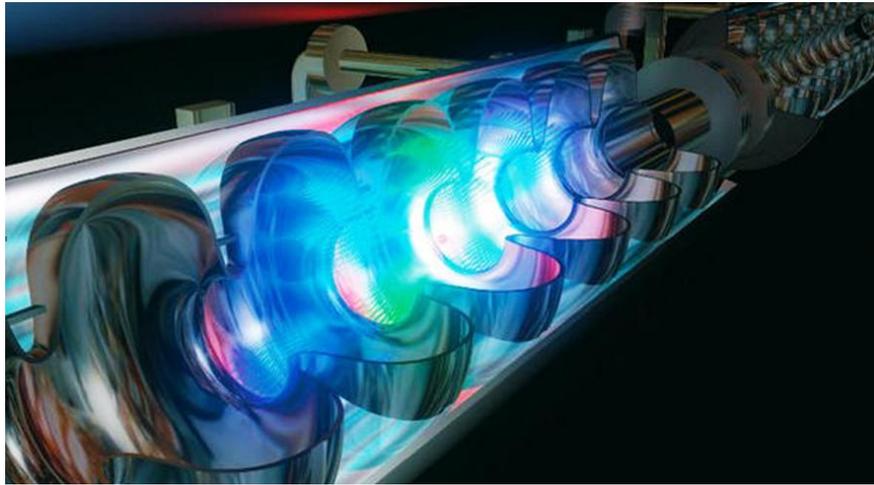
Tuy Free Electron Laser đang còn trong giai đoạn nghiên cứu, nhưng rất khả quan. Các Chiến Hạm Hải Quân Hoa Kỳ sẽ được trang bị sau này khi công trình sáng chế loại Vũ khí mới này thành công.

Kính

tvq

Attach: 6 Photos

Courtesy LANL



LANL scientists are instrumental in making breakthrough for the Navy

By John Severance

Sunday, January 23, 2011 at 12:00 pm (Updated: January 23, 12:59 pm)

Thanks to the Los Alamos National Laboratory, the Navy took a big step in its quest to build a powerful new anti-aircraft gun.

LANL scientists have achieved a breakthrough with the Office of Naval Research's Free Electron Laser (FEL) program, demonstrating an injector capable of producing the electrons needed to generate powerful megawatt-class laser beams for the Navy's next-generation weapon system.

The Dec. 20 milestone, which happened months ahead of schedule, was highlighted in a two-day preliminary design review Jan. 20-21 in Virginia.

"The injector performed as we predicted all along," said Dr. Dinh Nguyen, senior project leader for the FEL program at the lab. "But

until now, we didn't have the evidence to support our models. We were so happy to see our design, fabrication and testing efforts finally come to fruition. We're currently working to measure the properties of the continuous electron beams, and hope to set a world record for the average current of electrons."

Nguyen said Boeing, which had a measurement of 32 milliampere in 1993, holds the record for measuring properties of the continuous electron beams. The project leader said, "We are not there yet but we hope to break it in the near future."

At the demonstration, Nguyen received a lot of positive feedback from members of the ONR.. But he was not about to take a lot of the credit. "This is a team effort," Nguyen said. He credited 15 other LANL employees for helping him with the research. "The best thing is that the Navy is looking at Los Alamos as the go-to lab for this kind of technology. This is a good sign for the lab."

Nguyen said he and his team have been working on the project since 2006 but he has been working on the technology at the lab since the mid-1980s.

Asked where this accomplishment stacks up in his LANL career, which started in 1984, Nguyen said, "It's not the most important, but it is up there."

Quentin Saulter, the FEL program manager for ONR, said in a release the implications of the FEL's progress are monumental.

"This is a major leap forward for the program and for FEL technology throughout the Navy," Saulter said. "The fact that the team is nine months ahead of schedule provides us plenty of time to reach our goals by the end of 2011."

The research is a necessary step for the Department of the Navy to one day deploy the megawatt-class FEL weapon system, revolutionizing ship defense, Saulter said.

"The FEL is expected to provide future U.S. Naval forces with a near-instantaneous laser ship defense in any maritime environment throughout the world."

ONR's FEL project began as a basic science and technology program in the 1980s and matured into a working 14-kilowatt prototype. In fiscal 2010, it graduated from basic research to an Innovative Naval Prototype, earning the backing needed by senior Navy officials to ensure its evolution to advanced technology and potential acquisition. On the ONR website, Saulter explains the program.

"The Navy's future Free Electron Laser (FEL) weapon system is being designed to be game changing," Saulter said. "The capability of having

speed-of-light delivery for a wide range of missions and threats is a key element of a future shipboard layered defense. The design is to be able to have selectable wavelengths for use at sea.

“It will demonstrate scalability of the necessary FEL physics and engineering for an eventual megawatt-class device. It will focus on the design, development, fabrication, integration and test of a 100-kw class FEL device. Future needs for ship integration and beam control will be considered. This revolutionary technology allows for multiple payoffs to the war fighter.

“The ability to control the strength of the beam provides for graduated lethality and the use of light vice, an explosive munition, provides for low per engagement and life cycle costs. In fact, it provides an effective alternative to using expensive missiles against low value targets. Not worrying about propulsion and working at the speed of light allows for precise engagement and the resulting low collateral damage. Speed-of-light engagement also allows for a rapid reaction to moving and/or swarming time critical and swarming targets.”

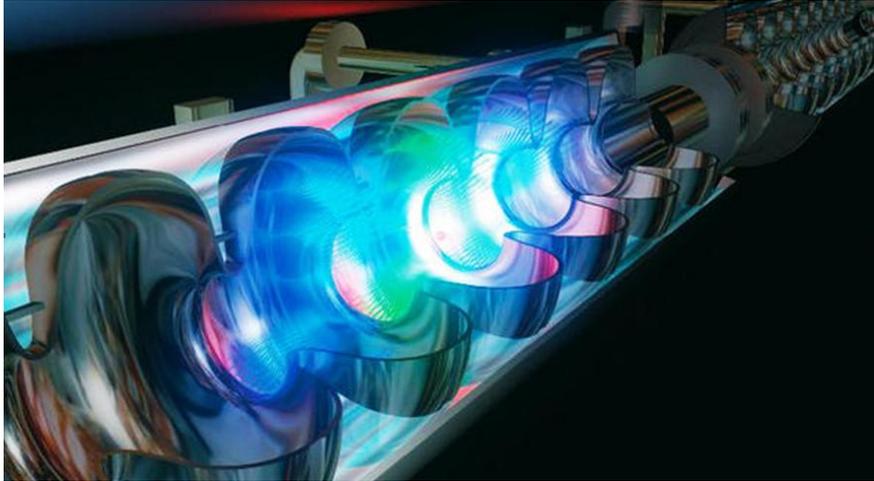
The laser works by passing a beam of high-energy electrons generated by an injector, through a series of strong magnetic fields, causing an intense emission of laser light. ONR hopes to test the FEL in a maritime environment as early as 2018.

“There still is a lot more testing,” Nguyen said.

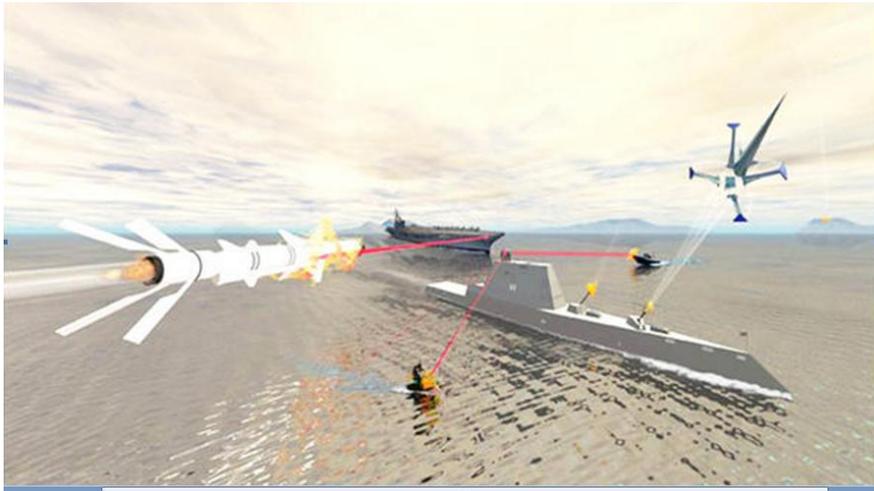
Scientists at Los Alamos National Laboratory, headed by Dr. Dinh Nguyen, senior project leader for the Free Electron Laser program at the lab, made a breakthrough when they unveiled an injector, below, capable of producing the electrons needed to generate megawatt-class laser beams for the Navy’s next-generation weapon system.

1 of 3

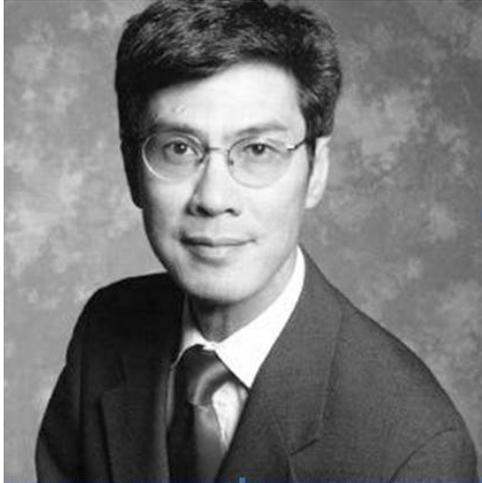
Courtesy LANL



Vu Khi Free Electron Laser (FEL).

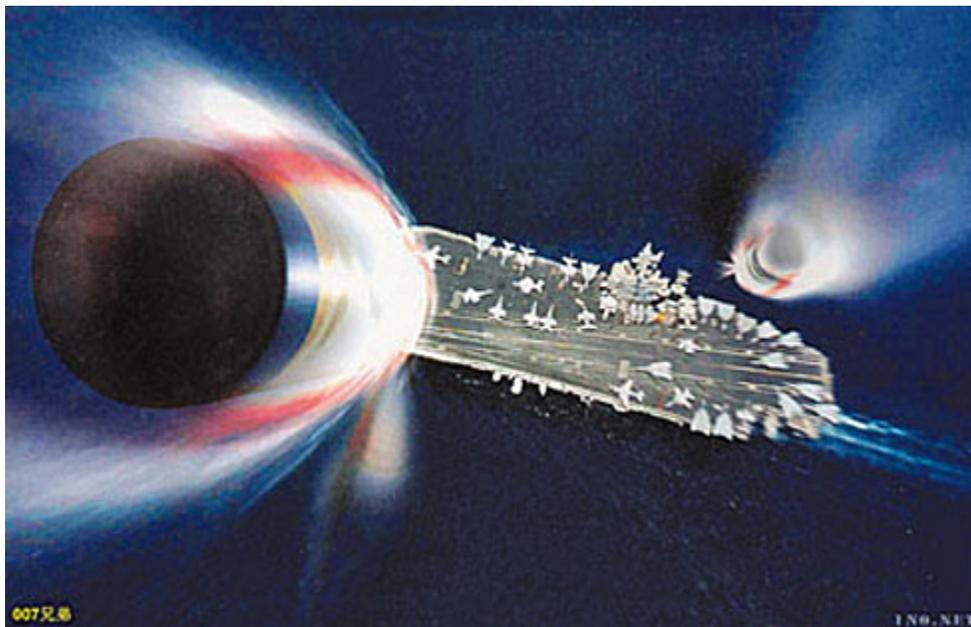


Free Electron Laser (FEL) trang bi tren HKMH va KTH se pha huy hoa tien cua doi phuong



Dr. Dinh Nguyen

Khu Trục Ham DD-21 moi se duoc trang bi Free Electron Laser (FEL)



Hoà Tiễn DF-21D của TC đe dọa HKMH HQ Hoa Kỳ

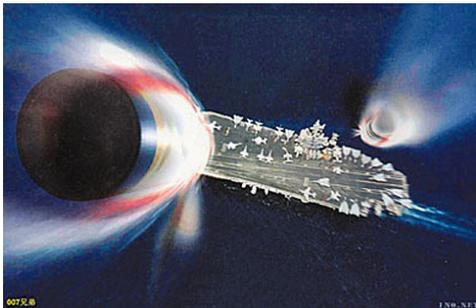


Khu Truc Ham AEGIS se duoc trang bi Free Electron Laser (FEL).

Attach: [Free Electron Laser \(FEL\) program: U.S. Counters China's DF-21D ...](#)

## **Free Electron Laser (FEL) program: U.S. Counters China's DF-21D**

January 21, 2011 by [Richard C. Young](#)



By Rob Anastasio, [ONR Corporate Strategic Communications](#)  
ARLINGTON, Va.-Scientists at Los Alamos National Lab, N.M., have achieved a remarkable breakthrough with the Office of Naval Research's Free Electron Laser (FEL) program, demonstrating an injector capable of producing the electrons needed to generate megawatt-class laser beams for the Navy's next-generation weapon system.

The Dec. 20 milestone, which occurred months ahead of schedule, will be the highlight of a two-day preliminary design review scheduled Jan. 20-21 in Virginia. "The injector performed as we predicted all along," said Dr. Dinh Nguyen, senior project leader for the FEL program at the lab. "But until now, we didn't have the

evidence to support our models. We were so happy to see our design, fabrication and testing efforts finally come to fruition. We're currently working to measure the properties of the continuous electron beams, and hope to set a world record for the average current of electrons."

Quentin Saulter, FEL program manager for ONR, said the implications of the FEL's progress are monumental. "This is a major leap forward for the program and for FEL technology throughout the Navy," Saulter said. "The fact that the team is nine months ahead of schedule provides us plenty of time to reach our goals by the end of 2011."

The research is a necessary step for the Department of the Navy to one day deploy the megawatt-class FEL weapon system, revolutionizing ship defense, Saulter said. "The FEL is expected to provide future U.S. Naval forces with a near-instantaneous laser ship defense in any maritime environment throughout the world." ONR's FEL project began as a basic science and technology program in the 1980s and matured into a working 14-kilowatt prototype. In fiscal 2010, it graduated from basic research to an Innovative Naval Prototype, earning the backing needed by senior Navy officials to ensure its evolution to advanced technology and potential acquisition.

The laser works by passing a beam of high-energy electrons generated by an injector, through a series of strong magnetic fields, causing an intense emission of laser light. ONR hopes to test the FEL in a maritime environment as early as 2018.

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## **Breakthrough in free-electron laser development | Homeland ...**

### ***Breakthrough in free-electron laser development***

Published 10 February 2011

Breakthroughs in Free-Electron Laser (FEL) technology could mean a virtually impenetrable defense system for Navy ships; the laser weapon has the capability to detect and engage incoming cruise missiles at the speed of light without running out of ammunition



FEL may make the fleet virtually impregnable // Source: [foxnews.com](http://foxnews.com)

Breakthroughs in Free-Electron Laser (FEL) technology could mean a virtually impenetrable defense system for Navy ships. The laser weapon in development has the capability to detect and engage incoming cruise missiles at the speed of light without running out of ammunition. The Office of Naval Research (ONR) has been developing the anti-aircraft and missile directed-energy weapon since the 1980s with the goal of creating a megawatt (1 million W) laser weapon with continuous power. The high-powered FEL uses a superconducting electron gun powered by a microwave tube to emit an intense emission of laser light. Last month, scientists at Los Alamos National lab demonstrated their capability to produce the necessary electrons needed to actuate megawatt laser beams. This development placed its researchers nine months ahead of schedule for its 2011 goals. In a news release, Dinh Nguyen, senior project leader for the Free Electron Laser program at the New Mexico lab said, “Until now, we didn’t have the evidence to support our models.”

Asides from its military applications, FEL has also been employed in the medical field. Research by Dr. Glenn Edwards and colleagues at Vanderbilt University’s FEL center in 1994 found that FEL could be used to excise sensitive tissues like skin, cornea, and brain tissue at wavelengths of approximately 6.45 micrometers. The technology is still being researched and improved upon to minimize and ultimately prevent collateral damage to adjacent tissue.

Quentin Saulter, research program officer at ONR said “the FEL is expected to provide future U.S. Naval forces with a near-instantaneous laser ship defense in any maritime environment throughout the world.” In a [video](#) produced by the ONR, Saulter mentions that the project’s workforce consists of experts that specialize in projection, accelerators, electron beam dynamics, and photo-optics.

Sarwat Chappell, research program officer at Air Warfare and Naval Weapons Applications described the FEL as versatile because of its ability to be tuned and generate multiple wavelengths the navy will need when encountering various scenarios across the world.

ONR aims to test the FEL at sea by 2018.

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**[ONR Achieves Milestone In Free Electron Laser Program](#)**

## ONR Team Demonstrates Source for Future 100KW FEL Laser

By [Administrator](#) on January 21, 2011 12:29 pm / [1 comment](#)



In future shipborne applications the laser will be powered by the ship's main generator, creating virtually unlimited ammunition. It will provide ultra-precise, speed-of-light defensive weapon capability necessary to meet emerging threats, such as hyper-velocity cruise missiles.

The [Free Electron Laser \(FEL\) program](#) is undergoing Office of Naval Research's (ONR) preliminary design review (PDR) this week, following the successful critical demonstration of an injector capable generating the electron flow for the megawatt-class FEL laser. "Until now, we didn't have the evidence to support our models" Dr. Dinh Nguyen, senior project leader for the FEL program at the lab said, confirming that the injector performed as predicted. The team is currently working to measure the properties of the continuous electron beams, in hope to set a world record for the average current of electrons.

The electron laser is generated by passing a beam of high-energy electrons through a series of powerful magnetic fields, generating an intense emission of laser light that can disable or destroy targets. In future shipborne applications the laser will be powered by the ship's main generator, creating virtually unlimited ammunition. It will provide ultra-precise, speed-of-light defensive weapon capability necessary to meet emerging threats, such as hyper-velocity cruise missiles. Each vessel carrying this weapon will operate a single FEL source feeding up to 10 beam directors, engaging multiple targets simultaneously at different directions, altitudes and ranges. ONR's FEL project began as a basic science and technology program in the 1980s and matured into a working 14-kilowatt prototype. In April 2009, the Boeing Company

was awarded an Office of Naval Research contract valued at up to \$163 million to develop and demonstrate a 100-kW class FEL weapon system. “Two unique attributes of FELs are the ability to tune the wavelength to maximize transmission of the laser through the marine atmosphere, and the ability to aim for a single small spot on the target,” said Ed Pogue, FEL program manager for Boeing. “The combination of these two effects allows the system to destroy the target in the minimum time.”

According to Quentin Saulter, FEL program manager for ONR the team is nine months ahead of schedule to achieve its goals for 2011. The FEL weapon system is set to pass critical design review phase in the fourth quarter of this year, to be followed by additional task orders for fabrication and testing in a laboratory environment. ONR hopes to test the FEL in a maritime environment as early as 2018.

Boeing is partnering on FEL with U.S. Department of Energy laboratories, academia and industry. The laboratories include the Thomas Jefferson National Accelerator Facility in Newport News, Va., the Los Alamos National Laboratory in Los Alamos, N.M., and the Argonne National Laboratory in Chicago. Major industrial partners include Advanced Energy Systems, Niowave Inc. and SAIC.

Related posts: [High Power Laser are Maturing into Weapons Grade Systems](#)