

CENTRE FOR JOINT WARFARE STUDIES



CENJOWS

CHINESE LASER WEAPONS

1. **China's New Crystals Could Finally Make Laser Weapons a Reality.** Due to a discovery from Chinese scientists, Laser could become more efficient in the future. Through **crystals of Caesium Bismuth Germanate (CBGO)**, an inorganic chemical compound, the scientists believe that they could convert low-energy beams into high-energy emissions with "unparalleled efficiency," according to Professor Mao Jianggao, team leader at the Fujian Institute of Research on the Structure of Matter. Compared to modern crystals, the CBGO was 13 times more efficient at converting infrared lasers into highly energized green beams.
2. "This is a record performance," Mao said in his statement. "This is why we think the crystal may have potential." *But that's all it is at this point: potential.* Despite their promising showing in tests, CBGO crystals have a drawback in the tremendous amount of electricity required to make them run properly.
3. The problem that Mao and others are attempting to solve has stumped scientists since the 1960s. Laser weapons aren't commonly used by the military because they're impractical—not because they're unfeasible. The energy required to run a laser weapon can often lead to issues with thermal management, which can cause beam quality degrading. It's a predicament the U.S Navy has run into with its only laser system, LaWS.
4. *These high-energy beams are increasingly seen as the future of laser warfare.* The Chinese government is in the midst of building of a satellite currently known as Project Guanlan, which means "watching the big waves." An anti-submarine satellite, Guanlan will significantly increase China's oceanic surveillance abilities with the ability to fire a high-energy pulse on submarines as far down as 1,640 feet.

5. Some are skeptical that Guanlan is more than wishful thinking. “Five hundred meters is ‘mission impossible,’” said a lidar scientist with the Shanghai Institute of Optics and Fine Mechanics at the Chinese Academy of Sciences, in an interview with the *South China Morning Post* last year.

6. Mao's team is hoping it might have taken the first step toward cracking mission impossible. Laser weapons, which would never need to be reloaded, have been a dream of scientists and science-fiction authors for decades. In the 1970s, the Soviet Union considered arming its cosmonauts with laser pistols. Meanwhile, NASA, acting more in the name of monitoring global warming, has used high-powered lasers to measure levels in polar ice.

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