

Probing what happens to plutonium in a nuclear explosion

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For years, research on nuclear weapons has relied on old data, limited experiments and computer modeling. But this year, that pattern has changed. Scientists have run new experiments that simulate what happens to plutonium in a nuclear explosion, according to an article in *Chemical & Engineering News* (C&EN), the weekly newsmagazine of the American Chemical Society. The research will deepen scientists' understanding of the element—and help them analyze a nuclear event should one occur.

In the article, Jyllian Kemsley, a senior editor at C&EN, notes that six years ago, the Department of Energy completed construction of its \$3.5 billion National Ignition Facility at Lawrence Livermore National Laboratory in California. It has been widely recognized for its efforts to study nuclear fusion as a possible new energy source. But the facility, which boasts 192 high-power lasers, is also exploring [nuclear weapons](#) science.

In the first two experiments of this program, scientists sandwiched a thin wafer of plutonium—radioactive but not weapons-grade—with the diameter of a poppy seed between disks of aluminum and diamond. They shot 16 lasers at the top layer to compress the plutonium to help understand how the material responds to the high pressures and temperatures experienced in a nuclear detonation. Analyzing the debris that resulted could help scientists perform forensic analyses in the case of an actual detonation.

More information: Plutonium Studies Fire

Up—cen.acs.org/articles/93/i23/Plutonium-Studies-Fire-Plutonium-Ignition.html

Provided by American Chemical Society

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