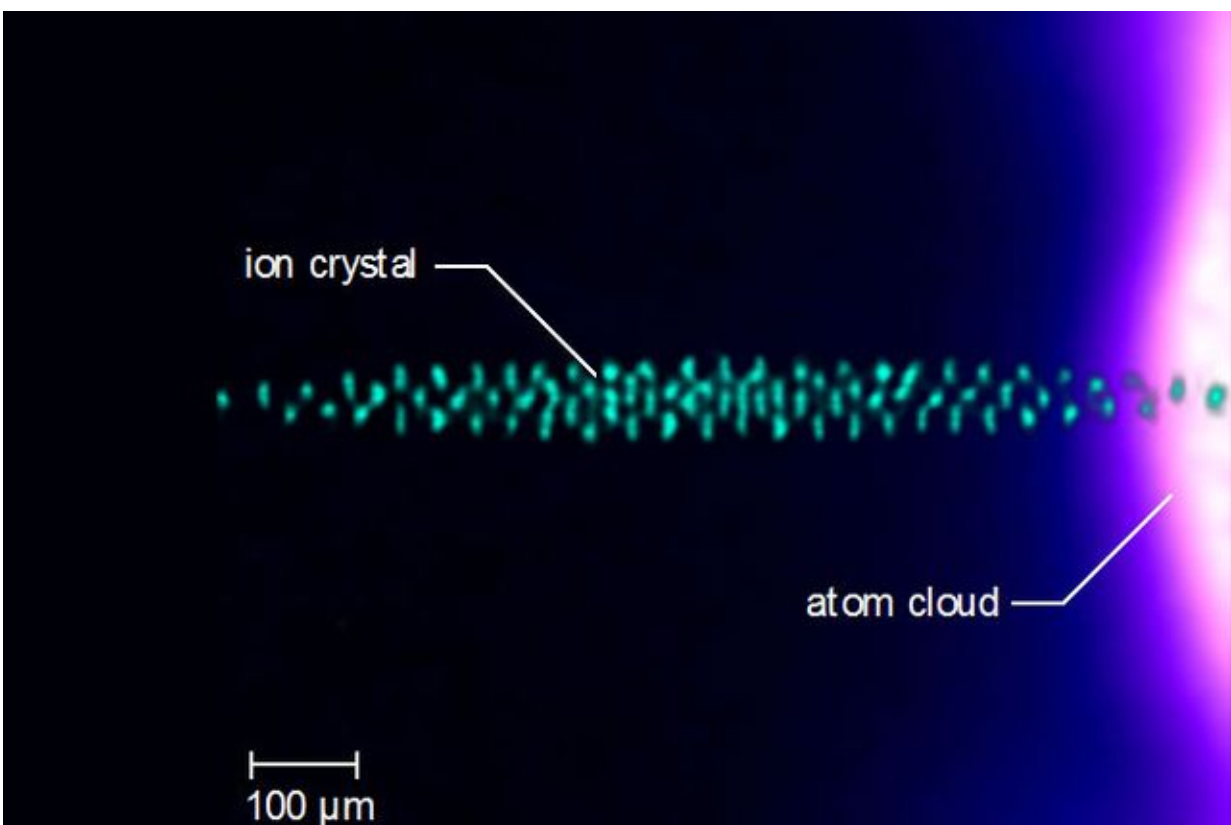


# Best of Last Week: Possible fifth force of nature found, purifying carbon nanotubes, possible replacement for opioids

August 22 2016, by Bob Yirka

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A microscopic sample of barium ions, shown in teal, immersed in a cloud of calcium atoms whose temperature is 1/1,000th of a degree above absolute zero. Credit: University of California, Los Angeles

(Phys.org)—It was another good week for physics as a team at the University of California [announced the possible discovery of a fifth force of nature](#)—which was related to the discovery of a subatomic particle, possibly a protophobic X boson, that defied other explanations. Another team with the U.S. DOE's Brookhaven National Laboratory uncovered [the origin of high-temperature superconductivity in copper-oxide compounds](#)—they discovered that it is controlled by the density of electron pairs. And another team at UCLA discovered [an 'apparent departure from the laws of thermodynamics'](#)—ions not cooling to the temperature of a surrounding gas as expected.

In technology news, a team at McMaster University announced that they had resolved [a problem that has been holding back a technological revolution](#)—they believe they have found a way to purify carbon nanotubes economically. And a team of researchers at MIT suggested that [electric vehicles can meet drivers' needs enough to replace 90 percent of vehicles now on the road](#)—which suggests that their limited range is not enough to prevent them from replacing almost all of the gasoline-powered cars being driven today, greatly reducing [greenhouse gas emissions](#).

In other news a combined team from Université de Montréal and McGill University found that [legions of nanorobots can target cancerous tumors with precision](#)—by actually doing it. They released bio-engineered bacteria into mice and had them directly target colorectal tumors. In news that may grow more frightening if initial findings prove true, a combined team of researchers with the Rockefeller University and La Jolla Institute for Allergy and Immunology found that [a Zika infection may affect adult brain cells](#)—causing damage to cells that serve a repair and replace function for neurons. And a team at Northwestern University discovered that [DNA naturally fluoresces](#)—possibly paving the way for super-resolution nanoscopic imaging. And an international team of space researchers announced that they had found evidence that

[beyond Neptune, a chunk of ice is orbiting the sun in the wrong direction](#)

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And finally, for the millions of people suffering from chronic pain but who fear becoming addicted to an opioid, a team of researchers from the U.S. and England has announced the discovery of [a designer agent that kills pain as well as morphine but may lack overdose risk](#)—it does not cause respiratory suppression, which is how people die from overdoses of opioids.

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