

Spinoffs

RESEARCH AT THE PRINCETON PLASMA Physics Laboratory has led to technologies and spinoffs with applications that extend far beyond the Lab's halls. Some examples:

MINDS

Device created at PPPL helps protect America from radiological threats.

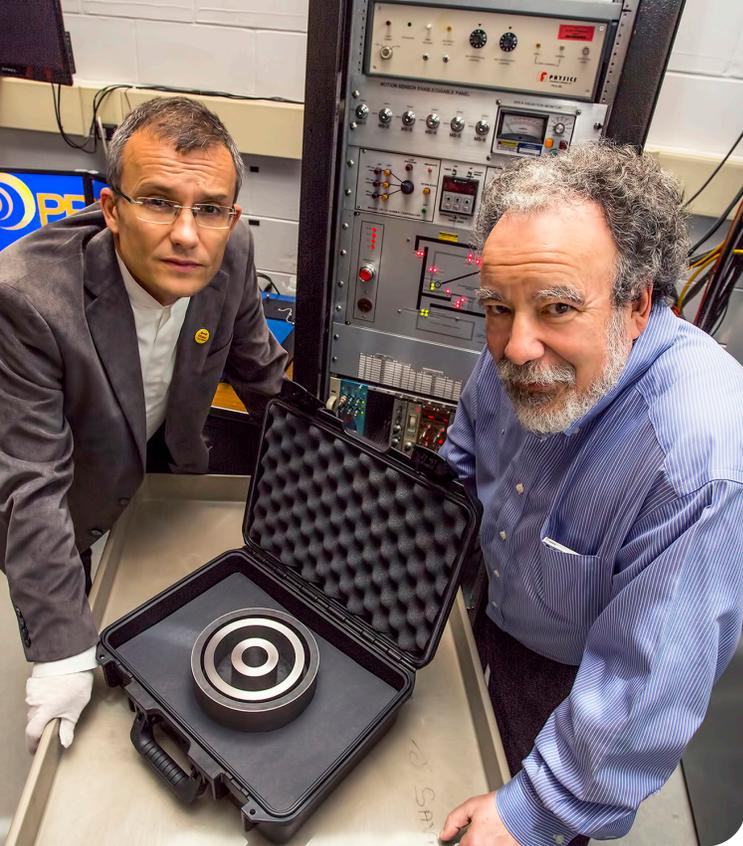
A PPPL team has developed the Miniature Integrated Nuclear Detection System (MINDS), a device that can detect radiological weapons like so-called dirty bombs. MINDS can scan moving vehicles, cargo ships, luggage and other items for a variety of radiation, including x-rays, gamma rays, and neutrons, and can identify specific radionuclides. MINDS has been deployed at U.S. military bases as well as busy rail and bus commuter centers.



Egg Pasteurization

PPPL research has led to advances in health-related technology.

Engineer Christopher Brunkhorst, working in partnership with the U.S. Department of Agriculture, developed a method of quickly pasteurizing eggs within their shells without damaging the delicate whites. A prototype machine the size of a shoebox sends radio-frequency waves through the egg while the egg rotates and cool water pours over the eggs to prevent the whites from getting too hot. The device can pasteurize eggs in their shells in around one-third the time of current methods. Commercialization of this patented apparatus could reduce the number of illnesses from egg-borne salmonella.



Nuclear Weapon Verification

Neutrons Used to Inspect Nuclear Weapons

Physicists at PPPL and Princeton University are developing a novel method of verifying that nuclear weapons scheduled to be dismantled contain true warheads. This method, which would shoot beams of neutrons through a weapon to see how many pass through to detectors behind it, would not reveal any classified information that might lead to nuclear proliferation. Inspectors would compare the results to those obtained by beaming neutrons through a known warhead to see if the findings matched. Researchers are building a prototype at PPPL that will test the method by sending neutrons through a non-nuclear test object.

Synthetic Muscle

Man-made muscle promises better prostheses.

The Lab's five-year partnership with Ras Lab LLC, a Boston-area company, has led to development of a special kind of polymer material suitable for synthetic muscle and other biotechnical uses, as well as for robotic applications. The material, created by Ras Lab founder Lenore Rasmussen, flexes and contracts when an electric current passes through it. In April, NASA delivered the polymer to the International Space Station to test the material's ability to withstand radiation in a space environment.

