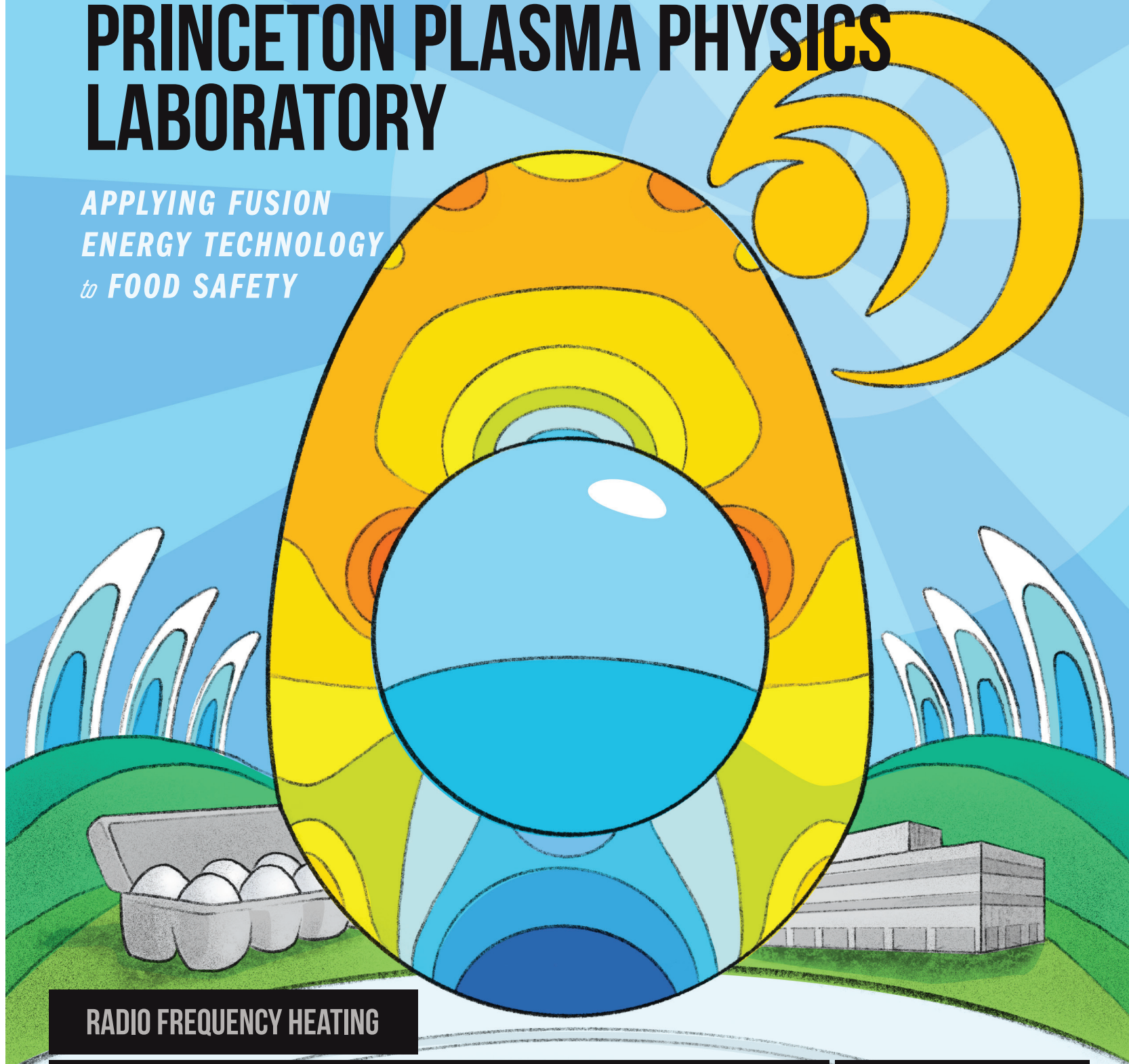


ADVANCING AMERICA *through* TECHNOLOGY TRANSFER

PRINCETON PLASMA PHYSICS LABORATORY

APPLYING FUSION
ENERGY TECHNOLOGY
to FOOD SAFETY



RADIO FREQUENCY HEATING

**REDUCED RISK *of*
FOODBORNE ILLNESS *for the*
MOST VULNERABLE AMERICANS**



U.S. DEPARTMENT OF
ENERGY

Office of
TECHNOLOGY TRANSITIONS



What do fusion energy research and raw eggs have in common?

Scientists at Princeton Plasma Physics Laboratory (PPPL) working in partnership with the U.S. Department of Agriculture invented a device to more rapidly pasteurize shell eggs without damaging the delicate egg whites by adapting a technique that uses radio waves to heat plasma in fusion energy experiments. Shell egg pasteurization leaves little room for error since egg white pasteurizes at a lower temperature and is especially sensitive to overheating and unintentional cooking when compared to egg yolk. Radio Frequency (RF) Heating pasteurizes raw eggs without affecting composition by simultaneously exposing a rotating shell egg to RF waves and cool water to effectively distribute RF heat. Commercialization of PPPL's patented apparatus is expected to sharply reduce illness stemming from egg-borne salmonella bacteria, a widespread public health concern.

PPPL at a Glance

PPPL's origins trace to Princeton University's Forrestal Campus in Plainsboro, New Jersey, where in 1951 Princeton's preeminent interstellar plasma expert, Lyman Spitzer, conceived of a world with stable fusion power and masterminded the first controlled fusion experiment famously known as Project Matterhorn.

Boasting a world-class workforce, large-scale user facilities, and unique advanced instrumentation, PPPL's scientists and engineers continue Spitzer's pioneering legacy today by providing the highest quality science education to future generations and leading plasma science and technology discoveries to achieve a world powered by safe, clean, and plentiful fusion energy.

U.S. Department of Energy Laboratories

The 17 U.S. Department of Energy (DOE) National Laboratories comprise a preeminent federal research system that executes long-term government scientific and technological missions, often with complex security, safety, project management, or other operational challenges. The National Laboratory system produces the scientific research needed to develop national energy policy and solutions allowing DOE to be one of the largest supporters of technology transfer in the federal government.

Technology Transitions

The mission of the Office of Technology Transitions (OTT) is to expand the commercial impact of the DOE's research and development portfolio to advance the economic, energy, and national security interests of the Nation. The office develops the Department's policy and vision for expanding the commercial impact of its research investments, and streamlines information and access to DOE's National Labs and sites to foster partnerships that will move innovations from the labs into the marketplace.

www.energy.gov/technologytransitions

Pasteurization of shell eggs using RF heating can reduce egg-borne salmonella illness in the United States by up to 85%, or more than 110,000 cases annually

Application

The RF Heating device can pasteurize shell eggs in one-third the time of current methods and without any discernable difference when compared to a raw shell egg.

Collaboration

PPPL and USDA engineers collaborated on the research and development, and share a patent for the RF Heating pasteurization technique and device.

Contact Us

The scientific discovery highlighted on this poster is just one of DOE's many successes advancing America.

Learn more about available resources and partnering opportunities with the National Labs by visiting:

www.energy.gov/technologytransitions

U.S. DEPARTMENT OF
ENERGY

Office of
**TECHNOLOGY
TRANSITIONS**