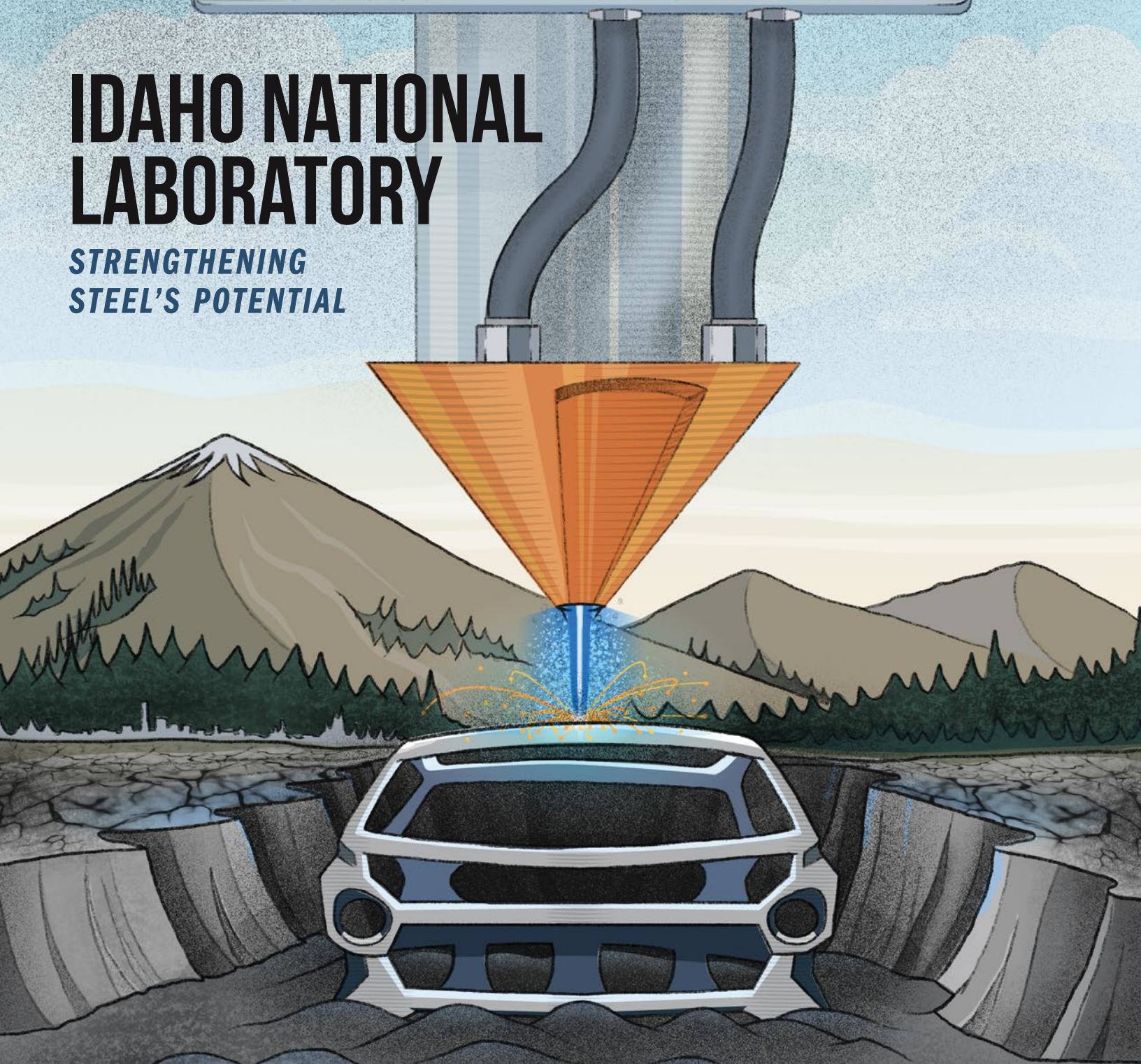


ADVANCING AMERICA *through* TECHNOLOGY TRANSFER

IDAHO NATIONAL LABORATORY

STRENGTHENING
STEEL'S POTENTIAL



NANOCRYSTALLINE STEEL TECHNOLOGY

**REDUCED EMISSIONS,
SAFER VEHICLES, *and* ADVANCED
MANUFACTURING *at* REDUCED COST**



U.S. DEPARTMENT OF
ENERGY

Office of
TECHNOLOGY TRANSITIONS



Steel that is – harder, better, lighter, stronger?

Scientists at Idaho National Laboratory (INL) transformed the manufacturing, mining, and automotive industries when they discovered a new class of nanostructured steel lighter and more ductile than conventional material.

Nanocrystalline steel harnesses the collective capability of miniscule grains of metal to deliver superior performance and durability, driving the sustainable expansion of steel's functionality and application in fields such as additive manufacturing. The material mimics steel in production processes, empowering manufacturers to embrace conversion by using existing equipment and skills while reducing emissions and cost. INL's invention disrupts accepted paradigms, minimizing automotive and aerospace vehicle weight and improving material flexibility without sacrificing strength or safety.

INL at a Glance

Nearly every nuclear reactor in the world owes its existence to research and development conducted at INL. Nestled against the stunning Rocky Mountains and commanding 890 square miles of desert territory, the largest National Laboratory by geographic area began as the Nation's chief nuclear energy research facility. Home to the world's largest concentration of nuclear reactors, INL's research portfolio highlights state-of-the-art capabilities in advanced manufacturing and transport, predictive modeling, and sustainable energy development. Today, INL continues to power the Nation forward, conducting cutting-edge research across all of the DOE's strategic goal areas.

U.S. Department of Energy National 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.

Using nanocrystalline steel increases vehicle fuel economy by 9.5%

Industry

Nanocrystalline steel is among the most widely used materials in the automotive industry.



Nanocrystalline steel increases the lifespan of mining equipment by 400%.



Awards

Nanocrystalline steel products have won five R&D 100 Awards since 2001.

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

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

U.S. DEPARTMENT OF
ENERGY

Office of
**TECHNOLOGY
TRANSITIONS**