U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Vehicle Technologies Office Newsletter

Director's Corner

Advanced materials are essential for boosting the fuel economy of modern automobiles while maintaining safety and performance. A 10% reduction in vehicle weight can result in a 6%-8% fuel economy improvement, saving consumers and businesses money. VTO's Materials Program aims to increase understanding of the materials themselves through modeling and computational materials science, improve their properties and their manufacturing, and to develop alloys of advanced materials.

This month VTO is celebrating R&D 100 finalists and winners from our Materials Program. Congratulations to all of our researchers that were honored.

-Michael Berube, VTO Director

Meet the Team:

Felix Wu

The Vehicle Technologies Office's communications team sat down with Felix Wu, program manager for VTO's Materials Program to learn how he got in to materials research. VTO's Materials Program includes research on propulsion and lightweight materials, as well as joining.
Read our interview with Felix.

Save the Date: 2018 Annual Merit Review

When: June 18-21, 2018
Where: Crystal Gateway Marriott in Arlington, VA

Office Highlights

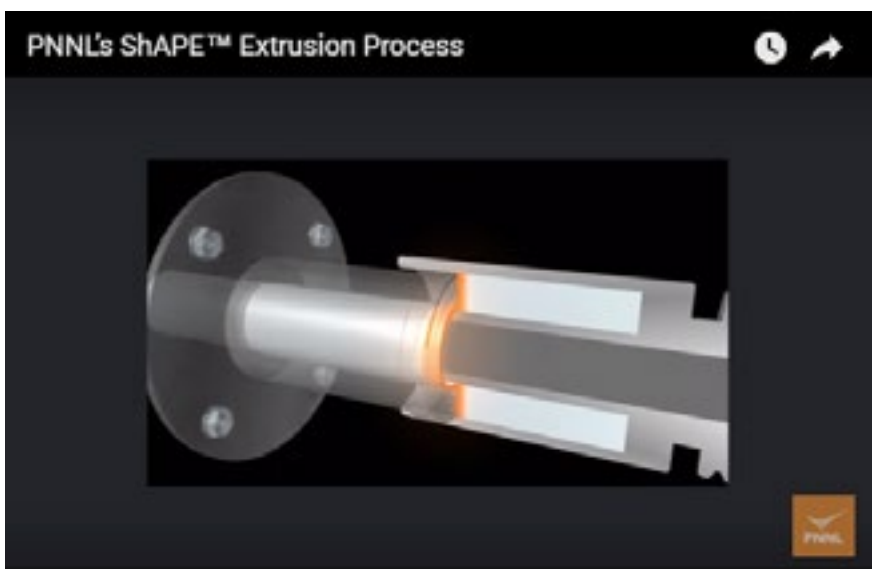
Materials Program Celebrates Four R & D 100 Finalists

The R & D 100 Awards Committee announced the winners for this year's R & D 100 Awards. Four VTO Materials Program research projects were selected as 2017 finalists in August and three were named winners at the annual conference held November 16-17, 2017.

Winners:
- ORNL: ACMZ Cast Aluminum Alloys
- ORNL: Filler Materials for Welding and 3D Printing
- PNNL: Friction Stir Scribe Process for Joining Dissimilar Materials

Finalist:
- ORNL: Low Cost Carbon Fiber

See the full list of winners and finalists.



Click to watch a video on PNNL's ShAPE Extrusion Process

ShAPEing the Future of Magnesium Car Parts

Magnesium - the lightest of all structural metals - has a lot going for it in the quest to make ever lighter cars and trucks that go farther on a tank of fuel or battery charge. With funding from VTO's Materials Program, researchers at Pacific Northwest National Laboratory (PNNL) have developed a new process that should make it more feasible for the auto industry to incorporate magnesium alloys into structural components. Read more about PNNL's work.

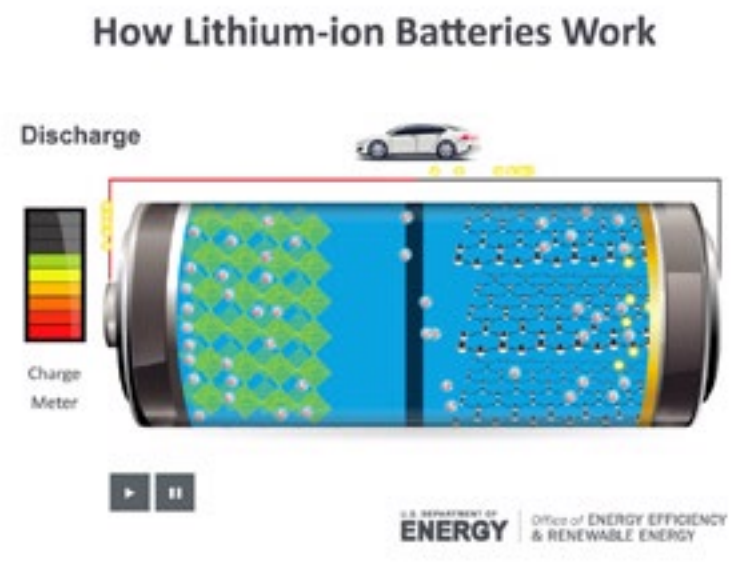
Advanced Materials & Process Magazine Features VTO Materials Research

AM&P Magazine's October 2017 cover story features VTO-funded research on hybrid metal composites. Researchers at Oak Ridge National Laboratory (ORNL) and Rice University have demonstrated how advanced manufacturing interpenetrating phase composites (AMIPCs), which allow application-specific combinations of properties of two dissimilar metals, can enable new opportunities in the world of industrial design and materials selection by combining additive manufacturing with casting technologies. Read the article in AM&P Magazine.

Social Media and Blogs

How Do Lithium-ion Batteries Work?

Lithium-ion batteries power the lives of millions of people each day. From laptops and cell phones to hybrids and electric cars, this technology is growing in popularity due to its light weight, high energy density, and ability to recharge. So how does it work? This blog and animation walk you through the process.



Click to watch the EERE animation on how lithium-ion batteries power our lives everyday.

Alternative Fuels Aid Response to Natural Disasters

Back-to-back hurricanes Harvey and Irma devastated parts of Houston and Florida and left millions of residents in the dark. In a number of cities and states, alternative fuel vehicles (AFVs) are improving emergency preparedness. A recent DOE Office of Energy Efficiency and Renewable Energy blog highlights 5 ways AFVs are playing a role.

The Future of Electric Charging Stations

As sales of plug-in electric vehicles (PEVs) increase in the United States, a key question comes to mind—how many charging stations are needed to support these new vehicles? The 4 maps in this blog examine some of the potential expansion scenarios proposed by the National Renewable Energy Laboratory in a recent report to support PEVs nationwide.

Reports and Publications

Find more on VTO's Report & Publications page.

Enabling Extreme Fast Charging: A Technology Gap Assessment

Researchers at Idaho National Laboratory teamed with Argonne National Laboratory and the National Renewable Energy Laboratory to identify technical gaps to implementing an extreme fast charging network in the United States. This report highlights technical gaps at the battery, vehicle, and infrastructure levels.

National Plug-In Electric Vehicle Infrastructure Analysis

This plug-in electric vehicle (PEV) infrastructure analysis addresses the fundamental question of how much charging infrastructure would be needed in the United States to support various market penetration scenarios for both plug-in hybrid electric vehicles and battery electric vehicles. The result is a quantitative estimate for developing a U.S. network of non-residential (public and workplace) charging that enables broader PEV adoption and maximizes PEV use. Read the full report.

Renewable Natural Gas as a Transportation Fuel

Two case studies by Argonne National Laboratory explore the production and use of renewable compressed natural gas to fuel heavy-duty refuse trucks and other natural gas vehicles in Sacramento, California and milk tanker trucks operating in Indiana, Michigan, Tennessee, and Kentucky.