



⊗



U.S. Department of Energy funding supports vision for affordable hydrogen production, storage, distribution and use.

Stephen Moore | Aug 07, 2020

IACMI (The Composites Institute) will receive \$2.7 million from the U.S. Department of Energy (DOE) to develop and validate technology that will reduce the cost of manufacturing high-performance carbon fiber by 25 percent to make composite natural gas or hydrogen fuel tanks to power cars and trucks.

Today, fuel tanks add significantly to a vehicle's cost, impeding the use of these clean fuels in U.S. transportation. Throughout IACMI's first five years of funding, the Manufacturing USA institute has focused one of its technology areas on compressed gas storage (CGS) tanks, making headway in innovations of materials and processes that lead to wider adoption of the technology in novel applications.

"Validating the use of low-cost, high-strength carbon fiber for compressed hydrogen and natural gas storage tanks will help expand technology choices for ground transportation," IACMI CEO John Hopkins said. "Significant cost reduction is especially difficult for the type of carbon fiber used in CSG tanks and this project addresses that challenge."

Hopkins said while composite fuel tanks are lighter than other options, they have also been relatively expensive. Well over half of the composite fuel tank's cost is attributed to carbon fiber used in its manufacture. So, reducing the cost of making carbon fiber will also lower the cost of composite fuel tanks making them a viable alternative to improve storage options and with no reduction of fuel tank performance.

The new award is one of 18 projects and approximately \$64 million in DOE funding that will support the H2@Scale vision for affordable hydrogen production, storage, distribution, and use. Four of the 18 projects focus on composite fuel tanks. The projects will support the next round of research, development, and demonstration (RD&D) activities under H2@Scale's multi-year initiative to fully realize hydrogen's benefits across the economy.

DOE will fund the projects through its Office of Energy Efficiency and Renewable Energy's (EERE) Hydrogen and Fuel Cell Technologies Office. The projects will feature collaborations with EERE's Advanced Manufacturing Office to manufacture reliable, affordable electrolyzers and with EERE's Vehicle Technologies Office to develop low-cost, high-strength carbon fiber for hydrogen storage tanks.

Hopkins said in addition to advancing carbon fiber technology for CGS tanks, the project will validate how collaboration by industry, government and academia partners advances composites innovation. These collaborations drive smarter manufacturing practices and create capacity and related expertise impactful for U.S. manufacturers.

For this project, IACMI will leverage its unique consortium network of partners, including:

- Prescott Composites headquartered in San Diego, CA, will validate the melt spinning and carbon fiber production technologies at a U.S. site to be selected during the project.
- JR Automation headquartered in Holland, MI, will design and fabricate the melt processing equipment at its facility in Nashville, TN.

7/2/2021

Advanced Carbon Fiber for Hydrogen Storage Tanks

- Oak Ridge National Laboratory (ORNL) in Oak Ridge, TN, will develop and scale the melt spinning process and heat treatment protocol. Carbon fiber for tank fabrication and testing will be produced at the U.S. Department of Energy’s Carbon Fiber Technology Facility at ORNL.
- Virginia Tech, whose main campus is in Blacksburg, VA, will provide chemistry support on polyacrylonitrile, also called PAN, polymer formulation and testing.

TAGS: [SUSTAINABILITY](#) [COMPOSITES](#) [MATERIALS](#) [MATERIALS RESEARCH](#)

0 COMMENTS

RELATED


 **Plastec West**


 **Inventor of Kayak Condos Needs Help Staying Afloat**
JUN 29, 2021

 **Continental Names DuPont Supplier of the Year, Again**
JUN 29, 2021

 **Foxconn to Venture into Electric Vehicle Production in Thailand**
JUN 29, 2021

Danimer Scientific Receives US Patent for Biodegradable Marking Wax

 color crayons

 Image: Leigh Prather/Adobe Stock

The material can be used to make plant-based, compostable crayons. Conventional crayons made with petrochemical-based paraffin wax can take decades to decompose.

[PlasticsToday Staff](#) | Jul 01, 2021

Bioplastics company Danimer Scientific and Rob Falken have received a joint US patent for a renewable, biodegradable marking wax that serves as an alternative to petrochemical-based paraffin wax. Falken is an environmentally focused material developer in San Diego, CA, who partnered with Danimer Scientific to develop the material, which can be used to make plant-based, compostable crayons that reportedly break down in industrial composting facilities and home compost bins.

Traditional crayons made with non-renewable paraffin wax can take decades to decompose, noted Danimer Scientific. “Our mission is to develop and manufacture 100% renewable and biodegradable alternatives to traditional petrochemical-based materials,” said Chief Science and Technology Officer Phil Van Trump. “This project is a significant step toward expanding this mission from single-use plastic alternatives to a greater range of industries and applications. By collaborating with Mr. Falken, we combined his knowledge of functional waxes with our expertise in polymer chemistry to create a completely new material that has the potential to bring the crayon industry to the forefront of sustainability. We believe this has potential to help the next generation see how they can reduce the environmental impact of popular consumer products.”

Crayons made from the biodegradable wax exhibit the same quality, feel, and breaking strength as non-renewable paraffin, so consumers will not have to sacrifice performance when using a compostable crayon. In addition, the material is non-allergenic, non-toxic, and odorless, making it a safe and reliable product for children and adults alike. Danimer Scientific plans to engage crayon manufacturers in bringing this new material to the marketplace.

“The largest crayon manufacturers consume millions of pounds of paraffin wax every year to produce billions of crayons, and this new material offers a way to reduce the environmental impact of these beloved products,” said Falken. “We’ve also developed a formulation to use our biodegradable wax for making crayons with seeds in them, allowing consumers to plant the crayons rather than simply throwing them away after use. It’s a great way to educate children on how to dispose of broken or discarded crayons in an eco-friendly manner.”

TAGS: [MATERIALS RESEARCH](#) [MATERIALS](#) [CONSUMER PRODUCTS](#) [ADVANCED RECYCLING](#) [SUSTAINABILITY](#)

RELATED



Plastec West



Hot News in Plastic Packaging Sustainability

JUN 30, 2021



Carbon-Negative Snack's Packaging Is Home Compostable

JUN 29, 2021



Report Blasts 'False' Corporate Solutions to Plastic Pollution

JUN 28, 2021

[Next Article](#)

We use cookies to improve your website experience. To learn about our use of cookies and how you can manage your cookie settings, please see our [Cookie Policy](#). By continuing to use the website, you consent to our use of cookies.



Sign up for the PlasticsToday NewsFeed newsletter.

Email address

Select Country

GO

- About
- Advertise
- Contribute to the Site
- Events
- Subscribe
- Battery Technology

- Design News
- Packaging Digest
- MD+DI
- Powder & Bulk Solids
- Sitemap
- Content Licensing and Reprints



Copyright © 2021. All rights reserved. , a trading division of Informa PLC.

[Accessibility](#) | [Privacy Policy](#) | [Cookie Policy](#) | [Terms of Use](#) | [Visitor Terms and Conditions](#)

