



PPG Selected for DOE Partnership to Speed Development, Testing of Adhesives for Lightweight Vehicles

09/05/2019

PITTSBURGH--(BUSINESS WIRE)-- PPG (NYSE:PPG) today announced that it has been selected for a U.S. Department of Energy (DOE) partnership that will use supercomputing resources to accelerate the development and testing of structural adhesives for vehicles built from lightweight materials. The project was authorized by the DOE Vehicle Technologies Office, with funding provided by the High Performance Computing for Energy Innovation (HPC4EI) program.

PPG will collaborate with DOE's Lawrence Livermore National Laboratory (LLNL) and Pacific Northwest National Laboratory (PNNL) to develop computer-based models of the aging characteristics of a variety of next-generation adhesives designed to join lightweight materials. Vehicle manufacturers are exploring the use of high-strength steel, aluminum, magnesium, carbon-fiber composites and other lightweight materials to reduce vehicle mass and improve fuel economy. This approach requires new adhesive chemistries that will mitigate corrosion and thermal expansion issues associated with joining dissimilar materials.

"It is critical to understand how adhesive bonds evolve over the life of a vehicle," said Peter Votruba-Drzal, PPG global technical director, automotive OEM coatings. "This knowledge has traditionally come through iterative formulation and testing, including lengthy exposure tests. This project will enable us to reduce adhesives testing time by up to 75%, which in turn will help manufacturers accelerate their development of increasingly energy-efficient vehicles."

The project will use supercomputing to achieve a fundamental understanding of the influence of water – a key determinant in the aging process – on the chemistry and adhesion properties of adhesives joined to lightweight substrates. Supercomputing resources are necessary because of the extremely large data sets involved in each simulation.

PPG will provide \$60,000 for the project in the form of technical activities at the company's Global Coatings Innovation Center in Allison Park, Pa. The DOE will provide \$300,000 to LLNL and PNNL for their modeling expertise and the use of their supercomputing resources.

PPG is a global leader in structural adhesive technology. The company's CORABOND™ adhesives enable vehicle manufacturers to achieve significant cost and weight savings while addressing a wide range of design considerations and manufacturing process requirements.

The HPC4EI program is funded by the DOE Office of Energy Efficiency and Renewables and the Fossil Energy Office. It uses world-class DOE capabilities in high performance computing to help industry improve manufacturing processes and product and materials development to reduce national energy consumption. Some 40 U.S. companies have engaged this program for more than 80 projects, increasing competitiveness and reducing energy usage. High performance computers enable increased accuracy of engineering and science simulations, provide for faster optimization and enhance data analytics. Information about the program can be found at <https://hpc4energyinnovation.llnl.gov/>.

PPG: WE PROTECT AND BEAUTIFY THE WORLD™

At PPG (NYSE:PPG), we work every day to develop and deliver the paints, coatings and specialty materials that our customers have trusted for more than 135 years. Through dedication and creativity, we solve our customers' biggest challenges, collaborating closely to find the right path forward. With headquarters in Pittsburgh, we operate and innovate in more than 70 countries and reported net sales of \$15.4 billion in 2018. We serve customers in construction, consumer products, industrial and transportation markets and aftermarkets. To learn more, visit www.ppg.com.

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Source: PPG