



Ramaco Carbon Partners with National Energy Technology Laboratory to Manufacture High-Value Products from Coal

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Pittsburgh, Pa. – The National Energy Technology Laboratory (NETL) is launching a valuable partnership with Ramaco Carbon to collaborate on innovative projects that use coal to manufacture high-value products.

NETL Acting Director Sean I. Plasynski, Ph.D., and Ramaco Carbon Chairman and Chief Executive Officer Randall Atkins signed an umbrella cooperative research and development agreement (CRADA) on Thursday, June 7, at the Lab's Pittsburgh site. The agreement allows NETL and Ramaco Carbon to work together on specific projects that use coal as a manufacturing feedstock for high-value products.

The CRADA will enhance NETL's materials engineering and manufacturing capabilities by allowing Lab researchers access to coal-based manufacturing and 3D-printing facilities being developed by Ramaco Carbon near Sheridan, Wyoming. Once construction is completed, Ramaco Carbon will operate the world's only fully integrated carbon resource-based research, development and production facility.

Ramaco areas of interest include the use of coal to create carbon-based product precursors and resins, rare earth elements from coal and coal by-products, feedstock production for carbon-based products, and production of advanced carbon materials – all areas in which NETL has extensive expertise. The Lab is working to establish programmatic research activities in coal-based manufacturing, which will be aided by the agreement.

“At NETL, we are working every day to revitalize coal by finding innovative new uses for coal and coal by-products. Ramaco Carbon is developing cutting-edge facilities that support research and manufacturing efforts to produce valuable advanced materials from coal,” Plasynski said. “We both benefit by pooling our resources to expand opportunities as we build a brighter future for America's most abundant natural resource.”

Ramaco Carbon has been developing its unique integrated “coal to products” resource, research and high technology manufacturing platform over the past several years. It is the only operating entity in the coal industry solely dedicated to emerging coal technology and developing new markets for coal.

“We are honored and humbled to be partnering with NETL, the United States government's premier research center focused on fossil fuels,” Atkins said. “NETL has state-of-the-art understanding and research into coal's special properties and the carbon products that can



be made from coal. At Ramaco, we are building a unique platform to help capitalize on this type of research and are excited to collaborate with our nation's experts on the conversion of coal into valuable carbon products. The 'end game' is to create new jobs for the coal industry with new technologies, and to insure that coal will be elemental for advanced materials in manufacturing for generations to come."

Ramaco Carbon and NETL also have a shared partner in Oak Ridge National Laboratory. Ramaco Carbon partnered with Oak Ridge to develop and market new products from coal, while NETL signed a Memorandum of Understanding with the Tennessee-based lab to conduct joint research on new ways to use coal to create high-value products. Click [here](#) to read the NETL announcement.

As the nation's only federal research facility devoted entirely to fossil fuels, NETL strives to make effective use of our vast domestic energy resources. Pursuing novel ways to use coal more efficiently helps to stimulate the economy, boost America's energy dominance and ensure national security.

Ramaco Carbon is a vertically integrated coal technology company based in Wyoming that combines coal resources with advanced research and modern manufacturing techniques to develop new products from coal – including carbon-fiber parts for vehicles and airplanes, carbon-based building materials, medical technology devices and more. The company focuses on three broad areas: coal to chemicals, coal to carbon fiber and coal to building products.

NETL is a U.S. Department of Energy (DOE) national laboratory that produces technological solutions for America's energy challenges. From developing creative innovations and efficient energy systems that make coal more competitive, to advancing technologies that enhance oil and natural gas extraction and transmission processes, NETL research is providing breakthroughs and discoveries that support home-grown energy initiatives, stimulate a growing economy, and improve the health, safety, and security of all Americans. Highly skilled men and women at three NETL research sites – Albany, Ore., Morgantown, W.Va., and Pittsburgh, Pa. – conduct a broad range of research activities that support DOE's mission to advance the national, economic, and energy security of the United States.