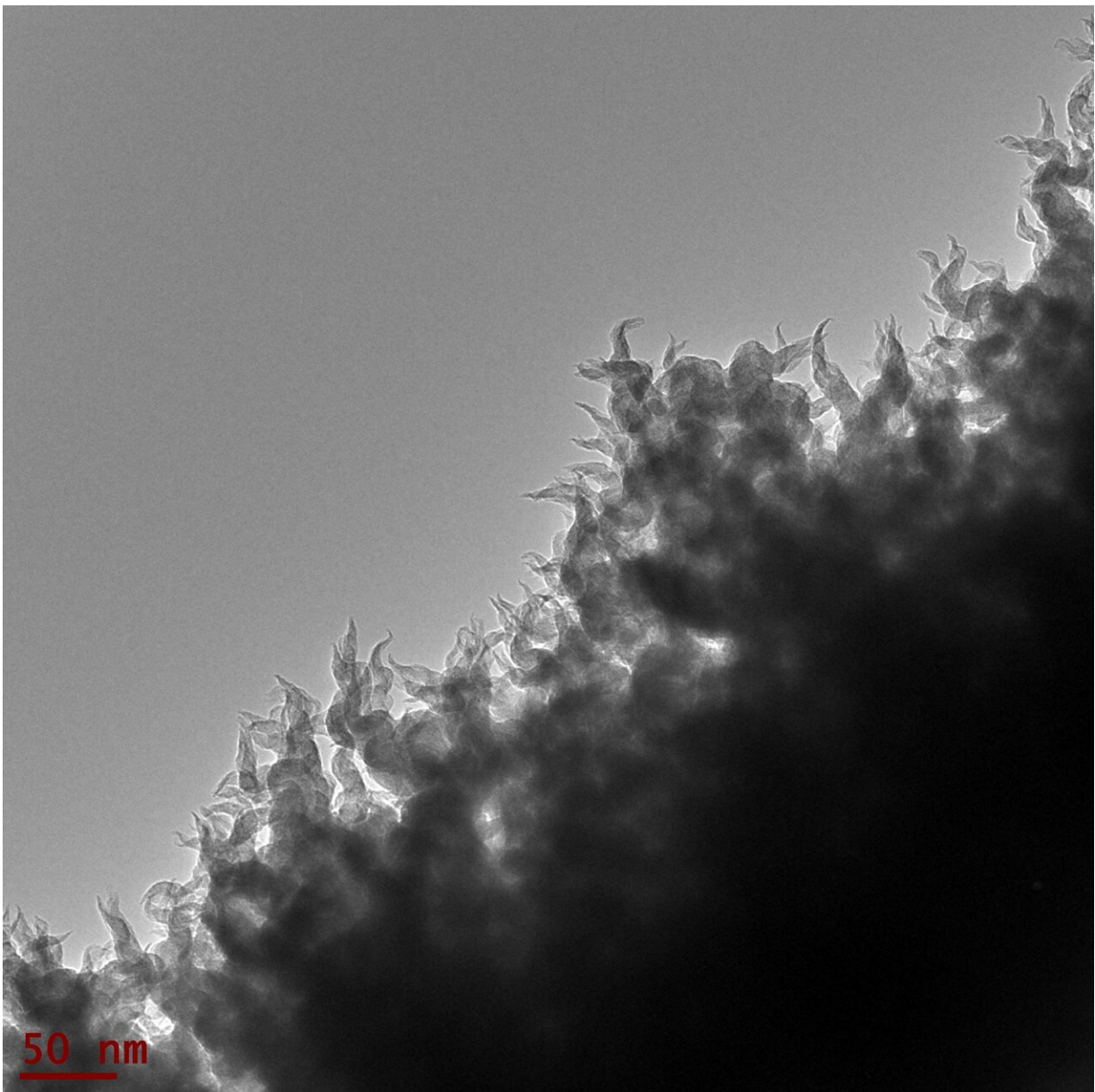


# Carbon nanospike catalyst splits water, carbon dioxide and recombines atoms into heavier nanocarbons

April 6 2021, by Karen K Dunlap

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ORNL researchers have developed an electrocatalyst made of custom-designed alloy nanoparticles embedded in carbon nanospikes. This image, made with a transmission electron microscope, shows the carbon nanospikes. Credit: Adam Rondinone and Dale Hensley/ORNL, U.S. Dept. of Energy

In a new twist to an existing ORNL technology, researchers have developed an electrocatalyst that enables water and carbon dioxide to be split and the atoms recombined to form higher weight hydrocarbons for gasoline, diesel and jet fuel.

The technology is a [carbon](#) nanospike catalyst that uses nanoparticles of a custom-designed alloy, which has been licensed by California-based Prometheus Fuels. The spiky textured surface of the catalysts provides ample reactive sites to facilitate the [carbon dioxide](#)-to-hydrocarbons conversion.

"This cutting-edge catalyst will enable us to further lower the price of our zero net carbon fuels," said Rob McGinnis, CEO and founder of Prometheus.

The company plans to use the technology in its process for converting electricity from solar and wind into [chemical energy](#) to make zero net carbon electrofuels.

The carbon nanospike catalyst [was invented](#) using a one-of-a-kind nanofabrication instrument and staff expertise at ORNL's Center for Nanophase Materials Sciences.

Provided by Oak Ridge National Laboratory

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