

## Science Exchange in Action



### NASA's Super-Black Carbon Nanotubes Developed through Science Exchange

NASA used Science Exchange to find the perfect partner for a new process of developing nanotube technologies.

"I am extremely impressed with the quality of the work performed and the professionalism of everyone involved."

– John Hagopian,  
NASA Investigator

#### THE CUSTOMER:

##### Going where no one has gone before, again

The National Aeronautics and Space Administration (NASA) is an independent agency of the United States Federal Government responsible for the civilian space program, as well as aeronautics and aerospace research. Discovered in 1991, carbon nanotubes exhibit an array of useful electronic, magnetic and mechanical properties, and have many applications in NASA's research.

#### THE CHALLENGE:

##### What's blacker than black?

As a part of their efforts to push the limits of mankind and invent new materials and processes, NASA must often collaborate with multiple, global partners. They were searching for a partner to augment their own abilities and enhance their effort to increase the blackness of their carbon nanotubes. In order to achieve these unique spectral properties, a uniform film of nanoparticles or iron oxide needed to be meticulously and uniformly applied to the nanotubes.



## THE SOLUTION:

### **At their fingertips, on the other side of the world**

The NASA team was able to submit an open RFQ on the Science Exchange marketplace and quickly identify a capable provider, the Melbourne Centre for Nanofabrication (MCN), based on the MCN's expertise and novel deposition platforms. With robust collaboration and security built into the Science Exchange marketplace, what resulted was an ideal overseas partnership to develop NASA's intricate nanotubes.

## THE OUTCOME:

### **A match made in the heavens**

A new and emerging technique called Atomic Layer Deposition was perfect for this procedure, and the specialists at MCN and NASA see it as an important innovation in nanotube development. NASA intends to continue the collaboration via Science Exchange and look for additional opportunities to leverage MCN's capabilities to increase the speed of technology development.