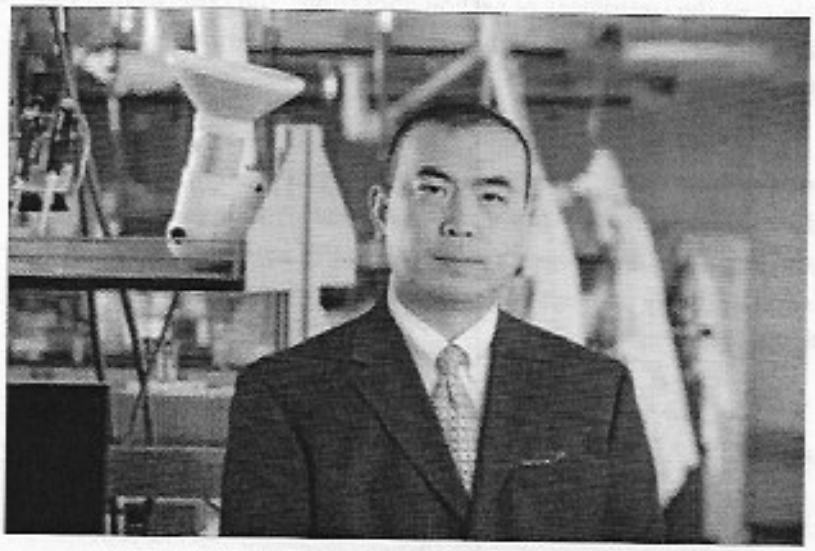
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New study is a step toward creating planes that travel at hypersonic speed

(*Nanowerk News*) An average flight from Miami to Seattle takes about six hours and 40 minutes, but imagine being able to reduce that time to 50 minutes or less. A recent study (*Scientific Reports*, "Quantitative Characterization of Structural and Mechanical Properties of Boron Nitride Nanotubes in High Temperature Environments") by researchers at NASA and Binghamton University, State University of New York, could lead to a drastic decrease in flight times.

The study, funded in part by the U.S. Air Force, is one of the first steps toward the creation of planes able to move at hypersonic speeds, five to 10 times the speed of sound.

There are currently quite a few obstacles when it comes to building these super planes, said Binghamton University Associate Professor of Mechanical Engineering Changhong Ke. The first of which is finding a material that can hold up to hypersonic travel.



Associate Professor of Mechanical Engineering Changhong Ke, Binghamton University.

"Our study used what are called boron nitride nanotubes (BNNTs). NASA currently owns one of the few facilities in the world able to produce quality BNNTs," said Ke. Typically, carbon nanotubes have been used in planes for their strength -- they're stronger than steel -- and their ability to conduct heat. However, BNNTs are the wave of the future when it comes to air travel.

"While carbon nanotubes can stay stable at temperatures up to 400 degrees Celsius, our study found that BNNTs can withstand up to 900 degrees Celsius," said Ke. "BNNTs are also able to handle high amounts of stress and are extremely lightweight."