

ADA Technologies Receives Contract for Morphing UAV Wing Skin Research

Denver, CO (February 2, 2010): ADA Technologies, Inc. (ADA) received a \$100,000 contract from the United States Air Force to conduct early stage research on a new method of creating a wing skin for use on morphing unmanned air vehicles (UAVs).

Much like a bird, morphing UAVs have the ability to dramatically alter their wing shape during flight to maintain optimal aerodynamic efficiency over a wide range of flight conditions. To perform, morphing wings skins must be sufficiently compliant to allow for substantial changes in wing shape, while having sufficient stiffness to carry aerodynamic loads.

Shape Memory Polymers (SMPs) show substantial promise in meeting these conflicting requirements due to their ability to quickly transition between rubber- and rigid-like behaviors through the application of heat. Efficient heat transfer within a timeframe that is consistent with UAV flight control needs is critical to the successful application of SMPs for morphing wing skins. Traditional resistive heating techniques have thus far proven unable to meet this requirement.

ADA's research will utilize the firm's nanotechnology, shape memory polymer and thermal modeling expertise to develop wing skins that are capable of rapid shape change enabled through highly efficient means of heat transfer.

"A key distinction of ADA's approach compared to prior work is the use of a novel approach to transmitting heat within a nanoparticle reinforced SMP wing skin. Specifically, our approach will improve the thermal conductivity at the interface between the nanoparticles and the SMP resin thereby increasing the heat transfer efficiency and ultimately the performance and effectiveness of the morphing UAV," said Steven Arzberger, Ph.D., ADA senior research scientist and project manager.

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