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# Super Fast Research

University of Dayton

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Friday December 1, 2017

## Super Fast Research

The Air Force Research Laboratory has awarded the University of Dayton Research Institute a \$9.8 million, three-year contract for research and development in materials and structures for reusable hypersonic vehicles.

Hypersonic vehicles, which travel at speeds faster than five times the speed of sound, experience significant thermal and aerodynamic loads, said Steven Olson, group leader for structures in the Research Institute's aerospace mechanics division, who will serve as principal investigator on the program.

"Designing vehicles that can survive extreme environmental stresses is critical but challenging, requiring unique structural configurations and advanced materials," Olson said. "Our role will be to focus on understanding the mechanical and thermal loads experienced by hypersonic vehicle structures, then work to identify the best materials and create preliminary designs for select airframe structures."

As the program progresses, researchers will perform experiments and analysis to verify performance of the aerospace structures.

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The Research Institute has a long history of developing and transitioning advanced materials and structures for aerospace, including work in exotic materials for a variety of high-temperature applications.

"There have been a number of advances in materials over the last several decades, particularly in the area of ceramics and ceramic matrix composites, that will make them particularly well suited for this type of application," Olson said. "The Research Institute will partner with the University of Tennessee and Purdue University, whose capabilities in aerodynamic modeling and wind tunnel testing complement our own capabilities."

Research Institute Director Allan Crasto said hypersonics is one of several targeted technology areas included in the Institute's new strategic plan, designed to serve as a blueprint for the organization's growth and expansion in significant fields of research for the coming decade and beyond.

U.S. Rep Mike Turner (R-Dayton) provided significant support in securing congressional funding for the program, Crasto said.

For media interviews, contact Pamela Gregg at [pamela.gregg@udri.udayton.edu](mailto:pamela.gregg@udri.udayton.edu) or 937-229-3268.

Photo Credit: UDRI. Steve Olson holds a 3D printed model of a hypersonic vehicle.

Research Institute's Energy Experience Center. The 6 kW turbine, valued at more than \$25,000, was donated by OGW Energy Resources of Tipp City.

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