

CU selected for NASA/DOD launch vehicle research project

By David Brand

For the first time NASA and the Department of Defense (DOD) have elected to fund engineering research and development centers in universities. On June 12, as part of this new thrust, the agencies said they were establishing seven University Research, Engineering and Technology Institutes (URETI), one of which will involve Cornell researchers.

Each institute will carry out research in an area of long-term strategic interest, such as aeropropulsion and power, and nanoelectronics and computing. Another such area is that of third-generation reusable launch vehicles that would replace the space shuttle. The University of Florida and the University of Maryland were selected to lead two URETIs to develop this area of technology.

Cornell will receive about \$500,000 a year from NASA and the DOD's Research and Engineering Office to work with the University of Florida URETI in vehicle life prediction and health management.

Research team members at Cornell include Anthony Ingrassia, the Dwight C. Baum Professor of Engineering, and Katerina Papoulia, assistant professor, both in the Department of Civil and Environmental Engineering; and Leigh Phoenix, professor, Alan Zehnder, associate professor, and Herbert Hui, professor, all in the Department of Theoretical and Applied Mechanics. Ingrassia will be co-principal investigator and associate director of the project.

The Cornell team's responsibilities in the research will include:

- Life prediction of composite structures for ultrahigh reliability in support of NASA's goal of less than one crew loss per million reusable launch vehicle missions.
- A third-generation fatigue/damage simulator, using high performance, parallel supercomputing at Cornell Theory Center's computing cluster.

Syracuse University and Cornell currently are receiving \$1 million annually from NASA for the Advanced Interactive Discovery Environment (AIDE) for Engineering Education project. AIDE and the URETI collaboration "will allow us to expand and enhance the web-based, collaborative design education environment to other schools on our team and to middle and high schools," said Ingrassia.

The Cornell and Syracuse collaboration allows students at the two universities to contribute to the virtual design of a future reusable space vehicle. NASA and the DOD said the university collaborations will provide support for undergraduate and graduate students, curriculum development, personnel exchange, learning opportunities and advanced scientific and engineering concepts for the aerospace workforce.

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