

## **Department of Energy awards UF \$800,000 to improve nuclear power safety**

GAINESVILLE, Fla. — The nuclear engineering program in the University of Florida's department of materials science and engineering was recently awarded an \$800,000 research grant by the U.S. Department of Energy.

As part of DOE's ongoing commitment to support university-led nuclear research and development, the department is awarding a total of \$19.9 million in fuel cycle research and development in 32 U.S. universities and colleges including the UF College of Engineering, the Massachusetts Institute of Technology and Case Western Reserve University.

"This grant recognizes the outstanding research that is being conducted at the University of Florida's Laboratory for Development of Advanced Nuclear Fuels and materials," said James S. Tulenko, professor emeritus in the nuclear engineering program and principal investigator on the grant. "We aim to make strides in making nuclear fuel a safer and more efficient energy for America and the world."

Tulenko is an expert in nuclear fuel processing and performance, engineering application of radioisotopes, nuclear fuel cycle economics, radioactive wastes, reactor analysis and system analysis.

Tulenko and his team will study the use of diamond nanoparticles composite material on fuel pellets to improve the thermal conductivity of the nuclear fuel resulting in reduced fuel temperatures, fuel thermal expansion, thermal cracking and fission gas releases. This would produce a better performing, higher burn-up and more accident tolerant fuel. The research team has extensive experience in researching nano-diamond particles as an addition to the reactor coolant for improved plant thermal performance. Additionally, an economic study of the benefit resulting from the higher discharge burn-up expected with this fuel will also be conducted.