Lunar oxygen project begins

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Florida Tech is collaborating with British Titanium, Cambridge University and the Kennedy Space Center on a NASA-funded project to produce oxygen from the Moon's regolith (top soil covering solid rock). The goal of the study ultimately is to produce oxygen on the moon using the FFC Cambridge process, which uses electrochemical reduction of metal oxides in a molten salt electrolyte. Liquid oxygen is by far the largest component of rocket fuel, forming as much as 85 percent by weight. Its production on the moon would enable rockets to re-fuel on their way to far-flung corners of the earth's solar system.

The total budget for phase 1 of the project, titled, "ILMENOX," is $1.8 million with British Titanium serving as the primary contractor on the award. Initial phase 1 financial support to Florida Tech is $430,000.

Project director is Dr. Derek Fray. He is a co-inventor of the FFC Cambridge titanium electrolytic production process, head of the Department of Materials Science and Metallurgy at the U.K.'s University of Cambridge and chief science officer for British Titanium. Florida Tech's Dr. Jonathan Whitlow, associate professor of chemical engineering, is Florida Tech's principal investigator on the project. Since 1998 he has conducted research with NASA support on In-Situ Resource Utilization (ISRU) from resources on the moon and in the Martian atmosphere.

"Locally produced oxygen for rocket propulsion promises by far the greatest cost and mass savings. It is crucial to achieving a sustained and affordable human robotic program to explore the solar system and

beyond," said Whitlow.

The FFC process will possibly produce lower cost metals on earth, most notably titanium. According to Whitlow, "The use of this technology on the moon for ISRU is promising because it has the potential to extract virtually all of the oxygen from the lunar regolith at temperatures lower than competing processes, which have less extraction efficiencies."

Manned space missions received presidential support in Jan. 2004 when George W. Bush announced plans to send an expedition to the moon by 2015.

Source: Florida Institute of Technology