Along with lunar, planetary and asteroid scientists, space resource advocates are conceiving new exploration approaches and advanced technology concepts under a paradigm in which scientific advancement helps to identify resources, and resources enable scientific exploration.

NASA’s *Life in the Atacama*, or LITA, team is making plans to return to the Chilean desert in 2015 to conduct more tests of sample-collection technologies. In 2013, Honeybee Robotics deployed a fully robotic 1-meter-long drill in the Atacama on a Carnegie Mellon University-designed rover called Zoë. The 10-kilogram LITA drill captured samples from target depths and delivered them to a carousel for analysis by instruments that included a Raman spectrometer. In 2014, Honeybee also tested the LITA drill in the Mojave Desert. LITA is part of NASA’s Astrobiology Science and Technology for Exploring Planets program.

Deltion Innovations Ltd., a maker of space mining equipment, moved from a location in Sudbury, Ontario, to a newly acquired 28,000-square-foot facility located approximately 30 kilometers away in Capreol, Ontario. This move will allow the company to expand its labor force as the need arises over the next couple of years.

Deltion and the Colorado School of Mines are planning the May 2015 Planetary and Terrestrial Mining Sciences Symposium/Space Resources Roundtable in conjunction with the Canadian Institute of Mining Annual Convention, with the intention of promoting space resource utilization to the terrestrial mining industry. The institute has over 14,000 members from all sectors of the mining and petroleum industries.

Researchers from the Center for Space Exploration Technologies Research at the University of Texas at El Paso investigated extracting water from lunar polar regolith using a concept, proposed by ExoTerra Resource, involving beaming power from solar concentrators to regolith in shadowed craters. The researchers developed regolith heat-transfer models and validated their modeling using laser beams to simulate concentrated solar power.

Planetary Resources Inc.’s demonstration satellite, *Arkyd 3*, was among the payloads destroyed when an Antares rocket failed in October. The plan was to deploy the satellite from the International Space Station’s Japanese airlock to test avionics and failure points for PRI’s Kickstarter-funded Arkyd tele-

Crowd-funding, tool tests to clear way for space resource collection

*by Kurt Sacksteder*

The Space Resources Technical Committee advocates affordable, sustainable human space exploration using non-terrestrial natural resources to supply propulsion, power, life-support consumables and manufacturing materials.

Carnegie Mellon’s Zoë rover.

LITA drills in the Atacama Desert.