

**Project Title: Lunar ISRU Experimental Apparatus**

**Position Sought: Student researcher**

**Majors: Aerospace, Electrical, or Mechanical Engineering**

**Skills Required: Strong lab skills, mature and responsible.**

**Level Sought: Jr./Sr., or just graduated.**

**Description of Work:**

Packer Engineering in Naperville is building two experimental prototypes under a NASA grant. The first is an apparatus to produce oxygen from lunar regolith using a patent pending method we've developed (a former ISGC intern is a co-inventor on that patent application). The second is a device to be flown in a reduced gravity aircraft advancing a related experiment we ran in 2009 (another former ISGC intern built that fixture). The 1/6 gravity test should produce samples we cannot fabricate in earth's gravity. These samples will then be placed in the oxygen extraction prototype to show how we can isolate this exceedingly valuable element on the moon.

Help is needed in finalizing the assembly of each, running characterization experiments, and helping the team to make a few lungfulls of O<sub>2</sub>. The student researcher will spend 10 weeks on-site, starting as early as possible so we can meet program deadlines. One team member is a former ISGC intern, distinct from the other two mentioned, who is submitting a conference paper as lead author based on his work during summer 2010.

In addition to this specific project, Packer Engineering has an extensive intern program for college students – last year we had 18. The selected student will be part of the intern group as they visit local technology companies, participate in team activities, and hold social events. There is also the opportunity to mentor and supervise high school interns, who work on directed research projects related to the work done by college interns. Many of our student projects turn into published technical papers, successful research grants, and inventions.

For this project we need a hands-on person with a strong academic record who is comfortable working on a team and individually. This work is at the cutting edge of lunar in-situ resource utilization (ISRU), in which Packer Engineering is developing a strong reputation, partly due to excellent work by Space Grant interns over the last five years. Our long-term goal is to build the first lunar factory.