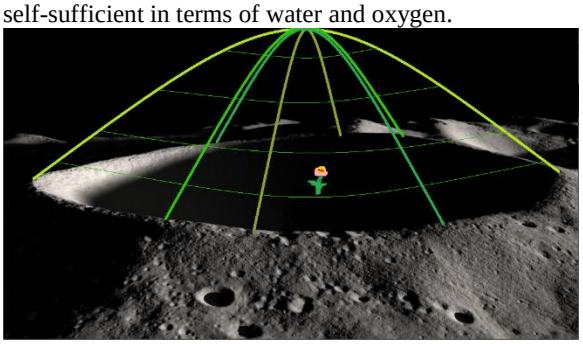
THE FUTURE LUNAR FLORA COLONY. E. Goel[1] and Dr. U. Guven[2], [1]University of Petroleum and Energy Studies, India (enagoel269@gmail.com), [2]UN CSSTEAP, United States (drguven@live.com).

Introduction: Missions of sample extraction to those of manned landings have been proposed since man extended its outreach to the Moon. The Moon offers a varying landscape and environment with no atmosphere or magnetic field unlike the Earth. The lunar regolith varies throughout the surface of the moon with depths and composition. A site nearby the poles, receiving adequate amount of sunlight throughout the year, holding adequate amount of micrometeorites on the surface will be good choice to start a lunar colony, setting up a flora community primarily. Micrometeorite rich surface will fuel the Iron oxide and Hydrogen ion reaction to produce water vapor, sunlight directed and stored in the right amount will drive the photosynthesis and close to poles site will ensure water availability in case of emergencies. This paper lays out a constructional design for the establishment of a lunar colony using the micrometeorite regolith and space technology input from Earth. Near pole craters covered with an inner concave surface dome such as those used on Earth's greenhouse buildings will be useful to store sunlight for the process of photosynthesis. The dome will be required to sustain condensation of the water vapors produced by the Iron and Hydrogen reactions taking place on the regolith. The utilization of the iron oxide and hydrogen reaction to extract water has also been discussed. Stored sunlight, condensed water and bio-manure from Earth will complete the ingredients for setting up the flora colony. The oxygen thus produced can be channeled to a human base. This set up will help future colonization missions on the moon and can be viewed as a potential source of water and oxygen for the human outpost on the Moon, the celestial body closest to home. If established, a colony based on this design shall be capable of making Moon self-sufficient in terms of water and oxygen.



Iron Oxide and H^+ ion Reaction: The Solar wind implants hydrogen ions on and into the regolith. Processing and reworking of regolith rich in micrometeorites triggers a melting reaction on the surface itself. This reaction employs the already present iron oxide to react with the hydrogen ions and produces water vapor. Sub microscopic metallic iron grains are formed thereafter in the resulting agglutinate. This output can be used to extract the water vapor. The Luna 16 and Luna 20 missions reveal that FeO is the second most abundant compound by mass when the regolith was tested for chemical composition.

References: [1] Allen C.C. et al. (1996), *J. Geophys. Res.* 101. 26,085-26,095. [2] Denisov A.N. et al. (2011). *Acta Astronautica*, 68, 1440–1447.