"Towards an Earth-Moon Economy - Developing Off-Planet Resources"

Moon Miners' Manifesto

INDIA BULLETIN

www.moonsociety.org/india/bulletin/

M3IB #1 - 29.01.2010 - SEDS India Conference 2010 Update

SINC10 moves to VIT, April 10-11

As any conference chair soon finds out, that precious advance "lead time" (pronounced leed) all too soon turns to "lead" (pronounced led as in the metal, workable, but barely.)

SEDS India has decided to postpone SEDS India National Conference by several weeks, and to change the venue from Veltech University campus in the outskirts of Chennai, **back to Vellore Institute of Technology** (VIT) in Vellore, where a very successful event was held last year.

Vellore is 130 km west of Chennai, and 180 km east of Bengaluru [Bangalore]. VIT is in Katpadi, just across the Palar River from Vellore proper.

http://www.vit.ac.in/informationfor/location.asp

The Conference Program (unofficial)

NAKSHATRA 3.0

Nakshatra 3.0 is a platform where you can use all your wacky theories and creative ideas to resolve technical conflicts. Nakshatra is the Paper presentation event of SINC'10. And for the first time it brings to all the biology students- topics on astrobiology. Abstracts for Papers are invited on the following topics:

1. **Environment friendly rocket propulsion:** Be the pioneers of eco-friendly rocket propulsion in India! Every launch leaves a huge cloud of exhaust and nasty chemicals in its wake. Environment- friendly rocket fuels have made a number of advances in recent months. So come up with your own ideas of designing an alternative and economical rocket propulsion system. Fuel a cleaner, more efficient rocket launch!
2. **Disaster, detection, mitigation and management through space technology:** Space technology plays a central role in providing early warnings to the risk-prone communities. Propose innovative ideas that use space technology-based solutions to increase awareness build national capacity and also develop solutions that are appropriate to the needs of the developing world.
3. **Extra terrestrial mining:** Develop a mechanism for active identification and mining of planetary bodies, for commodities ranging from metals to water, those which may be realized from a dormant comet or any other heavenly body.
4. **Advanced material used in space technology:** Potential space structures of the future will have extremely demanding goals in performance, reliability, and affordability. Give details of advanced materials which may be able to tolerate extreme conditions in space and can be used in futuristic space applications.
5. **Astrobiology:** This is a wide and general topic which focuses on issues like possibility of life on other planets, health and nourishment of astronauts in space, growth of flora and fauna in space and effect of zero/micro gravity on growth of living cells. Let your imagination run wild and come up with feasible ideas that are proportionate for mankind's future dominance of space!

STAR HUNT: For the first time a space hunt on computer. Participants will be provided with a set of questions. The answers to these questions can be found using Stellarium. All you have to do is get the right answers and find the celestial object's azimuthal angle in the night sky using the stellarium software. This event will check your knowledge on astronomy.

ORNITHOPTER: What is an ornithopter? An ornithopter is a device that flies by flapping its wings - just like a real bird. How is it different from an airplane or helicopter? Those machines are driven by rotating airfoils. In an ornithopter, the driving airfoils have an oscillating motion instead. This imitates nature, because no animals have any rotating parts. In fact, most ornithopters produce lift in the same way as an airplane, relying on their forward motion through the air. Also like an airplane, lift and thrust functions are separated. Flapping wings are potentially more fuel-efficient than rotary-driven aircraft.

Ornithopter Event: This is a workshop being conducted for the first time in SINC. We will provide you hands-on experience of building an ornithopter. Videos of ornithopters built around the world will be screened, after which the basics of flight mechanisms will be taught, along with details about the various kinds of materials used, the procedure for assembling all the raw materials together with necessary video grabbing and footage. All in all, a wholesome interactive session, eventually making you the proud owner of your own flying ornithoper!

Galileoscope Workshop 2.0: This workshop will explain the basic construction and working of various telescopes. The only requirements for this workshop are your interest, enthusiasm and curiosity, and we will provide you with knowledge and advice to help you make your own telescope! It is being conducted by the experts from the Bangalore Astronomical Society.

Rock-it! 2.0

Problem: Design, build, and launch a water jet rocket. It should return its payload (a raw egg) to Earth safely.

Introduction:

1. The four basic parts of any transportation system are: guidance, propulsion, payload and recovery techniques.
2. Newton's Third Law of Motion says, "For every action there is an equal, but opposite reaction."
3. Aerodynamics is the study of how things are affected by the flow of air around them.

Note:

- Participating teams are supposed to test their rockets before launching them at the conference
- The maximum number of participants in a team is 3.

Specifications:

1. It should be a Water Propelled Rocket. Electronics might be used for payload detachment.
2. The protection for egg should have maximum thickness of 5mm.
3. The result must be a space transportation vehicle capable of carrying a payload (the egg).
4. The vehicle must include guidance, propulsion, payload, and recovery systems.
5. The team is also supposed to develop their own launch pad.
6. The rocket must launch as one complete unit, but may come down as separate pieces.
7. On launch day, the rocket will be launched once and it will be judged on the time of flight. When the rocket is recovered, the payload will be inspected for damage.
8. The maximum working pressure of the rocket is 8atm(0.8megapascals)(120psi).
9. The weight of the rocket should not exceed 1000 gms (dry weight).
10. The dimensions of the nozzle would be updated on the website soon

SAFETY CODE :

(i) The rocket would be tested for 150% of the specified pressure limit in the design a day before the event. If it fails to meet the specification mentioned, the team would be disqualified.

(ii) High Pressure cylinder (N2) with pressure regulator will be provided for filling.

(iii) Participants should bring their own protection gadgets.

Moon Specific Events

Visionary India: Student Payloads for Chandrayaan-2. This is an inimitable event, where participants are required to present their own ideas for a payload for Chandrayaan-2. With Chandrayaan-1 completing 95% of its mission objectives (detecting evidence of water on the moon being the most sensational one) it opens the door for newer possibilities of India's venture into space. Chandrayasn-2 will deliver two rovers to the lunar surface. Come up with ideas and design of a payload for exploring the lunar surface. Among the varied types of payloads that can be deployed think of the most innovative and futuristic one, think differently!!

LUNAT TREK 2.0

Extolling the thumping success of the Indian Space Program (ISRO), this has further consolidated its esteemed position in the global space race and with future in perspective; SEDS-India announces **the second National Level Moon Rover Competition**.

This calls for all the budding engineers whose mind's eye flutters past the starry firmament, to demonstrate their aptitude in fabricating a rover that zooms on the rugged Lunar Terrain.

SEDS-India takes pride in contributing to the vision of Mr. Madhavan Nair whose vision to launch a rover to the moon bore fruit in the form of Chandrayaan-II (whose two landers have been based on a Russian design).

Some of the most challenging chores for the rover are maneuvering the rough and unknown terrain, rock samples collection and analysis, transmitting and receiving data, etc.

In this scenario, a rover's efficiency is tested in transporting a rock sample to a designated spot through the uneven course.

Problem Statement: The rover is required to steer through the uneven terrain to place a rock sample (2 inches x 2 inches x 2 inches) that it is carrying in the predefined test facilities where they shall be analyzed.

NOTE: Apart from this we will have many guest talks and presentation. One of this would be a talk on LARGE by MOON Society.

Vellore Inst. of Technology http://www.vit.ac.in/

SEDS India
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