

Report on Innovation and Incubation Center

“Necessity is the mother of invention” is an English-language proverb. It implies that when something is essential for the survival, the human mind finds some way or the other to attain it. Innovation and Incubation Center in CUTN facilitates to create innovative ideas and inventions that can solve the problems of the humanity and translates benefits to the society. This report is designed to showcase a recent effort by SCANMAT Center, CUTN on an innovative idea that make human race multi-planetary beings which also won Google Lunar XPRIZE.

Sustainable life on Moon – An interplanetary mission of two CUTN students.

The project work of Mr. Santhosh Roychowdhary and Ms. Sukanya Roychowdhary, the two sibling-students from SCANMAT (Simulation Centre for Atomic and Nanoscale MATerials), was selected for the international contest which plans to take a miniature lab experiment to the moon. The team Indus’ Lab2Moon contest received more than 3,000 entries all over the globe. From these, two of them were selected and the team of Santhosh, Sukanya and Autumn Kelsea Conner, a final year computer system engineer from the Arizona State University (ASU) titled as “team ZΩI” won the chance to send their project to the Moon.



The team Indus, a space tech startup based in Bengaluru, has already secured a launch contract from the Indian Space Research Organization (ISRO) and will launch our experimental module in the PSLV vehicle by the end of 2017. It is the lone Indian team that is participating in the Google Lunar XPRIZE contest that awarded \$30 million for the winning team. As a part of the contest, teams have to send their lander to the moon, deploy a rover which travel 500 m on the surface, take high definition photos and videos and beam it back to earth etc.



The team ZOI worked under the guidance of Prof. P Ravindran, Head SCANMAT, at CUTN. The miniature lab that the team created encompasses “Extremophile cyano” a bacteria which can withstand the harsh conditions in the outer space. The specialty of the bacteria is that it can do the photosynthesis which is the basis for sustainable life in outer space. The team’s ultimate aim is to help the humanity to become an interplanetary species. The success of this project will make sure that the photosynthesis can be performed on moon and thus the

sustainability of life. As the climatic conditions on Mars are more favorable compared to the conditions on Moon, if the bacteria can withstand the conditions of Moon then it can easily survive on Mars, which is considered as the man’s second favorite planet.

JOINT EFFORT

Students’ paper shortlisted for Moon project

EXPRESS NEWS SERVICE
@ Tiruvanur

THE project presented by the students of Central University of Tamil Nadu (CUTN) has found place among 25 short listed projects from 3,000 entries from 15 countries.

Student-siblings Santosh Roychowdhury and Sukanya Roychowdhury who completed their Integrated M Sc courses from the University partnered with Autumn Kelsea Conner, a final-year Computer System Engineer from the Arizona State University (ASU) to create a project for the international contest which plans to take a 250-gram student experiment to the Moon.

Team Indus’ Lab2Moon contest received over 3,000 entries from 300-odd cities in over 15 countries. Of these 3,000, as many as 25 projects were chosen for the prototype stage and the project by ‘Team ZOI’ consisting of Santosh, Sukanya and Autumn was one among them. From these teams, one prototype will be chosen and will be landed on Moon.

“Our project attempts to perform photosynthesis on Moon. It will be the first step towards cre-



Vice Chancellor of Central University of Tamil Nadu A P Dash (second from right) felicitating students whose project was shortlisted for Lab2moon contest | EXPRESS

ating sustainable life there,” said Santosh whose team works under the guidance of Professor P Ravindran, Head of the Department of Materials Science, CUTN.

“Photosynthesis is the basis of life on Earth. Plants do it with sunlight, water and carbon-dioxide with chlorophyll as catalyst. However, Moon is a different story. It has no atmosphere and manifests harsh climatic conditions that makes it difficult for life to sustain. Gravity is low but the radiation levels are high,” he added. “Most organisms will die on Moon. So, we chose a bacteria

called Extremophile cyano that can withstand such harsh conditions. It will carry out photosynthesis there,” said Sukanya. Explaining their project Santhosh said, “Our polycarbonate capsule, just 110 mm in height is a micro-lab. Its upper compartment that is just 4 cm long will house nine sensors, a micro-camera and a mini-computer that will beam videos and data of the experiment back to Earth after its launch,” he added.

“We are working in the university and building the capsule while Autumn is collaborating with us from ASU. Our project is

inter-disciplinary and hence, the team has been taking advice from experts across the globe,” Santosh said.

“If we succeed with photosynthesis, then we can move on to bigger such experiments and think of sustaining larger plants and organisms in capsules on Moon,” asserted Professor P Ravindran. He further added Santosh would be working in an Indo-Norwegian project in the department to pursue his Ph.D., after the Lab2Moon project.

Team Indus, a space tech startup based in Bengaluru, had already secured a launch contract from the Indian Space Research Organisation (ISRO) and will launch the vehicle by 2017-end.

The team from CUTN is the lone Indian team participating in the Google Lunar XPRIZE contest that will award \$30 million for the winning team. If selected, theirs will be the first student project to be sent to the Moon. Santosh and Sukanya took four months to transform their idea into a prototype which in itself is a feat said Professor Ravindran who also thanked the university and vice-chancellor Professor A P Dash for their support.



The polycarbonate capsule which is 110 mm tall and weighs 250 grams, is a micro lab that contains 9 sensors, a micro camera and a mini computer apart from the colony of the bacteria. The sensors will monitor the conditions of the bacteria and the camera and the mini computer is incorporated in order to feed live videos to earth. Both Santosh and Sukanya after completing their master studies, stayed back at the university and started their dream project with the guidance of Prof. P Ravindran. They designed and constructed the capsule and the electronic part were handled by Autumn Kelsea Conner from the ASU, USA. According to Prof. Ravindran, if the mission is successful, then this will be a revolutionary initiative for the mankind towards becoming a multi planetary species.



Calcutta siblings put mind to moon and metal

- Experiment designed by brother-sister duo chosen for Google Lunar XPRIZE mission



Brother-sister duo Santosh and Sukanya Roychowdhury with their American collaborator Autumn Kelsea Conner. Picture courtesy: Santosh and Sukanya@Byline:DEBRAJ MITRA

June 26: An experiment designed by two heavy metal-loving Calcutta siblings and an American research scholar has won a ticket to the moon aboard an Indian spacecraft-cum-rover priming for Google's global space exploration challenge.

Brother-sister duo Santosh and Sukanya Roychowdhury and their American collaborator Autumn Kelsea Conner have built a specialised container that would be carrying photosynthetic bacteria to the lunar surface to see if the organisms are able to produce oxygen on the moon.

We are in the process of collecting innovative project proposals from students to make our campus clean and green. Students can send a one page write up on his/her new ideas which can be implemented to make a better campus. The theme is "Sustainable Technology for Making a Clean and Green Campus" Awards will be given for the best ideas/design that can be adopted in CUTN. Also, some of the best innovative ideas/design may be sent to national/international level competition.