

Probe will bring back moon rocks and soil

Chang'e 5, China's newest lunar probe, will bring 2 kilograms of lunar soil and rock samples back to Earth before the end of 2017, the project's chief said Thursday.

"The monthlong Chang'e 5 mission will be the most sophisticated lunar expedition China has ever made," Hu Hao, director of the national Lunar Exploration Center, told China Daily. "It will face a lot of challenges such as the great number of demanding maneuvers and the complicated condition of its landing site."

The center is under the State Administration of Science, Technology and Industry for National Defense.

Hu said that Chang'e 5 will be launched atop a Long March 5 heavy-lift carrier rocket at the Wenchang Space Launch Center in Hainan province.

The 8.2-metric ton probe has four components, an orbiter, lander, ascender and re-entry module. After the probe reaches lunar orbit, the components will separate into two parts, with the orbiter and re-entry module remaining in the orbit while the lander and ascender descend toward the moon's surface, Hu said.

The lander and ascender will make a soft landing – using small rockets to slow descent – and get to work of such tasks as using a drill to collect underground rocks and a mechanical arm to gather lunar soil.

After two days, the ascender's rocket will elevate it to lunar orbit to dock with the re-entry module. It will transfer lunar samples to the module, which will carry them to Earth. The samples are to be distributed to scientists around the country for research.

If the mission is successful, the third phase of China's lunar exploration program will be finished ahead of schedule, Hu said, also a deputy to the 12th National People's Congress. The third phase is to be concluded before 2020, according to earlier plans.

China's most recent lunar mission took place in December 2013 when the Chang'e 3 probe carried the nation's first lunar rover, Yutu or Jade Rabbit, to the moon. The mission marked the mankind's first soft-landing on the moon in nearly four decades.

Chang'e 3's success marked the completion of the second phase of China's lunar exploration program. It followed the successful Chang'e 1 mission in 2007 and Chang'e 2 in 2010.

Designers and engineers are now carrying out tests on Chang'e 5 and work is proceeding well, Hu said.

The Chang'e 5 mission will pave the way for the nation's future manned expedition to the moon, Hu said.

Ye Peijian, one of China's leading space scientists, told Xinhua News Agency on Wednesday that the fourth phase of the country's lunar exploration program will unfold in 2018 as the Chang'e 4 probe will be launched to carry out the world's first soft-landing on the far side of the moon. He added that China also plans to explore the two lunar poles in the near future.

[Fossils point to life on Earth 4 billion years ago](#)

Tiny fossils that scientists say are the oldest ever found offer evidence of life on Earth 3.8 to 4.3 billion years ago, when our planet was still in its infancy, researchers reported on Wednesday.

Even at the more primitive end of the spectrum, "the microfossils we discovered are about 300 million years older" than any runners-up, said Dominic Papineau, a professor at University College London, who made the discovery.

Dating puts the fossils "within a few hundred million years" of the formation of the solar system, he said.

The results were published in the peer-reviewed journal Nature.

The emergence of life not long after Earth formed would suggest it also could emerge on watery worlds outside our solar system at comparable stages of formation, the scientists said.

"If life happened so quickly on Earth, then could we expect it to be a simple process that could start on other planets?" asked the lead author, Matthew Dodd, a graduate student at the London Centre for Nanotechnology.

Earth and Mars are believed to have had liquid water on their surfaces at the same time, he noted.

"We could expect to find evidence for past life on Mars 4 billion years ago," Dodd said.

But it may be that Earth was "just a special case", he added.

The tiny fossils – half the width of a human hair and up to half a millimeter in length – take the form of blood-red tubes and filaments formed by ocean-dwelling bacteria that fed on iron.

Locked inside white, flowerlike quartz structures known to harbor fossils,

they were found along what were once warm-water vents on the ocean floor, most often in deep waters.

Such iron-rich, hydrothermal systems still exist and are home to bacteria that may be similar to those unearthed by Dodd and his colleagues.

The site of the discovery, the Nuvvuagittuq Supracrustal Belt in Canada, contains some of the oldest sedimentary rocks known on Earth.

Scientists say they formed between 3.77 and 4.29 billion years ago, and may have been the habitat for the planet's first life-forms.

It is still not known when, or where, life on Earth began, but these deep-sea vents are seen as a good candidate.

Earth is thought to be about 4.57 billion years old, scientists said.

China launches experiment satellite 'TK-1'

China on Friday launched an experiment satellite, "TK-1", from northwestern Jiuquan Satellite Launch Center.

The satellite, carried by the rocket "KT-2", blasted off from the launch center at 7:53 a.m. Friday, and it later entered its intended orbit.

"TK-1" is the first satellite independently developed by China Aerospace Science & Industry Corp. (CASIC) and will be used for remote sensing, telecommunications and experiments in minisatellite-based technologies.

The "KT-2" rocket is one of the five carrier systems in the CASIC commercial space plan. It features high carrying efficiency and adaptability, according to the CASIC.

Angela Rayner comments on reports the Government is set to accept Labour amendments on Children & Social Work

Bill

Angela

Rayner MP, Labour's Shadow Education Secretary, commenting on reports that the Government is set to accept Labour amendments on the Children and Social Work Bill, said:

"With the Bill back in the Commons next Tuesday, the Government must urgently clarify its position. If ministers are giving in to Labour's demands to abandon this dangerous proposal and accept our amendments, then that is good news for vulnerable children across the country.

"We need to learn the lessons from the terrible tragedies of the past. The protections that were recommended after the appalling cases of Victoria Climbié and Baby P need to be enforced, not weakened. There is nothing 'innovative' about allowing councils to 'opt out' of such basic requirements.

"These proposals should never have been made in the first place, and we will fight until they are removed."

Press release: Flood relief for villages in Worcestershire

Construction will start this summer on a £4 million flood storage area which will reduce the risk of flooding to nearly 300 homes and businesses in Broadway, Childswickham and Murcot.

The Environment Agency, Worcestershire County Council, Wychavon District Council, Broadway Parish Council and Childswickham Parish Council have been working in partnership and have now secured over £2 million Government Grant in Aid funding, enabling the scheme construction to begin. The Environment Agency's English Severn and Wye Regional Flood and Coastal Committee have also contributed over £1 million. To enable access to the Government Grant in Aid funding under Defra's Flood Partnership Funding Model, Worcestershire County Council and Wychavon District Council are contributing £555,000 and the local parishes have raised £312,000.

Broadway, Childswickham and Murcot were severely flooded in 2007 following record breaking rainfall across the area. The new flood storage area in Broadway will be able to hold up to 135,000 cubic metres of water during times of flood and will only allow a set amount of water to flow downstream at times of intense and high rainfall. This will reduce flood risk along the Badsey Brook downstream of Broadway.

The English Severn and Wye Regional Flood and Coastal Committee (RFCC) continues to support the scheme and provided funding which allowed the Environment Agency to purchase the 18 acre field where the majority of the flood storage area is to be located.

As a condition of the planning application detailed archaeological investigations, part funded by Worcestershire County Council, are being carried out. This involves excavation work and will reduce the risk of delays during construction. These ground works are almost complete.

Specialist contractors are currently on site carrying out tree clearance in preparation for the main flood scheme works.

Daniel Wilkinson, from the Environment Agency, said:

Flooding has a devastating impact on people's lives and livelihoods, so it's great that by working together with our partners we have managed to find a solution which means we are now one step closer to reducing the risk of flooding for residents living in Broadway, Childswickham and Murcot.

Cllr Anthony Blagg, Worcestershire County Council's cabinet member for environment, said:

Now that the archaeological work is nearing completion, this project can move on to the next stage and closer to protecting homes and businesses with this innovative flood alleviation scheme.

Cllr Emma Stokes, portfolio holder for environment and street scene on Wychavon District Council, said:

It's almost 10 years since the floods of 2007 but none of us will forget the devastating impact they had. This scheme will help reduce the risk of future flooding and provide greater protection to communities in Broadway, Childswickham and Murcot.

Kevin Beasley, from Broadway Parish Council, said:

We are very pleased that the flood alleviation scheme is progressing well and that the residents of both Broadway,

Childwickham and Murcot will be more reassured that the properties are safer from flooding and the devastation that they have previously experienced, once the work is completed.

County Cllr for Broadway in Worcestershire, Liz Eyre BEM, said:

This project represents an enormous amount of hard work behind the scenes. I am simply delighted that sticking by the project, working with talented county and district officers at all levels and the Environment Agency has led to this, a real outcome for my residents.