

NASA's 'Chemical Laptop' to search for alien life

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Washington: NASA engineers are working on a unique "Chemical Laptop" - a portable, miniaturised laboratory that can help astronauts analyse samples for presence of life on the spot as they enter the alien world.

Being developed at NASA's Jet Propulsion Laboratory (JPL) in Pasadena, California, the device will help astronauts look for the signatures of life on another world, including Mars.

"If this instrument were to be sent to space, it would be the most sensitive device of its kind to leave the Earth and the first to be able to look for both amino acids and fatty acids - the building blocks of life," said Jessica Creamer, NASA post-doctoral fellow based at JPL.

The "Chemical Laptop" is a on-the-go laboratory which researchers hope to send one day to another planetary body such as Mars or Europa.

It is roughly the size of a regular computing laptop, but much thicker to make room for chemical analysis components inside.

But unlike a tricorder seen in the movie "Star Trek," it has to ingest a sample to analyse it.

"Our device is a chemical analyser that can be reprogrammed like a laptop to perform different functions," added Fernanda Mora, a JPL technologist.

As on a regular laptop, we have different apps for different analyses like amino acids and fatty acids, he added.

Amino acids are building blocks of proteins, while fatty acids are key components of cell membranes.

Both are essential to life, but can also be found in non-life sources and the "Chemical Laptop" may be able to tell the difference.

If a test found a 50-50 mixture of left-handed and right-handed amino acids, we could conclude that the sample was probably not of biological origin.

"But if we were to find an excess of either left or right, that would be the golden ticket. That would be the best evidence so far that life exists on other planets," Creamer noted.

When the laptop is set to look for fatty acids, scientists are most interested in the length of the acids' carbon chain. This is an indication of what organisms are or were present.

Coming up is a test in the Atacama Desert in Chile, with collaboration from NASA's Ames Research Center, Moffett Field, California.

"This could also be an especially useful tool for icy-worlds targets such as Enceladus and Europa. All you would need to do is melt a little bit of the ice, and you could sample it and analyze it directly," Creamer explained.

The "Chemical Laptop" technology has applications for Earth, too.

It could be used for environmental monitoring -- analysing samples directly in the field, rather than taking them back to a laboratory.

Uses for medicine could include testing whether the contents of drugs are legitimate or counterfeit, the statement added.

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