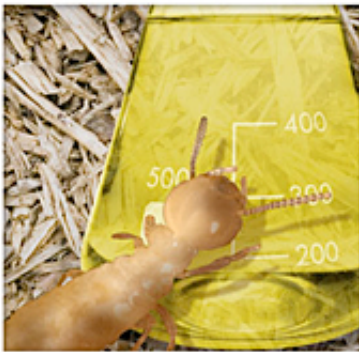


Invention could aid Mars probes' search for life

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The research identified in the ermite hindgut microbial community and their main processes.

The next generation of Mars rovers could have smaller, cheaper, more robust and more sensitive life-detecting instruments, thanks to a new invention by scientists at DOE's Idaho National Laboratory.

The INL team has come up with an efficient new way to generate complex electric fields, which will make it easier to direct [ions](#), or charged particles, along specified paths. The researchers just filed a patent application for their Total Ion Control (TIC) method, a key advance in the field of mass spectrometry.

[Mass spectrometry](#) allows scientists to determine the [chemical composition](#) of a sample. The technique is one of the best ways to find

signs of life, such as proteins and amino acids, on other worlds.

To move ions into a trap for analysis, most current mass spectrometers rely heavily on air flow created by pumps. But this system isn't ideal for [Mars rovers](#), because pumps are heavy and use a lot of energy. Ion inlets based on TIC technology can greatly reduce the need for pumps, getting good ion flow by generating versatile, intricate electric fields.

Tests at INL have shown that TIC-based inlets shepherd 10 times as many ions into the trap as commercially available inlets do. And TIC-based inlets weigh less than an ounce and require just 100 milliwatts of power at most — one thousand times less than a 100-watt light bulb.

ExoMars, a joint NASA-European Space Agency mission scheduled to launch in 2018, will put a rover down on Mars to look for signs of life. TIC-based ion inlets could well be on board; the INL researchers are currently talking to the makers of the ExoMars rover's mass spectrometers.

Source DOE/Pacific Northwest National Laboratory

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