

New evidence supports 19th century idea on formation of oil and gas

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An oil pump taps deposits of petroleum deep beneath the Earth. Scientists are reporting new evidence that oil may have originated from processes other than the decay of prehistoric plants. Credit: Wikimedia Commons

Scientists in Washington, D.C. are reporting laboratory evidence supporting the possibility that some of Earth's oil and natural gas may have formed in a way much different than the traditional process described in science textbooks.

Their study is scheduled for Nov./Dec. issue of ACS' *Energy & Fuels*, a bi-monthly publication. Anurag Sharma and colleagues note that the traditional process involves biology: Prehistoric plants died and changed into oil and gas while sandwiched between layers of rock in the hot, high-pressure environment deep below Earth's surface. Some scientists,

however, believe that [oil](#) and gas originated in other ways, including chemical reactions between [carbon dioxide](#) and [hydrogen](#) below Earth's surface.

The new study describes a test of that idea, which dates to at least 1877 and famous Russian chemist Dimitri Mendeelev.

They combined ingredients for this so-called abiotic synthesis of methane, the main ingredient in [natural gas](#), in a diamond-anvil cell and monitored in-situ the progress of the reaction. The diamond anvils can generate high pressures and temperatures similar to those that occur deep below Earth's surface and allow for in-situ optical spectroscopy at the extreme environments.

The results "strongly suggest" that some methane could form strictly from chemical reactions in a variety of chemical environments.

This study further highlights the role of reaction pathways and fluid immiscibility in the extent of hydrocarbon formation at extreme conditions simulating deep subsurface.

More information: "In Situ Diamond-Anvil Cell Observations of Methanogenesis at High Pressures and Temperatures", *Energy & Fuels*, [pubs.acs.org/stoken/presspac/p ... /10.1021/ef9006017](https://pubs.acs.org/stoken/presspac/p.../10.1021/ef9006017)

Source: American Chemical Society ([news](#) : [web](#))

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