# Abyssal abiogenic origin of petroleum: Updated milestones

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A number of facts obtained during the last decades such as location of ultra-deep petroleum fields below 'the main zone of petroleum formation', impossibility to identify biotic sources of the hydrocarbon generation for most of supergiant oil and gas accumulations, biomarkers recognized in meteorites, presence of hydrocarbons on the planets of the solar system and in space cannot be convincingly explained from the biotic concept of petroleum origin point of view. At the same time all these facts have found a proper interpretation in the frame the theory of the abyssal abiogenic origin of petroleum. According to this theory hydrocarbon compounds are generated in the mantle and migrate through the deep faults into the Earth's crust where they form oil and gas deposits in any kind of rock. The accumulation of oil and gas is considered as a part of the natural process of the Earth's outgrassing, which was in turn responsible for creation of its hydrosphere, atmosphere and biosphere. Experimental results obtained recently [1, *2*] place the theory of the abyssal abiogenic origin of petroleum in the mainstream of modern physics and chemistry and open a great practical application.

[1] Kutcherov *et al*. (2002) *Proc. Russ. Acad. Sci.* **387**:789. [*2*] Kolesnikov *et al*. (2009) *Nature Geosci*. **2**:566.

# Allophane and palagonite as the product of volcanic glass alteration of different ages

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Volcanic cinders and ashes of different ages and compositions have been collected in the Kluchevskaya volcano group on Kamchatka and in Iceland. Experimental study of thermal properties and phase composition of water was performed [1, 2]. There is no unfrozen water in the investigated modern volcanic cinders from Kamchatka in all temperature ranges (from -15 to 0ºC). But for volcanic ashes unfrozen water content is fixed from 0, 4 to 11% at -5°C that depends on age.

Four samples of ashes have been chosen for researches: three of them (no. 1-3) are collected on Kluchevskaya volcano group (Kamchatka), and one (no. 4) – in the south of Iceland. Ash samples had different age: no. 1 – about 35 years, no. 2 – about 1500 years, no. 3 – about 2000 years, no. - 15000-150000 years.

IR-spectroscopy study (IR-fourier spectrometer FSM-1201, Russia) was made for diagnostics of mineral compositions of ashes. As the results there were found that the sample no. 1 was the waterless allophone, the samples no. 2, 3 – were allophanes with the various water contents and the sample no. 4 – palagonite (Peng Wenshi, 1982; Geptner, 1977).

The thermal study showed that the mass loss depends directly on the ages of the investigated samples. The content of absorbed and structure water were found as: sample no. 1 - 0% ± 0%, sample no. 2 – 1, 0% ± 2, 8%, sample no. 3 – 3, 5% ± 2, 7%, sample no. 4 – 6, 3% и 5, 3%.

[1] Motenko *et al*. (2008) 9-th Intern.Confe. on Permafrost, **2**. [2] Motenko, Kuznetsova (2009) *8th intern. symp. on permafrost engin*. [3] Peng Wenshi (1982) *IR-spectra of minerals*. [4] Geptner, A.P. (1977) *Lithology & minerals* **5**.