



Kazan Golovkinsky Stratigraphic Meeting

2021



Kazan Federal University
Institute of Geology and Petroleum Technologies

Kazan Golovkinsky Stratigraphic Meeting 2021

celebrating the 180th anniversary of the establishment of the Permian system

“Sedimentary Earth Systems: Stratigraphy, Paleoclimate,
Geochronology, Petroleum Resources”

Sixth All-Russian Conference “Upper Paleozoic of Russia”

October 18-22, 2021, Kazan, Russia

ABSTRACT VOLUME





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Abstract Volume

Editor-in-Chief:
Danis K. Nurgaliev

Scientific editor:
Vladimir V. Silantiev

Technical editors:
Milyausha N. Urazaeva,
Veronika V. Zharinova



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**Международная конференция
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Осадочные системы: стратиграфия, геохронология, палеоклимат,
углеводородные ресурсы

**Шестая Всероссийская конференция
«Верхний палеозой России»**

18–22 октября 2021, Казань, Россия

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International Stratigraphic Meeting is dedicated Earth systems, stratigraphic events, paleoclimate, biotic evolution, sedimentary basins and resources.

Международная конференция посвящена проблемам планетарных систем, стратиграфическим событиям, палеоклимату, эволюции биоты, седиментационным бассейнам и полезным ископаемым.

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Evidence for soft-bodied organisms and invertebrate soft tissues in mudstones of the Timanian Horizon (Devonian, Frasnian) of the Southern Tatarian Dome (East European Platform)

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The Timanian Horizon is the terminal part of the Devonian terrigenous complex within the Southern Tatarian Dome (STD). It is represented by a succession of carbonates and siliciclastics, which includes the "upper limestone" marker bed. Mudstone, siltstone and sandstone layers with marine fauna and/or trace fossils (ichnofossils) of marine organisms are located below and above the "upper limestone". The Timanian horizon is conventionally correlated with the beginning of marine transgression and the lower boundary of the Frasnian Stage in the Volga-Ural Region (Fortunatova et al., 2013).

In 2021, a unique burial (Konservat-Lagerstätte) of soft-bodied fauna, including impressions of polychaetes, problematic remains, and soft tissues of inarticulate lingulid brachiopods was discovered during the study of a drill core from a series of wells in mudstones immediately above the "upper limestone". In addition to these remains, this level includes impressions (!) of conodonts, ostracod shells, and shells of marine bivalves with preserved primary shell microstructure. Shells of the conchostracan genus *Glyptoasmussia*, traditionally considered to be a freshwater inhabitant (Novojilov, 1961), were also found here. It is important to note that conchostracans are also known from marine Devonian sediments in Belgium (Webb, 1979).

Pyrite framboids are often observed on the claystone bedding planes that yielded the remains of soft-bodied fauna. They indicate anoxic sediment (and bottom water) conditions and basin depths below the normal (and possibly storm) wave base or closed lagoon conditions.

Preservation of soft-bodied fauna is possible in an anoxic environment with rapid burial and conservation of the sediment.

The preservation of primarily phosphatic conodonts in the form of impressions indicates specific physicochemical conditions of diagenesis, under which the behavior of soluble reactive phosphorus concentrations was probably controlled by the calcium ion content at $E_h < 0$ mV and $pH = 5/6$ (e.g., Moore & Reddy, 1994). It is possible that the acidic conditions in the sediment occurred due to the entry of organic acids.

The interval with remains of soft-bodied fauna has been traced within several areas of the STD and may serve as a regional macro-marker of the Timanian Horizon.

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