

Evgeny Artushkov

Education:

Faculty of Physics, M. V. Lomonosov Moscow State University, 1961.

Degrees:

- Ph.D. in physics of plasmas (1967);
- D.Sc. in physics and mathematics (geophysics)(1969).

Academic ranks:

Corresponding Member of the Russian Academy of Sciences (geology of oil (1991)).

Main scientific results:

- E. V. Artushkov together with M. E. Artemyev suggested viscous crust stretching as a cause of its dive. Most scientists now consider it to be the main mechanism for the formation of deep sedimentary basins;
- Found that large density inhomogeneities of the lithosphere create large additional forces in it, developed a method to calculate these forces and show that they are one of the main mechanisms of strong earthquakes and ridge push;
- Proved that the forces acting along the lithosphere with the power, variable on area, lead to its large vertical displacements and deviations from isostatic equilibrium position;
- Has shown that one of the causes of mantle convection is the differentiation of its matter density at the interface with the Earth's core with the rise of plumes from layer D (the so-called chemical convection);
- Together with S. V. Sobolev suggested a new mechanism of kimberlite magmatism, based on the transmission of pressure from the magma chamber into the magma with lower density, flowing on a crack;
- Together with M. A. Beyer showed that large oil-and-gas pools form in areas of fast submersions of crust due to eclogitization. This is a criterion for the search of new promising offshore basins. In particular, he showed that the deep North Chukchi and North Barents basins are likely to contain 5-10 billion tons of reference fuel;
- In relation with a search for stratigraphic traps for oil and gas, one of the main directions in the geology of oil abroad was to study changes in the depth of the sea in oil and gas basins, 20-200 m over 1-3 million years. They are usually associated with changes in global sea level. Together with P. A. Chekhovich et al. he showed that the sea depth changes of this type were mainly due to rapid uplifts and submersion of the crust on the platforms;
- Together with N.-A. Mörner and D. Tarling discovered a new phenomenon of sudden softening of the lithosphere at the infiltration of mantle fluids. It provides the possibility

of forming under the influence of plates drift fold belts and rift basins on the continent, the lithosphere of which is normally strong;

- Suggested rock sampling from the slopes of seamounts as the main proof of the existence of continental crust at the Mendeleev Uplift Area;
- Together with P. A. Chekhovich, I. V. Belyaev et al. found that the formation of ultra-deep sedimentary basins took place at only a mild stretching of the crust and was mainly due to dense crustal rocks due to metamorphism. He revealed the existence of thick layers of heavy and high-velocity eclogites in these structures below the Moho;
- Showed that the Pliocene-Quaternary uplifts of the crust, which covered 90% of the continents were connected with the infiltration into the lithosphere of large volumes of mantle fluids. This led to the destruction of the lower part of the mantle lithosphere of Phanerozoic age and decompaction of rocks in the crust on the Precambrian lithosphere;
- Together with P. A. Chekhovich found that the main cause of recent uplifts on Precambrian cratons was the decompression of deeply metamorphized rocks in the Earth's crust as mantle fluids penetrate into it;
- Based on these results, constructed a new concept of continental tectonics. Unlike conventional concepts, vertical crustal movement in most of the areas of drifting continents are not associated with the drift of lithospheric plates, but with the deep processes in the crust and mantle;
- Together with V. A. Poselov, I. V. Belyaev, E. I. Petrov, P. A. Chekhovich et al. found that in the deep basins of the Central Arctic the continental crust occurs, which experienced the largest submersion due to the rocks compression caused by metamorphism.

Scientific research and management:

- Member of the Scientific Council of GC RAS;
- Member of the Scientific Council of IPE RAS;
- Expert of RFBR and Presidential grants for young scientists;
- Member of the Bureau of the International Geodynamic Project and the Inter-union Commission on the Lithosphere;
- Deputy Chairman of the National Committee for the program "Lithosphere";
- Convener of a number of international symposia;
- 1961-1969 – senior assistant and junior researcher of the I. V. Kurchatov Institute of Atomic Energy;
- 1969-present time – senior researcher, head of laboratory, principal researcher of the Schmidt Institute of Physics of the Earth RAS.

International activity:

- 1992-1993 – research at Mainz University, Germany;
- 1994-1996 – research at Stockholm University, Sweden.

Publications:

- He has published over 200 scientific papers in our country and abroad, the results of which are widely known and quoted all over the world;
- For the monograph "Geodynamics", Moscow, Nauka, 1979, Elsevier, Amsterdam, 1983, in 1985 he was awarded the Schmidt Prize of the Presidium of the USSR Academy of Sciences;
- For the monograph "Physical Tectonics", Moscow, Nauka, 1993, he was awarded the State Prize of the Russian Federation in the field of science and technology for 1997;
- Delivered presentations about his work in the Presidium of the USSR Academy of Sciences and Russian Academy of Sciences, the Bureau of the Earth Sciences Branch of RAS and many domestic and international scientific conferences.